

Could manual gestures aid in bilingual children's language production?

Elena Nicoladis

University of Alberta, Edmonton, Canada

Bilingual development \neq 2 Monolinguals' development

- Rate of acquisition
 - Delay
 - Vocabulary scores in one language under 4 years (e.g., Nicoladis, 2002)
 - Past tense morphemes (particularly irregular) (Nicoladis, Palmer & Marentette, in press)
 - Acceleration?
 - = positive cross-linguistic influence?
 - VO compounds advanced in French, in French-English bilingual 4-year olds (Nicoladis, 2003)

Bilingual development \neq 2 Monolinguals' development

- Cross-linguistic transfer
 - English: “The car of my father” vs. “My father’s car”
 - One argument: occurs because there is competition between possible structures to convey meaning between languages as well as within (Nicoladis, 2006)

What happens with development?

- Bilingual children can sometimes catch up in vocabulary scores in both languages, in the school years (e.g., Cromdal, 1999)
- Interference due to competition between languages is reduced but never goes away (e.g., Gollan & Acenas, 2004)

What happens after 4 years?

- Some researchers argue that bilingual adults can produce words after fewer exposures than monolinguals (Gollan & Silverberg, 2001)
- Bilinguals might develop(implicit) strategies to access language effectively
 - For example, metalinguistic awareness (Bialystok, 2001)
- This study: manual gestures

Gestures help access language when the task is difficult

- Adults recovered more words when in TOT state when allowed to gesture than when hands were immobile (Frick-Horbury & Guttentag, 1998)
- Adults produced gestures more often with low frequency words than with high imagery words (Nicoladis, Pika & Marentette, under review)

Gestures help access language when the task is difficult

- Children produced more gestures when explaining their solutions to a difficult Piagetian task than when describing the experimental set-up (Alibali, Kita & Young, 2000)
- Several researchers have suggested that people gesture to aid in deciding how to package information for speaking (e.g., Kita, 2001)

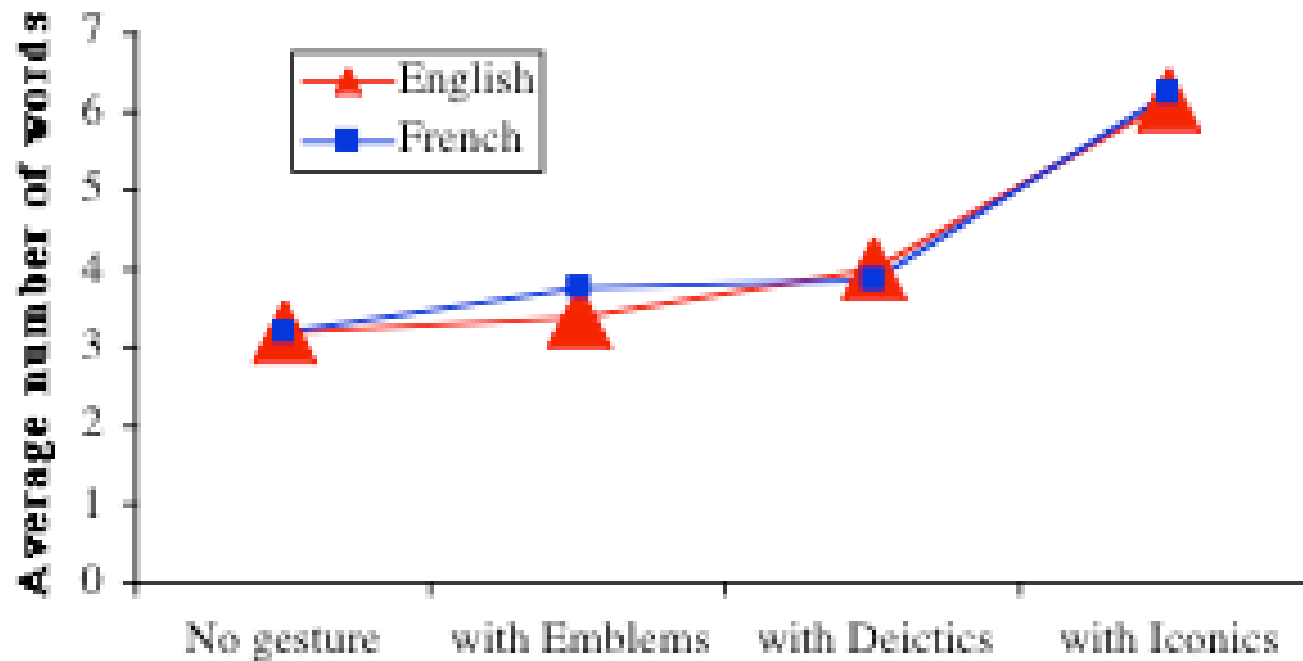
Gesture types

- Iconic gestures
 - Similarity between gesture shape/movement and referent (McNeill, 1992)
- Non-iconic gestures
 - Pointing
 - Conventional
 - Beats

