Introduction

What are risk factors for poor drawing performance?

- Associated with cognitive and motor development (Schepers, Deković, 2004), but relationships are weak (Imuta et al., 2013)

Developed as a nonverbal measure of intelligence (Goodenough, 1926)

Reliability:

- Aesthetic Scores
  - Parental Assessment
  - Ages and Stages Questionnaire
  - Used gestational-age (GA) corrected age to correct for prematurity

- Cognitive are in the model (COG = 0.21, p < .001)

Why the association between Intelligence and drawing?

- Drawing ability and intelligence may develop in parallel
  - Modeling to compare directly (see Leslie & Thaiss, 1992 for similar argument)

Drawing and Prematurity

- Premature did not predict DAP:IQ scores (contra Schepers et al., 2012)

Future Directions

- Compare DAP:IQ and aesthetic scores with scores on a figure copying task
- Compare drawing scores with face-detection algorithm results
- Extract measure of how well drawing depicts a face

References


Acknowledgements

We thank the following funding sources for supporting this work: The National Science Foundation (SBE BCS-0002010, BCS-0429681, BCS-0124905, BCS-0468838), DGE I0541915, Busch Biomedical Research Fund, and the Bamford-Lahey Children’s Foundation.

We thank to all members of the Language Acquisition and Language Processing Lab for providing valuable feedback on the project.

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Draw-a-Person (DAP) Task

- Developed as a nonverbal measure of intelligence (Goodenough, 1926)
- DAP:IQ validated against standard IQ measures (Reynolds & Hickman, 2004)
- Strong relationship between DAP: IQ and fine motor skills (Schepers et al., 2012)

Methods

Participants 345 four- and five-year-olds completing a longitudinal twin study

- Used gestational-age (GA) corrected age to correct for prematurity

Developmental Measures

- DAP: IQ Scores (Reynolds & Hickman, 2004)
- Aesthetic Scores
- Scoring system developed in house to capture aesthetic quality of drawings

Draw-a-Person (DAP) IQ Scores

- 4 children scored the DAP tests according to the DAP: IQ scoring rubric (Reynolds & Hickman, 2004)
- All DAP tests were scored by at least 2 different scorers (Inter-Rater Reliability (IRR) = 0.94, p < .001)

Aesthetic Scoring Criteria

- 2 scorers with fine arts training scored each drawing on a scale of 0-9 for aesthetic quality (Inter-Rater Reliability (IRR) = 0.88, p < .001)

Discussion

What does the DAP: IQ measure?

- Primarily: fine motor skills
  - Social: relationship between DAP: IQ and fine motor skills measures

- Not cognitive ability
  - No relationship found between DAP: IQ scores and cognitive measures

- Does capture aesthetic quality of drawing to an extent
  - Strong but not perfect relationship between DAP: IQ scores and aesthetic scores
  - But different relationship between aesthetic scores and developmental measures

Why the association between Intelligence and drawing?

- Drawing ability and intelligence may develop in parallel

Drawing and Prematurity

- Prematurity did not predict DAP: IQ scores (contra Schepers et al., 2012)

Future Directions

- Compare DAP: IQ and aesthetic scores with scores on a figure copying task
- Compare drawing scores with face-detection algorithm results
- Extract measure of how well drawing depicts a face