Gesture screening in young infants with the UK-CDI: Highly sensitive to risk factors for communication delay

Katie Alcock[1,4], Caroline Rowland[2,4], Kerstin Meints[3], Anna Christopher[1,2], Janine Just[3], Victoria Brelsford[3], Jayne Summers[1]

Lancaster University[1], University of Liverpool[2], University of Lincoln[3], ESRC LuCiD Centre[4]

The UK CDI: Words and Gestures

INTRODUCTION

- When measuring early communication, many scales only assess vocabulary (comprehension and/or production).
  - Youngest children (under 18 months) often have few spoken words
  - So comprehension alone can be used
- CDIs (Communicative Development Inventories) (Fenson et al, 2007) are often used in this context but **gesture** is often an afterthought.
  - Gesture scale of the MacArthur Bates CDI never validated
  - No other parent-completed gesture inventories validated in English to our knowledge
  - Yet gesture often precedes vocabulary
  - Closely related to language in children with delay (Thal & Tobias, 1997)
- Gesture validation and sensitivity to risk factors
  - Biological (birth weight, prematurity)
  - Social (birth order, SES factors)

SAMPLE AND CONCURRENT VALIDITY

- 1212 families from all regions and nations of UK
- Part of UK-CDI project (Alcock et al in prep., Alcock et al 2017)
- Infants aged 8-18 months
- Representative of UK SES
- Balanced as far as possible by month of age, gender
- Family questionnaire assessed risk and demographic characteristics
- Additional 32 families of babies aged 16-18 months
  - Completed CDI
  - Gesture challenge task carried out in lab
  - Communicative and symbolic
  - High, mid and low frequency items
    - Can you give me high five? (2 points)
    - Can you do like me/like Mummy? (1 point)
    - Can you show me how to use this (e.g. glasses)? (2 points)
    - Can you do like me/like Mummy? (1 point)

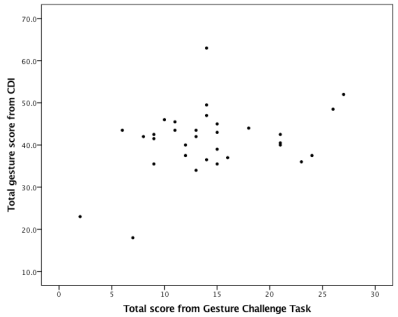
RESULTS – CONCURRENT VALIDITY

- Correlation with Gesture on CDI – r = .344, p = .054 (sig at 1-tail but ?due to a few outliers)
- Higher correlation between Gesture on CDI and Object Comprehension task (r = .419, p = .017)

Broken down into types

- Pretend gesture challenge correlated significantly with these items on CDI, overall CDI (r = .351, p = .049 and r = .394
- Games/routines gesture challenge did NOT correlate significantly with overall CDI

(But Games/routines on CDI does correlate with overall CDI – likely measuring same global gesture construct)



RISK FACTORS

- Biological risk factors – significant correlations with CDI subscales

	Birthweight	Prematurity
CDI Comprehension	-	-
CDI Production	✓	✓
CDI Gesture	✓	✓

- Social risk factors – significant correlations with CDI subscales

	Gender	Firstborn status	Childcare hours
CDI Comprehension	-	✓	
CDI Production	-	✓	✓
CDI Gesture	✓	✓	✓

- Controlling for age (ANCOVA) – significant effects of:

	Gender	Gestation	Birthweight	Spoken language impairment in 1st degree relative	Firstborn status	Multiple birth	Mum's age	Parental education	Childcare hours
CDI Comp	-	-	-	✓	✓	-	✓	✓	-
CDI Prod	-	-	✓	✓	-	-	✓	-	-
CDI Gesture	✓	✓	✓	✓	-	✓	-	✓	✓

- Gestation: <33 weeks poorer gesture than any longer gestation
- Birthweight: Gesture, < 5.5lb poorer. Production, >= 10lb better
- Mum's age: ***younger mums report more comprehension, oldest mums report less production***
- Parent education: ***less well educated report more comprehension, degree level report more gesture***
- Childcare: No childcare hours poorer gesture than mid-range of hours.

DISCUSSION

- Gesture scale appears to be more sensitive than
  - Production (but low variability at this age)
  - Comprehension (widely relied upon for screening)
- Also seems to be less vulnerable to anomalies
  - Younger/less well educated parents may have expectations about vocabulary
  - Families may have fewer expectations about gesture?
- Parental expectations - subject for future research

References:

- Alcock, K.J., Meints, K., Rowland, C. F., Christopher, A. Just, J. & Brelsford, V. (in prep). The UK Communicative Development Inventory: Words and Gestures.
- Alcock, K. J., Meints, K., & Rowland, C. F. (2017). UK-CDI Words and Gestures - Preliminary norms and manual.
- Fenson, L., Marchman, V. A., Thal, D., Dale, P. S., Reznick, J. S., & Bates, E. (2007). MacArthur-Bates Communicative Development Inventories (CDIs), Second Edition (Vol. 59). Baltimore, MD: Brookes.
- Thal, D., & Tobias, S. (1994). Relationships between language and gesture in normally developing and late-talking toddlers. *Journal of Speech and Hearing Research, 37(1)*(1), 157-170.

ACKNOWLEDGEMENTS

The UK-CDI project is funded by the Economic and Social Research Council. The support of the ESRC [ES/J007692/1] is gratefully acknowledged. Caroline Rowland and Katie Alcock are members of the ESRC International Centre for Language and Communicative Development (LuCiD) at Liverpool and Lancaster Universities. The support of the Economic and Social Research Council [ES/L008955/1] is gratefully acknowledged.

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL · Lancaster University · University of Liverpool · University of Lincoln · LuCiD The ESRC International Centre for Language and Communicative Development