**BACKGROUND**

- Handwriting and letter perception in adults
  - Handwriting
  - Letter perception

- Handwriting produces several levels of visual input

- Study questions
  1. How does the brain system supporting handwriting change with experience?
  2. What does the brain extract from the letterforms produced during handwriting – does this response change with experience?

**METHODS**

**Participants**
- Early-literate children (5 – 6 years, n = 14)
- Literate children (7 – 8 years, n = 14)
- Literate adults (19 – 25 years, n = 14)

**Materials and procedure**

**Scanning protocol**

**Standard preprocessing**
- Slice scan time correction
- 3D motion correction
- Spatial smoothing

**Additional motion correction**
- Spike regression
- Motion regression

**Whole brain contrasts**
- Motor component: Write with ink > Watch dynamic
- Visual component: Write with ink > Write without ink
- Unfolding: Watch dynamic(own) > Watch handwriting(own)
- Own handwriting: Watch handwriting(own) > Watch handwriting(other)
- Variability: Watch handwriting(other) > Watch typed
- Letters: Watch typed > fixation

**RESULTS & DISCUSSION**

1. The neural response during handwriting changes with experience.
   - ... progression from a frontal-parietal system to including the ventral visual stream.
   - ... overlap in L IPS/SPL is replaced by overlap in the ventral visual stream in adults.

2. What the brain extracts from the letterforms produced during handwriting changes with experience.
   - ... before a letter-category response is established, variability prevails.
   - ... after a letter-category response is established, a new category emerges.

**REFERENCES**