Gestures and bilingual children

- French-English bilingual children (2;0-3;6) produced more iconic gestures in their dominant than non-dominant language
(Nicoladis, Mayberry & Genesee, 1999)
- Ditto for older bilingual children (3;6-4;11)
(Nicoladis, 2002)
- Same pattern did not hold for non-iconic gestures

Gestures and MLU



(Figure 4; Nicoladis, 2002)

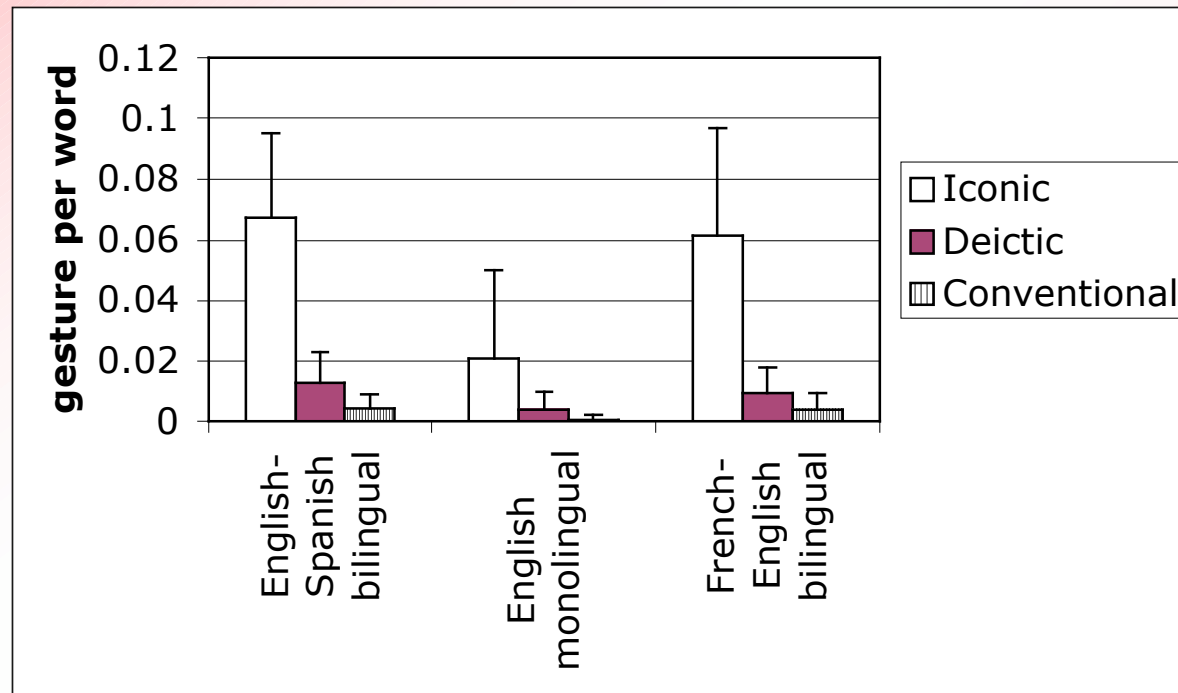
Gestures and bilingual children

- The use of iconic gestures allows bilingual children to create long utterances
- Perhaps by aiding in accessing the desired language

Bilingual adults

- French-English bilingual adults and English-Spanish bilinguals gesture more than English monolinguals (Pika, Nicoladis & Marentette, in press)

Bilingual vs. monolingual adults: Gestures in English



(Pika, Nicoladis & Marentette, in press)

Bilingual adults

- French-English bilingual adults and English-Spanish bilinguals gesture more than English monolinguals (Pika, Nicoladis & Marentette, in press)
- The bilinguals gestured more in their L1 than monolinguals
 - So, this effect is likely due to language access (reducing interference) rather than cultural/linguistic differences in gesture rates
 - But no monolingual controls for French or Spanish

This study

- Do French-English bilingual children gesture more than monolinguals in both French and English?
 - French might be a more “gesture-y” language than English so children might gesture more in French
 - If bilinguals gesture more to aid in language access, they will gesture more than monolinguals in both languages

Participants

- 10 French-English bilingual children
 - Between 4 and 6 years
 - In Edmonton, Alberta
- 10 English monolingual children
 - Same age range
 - In Edmonton, Alberta
- 10 French monolingual children
 - Same age range
 - In a city outside of Montreal, Quebec

Procedure

- All participants watched two short clips of two Pink Panther cartoons
- They told a fluent speaker of the relevant language what happened in the cartoons
- Their retellings were videotaped
- The bilingual children did this twice: once in French and once in English
 - Two sessions separated by about a week

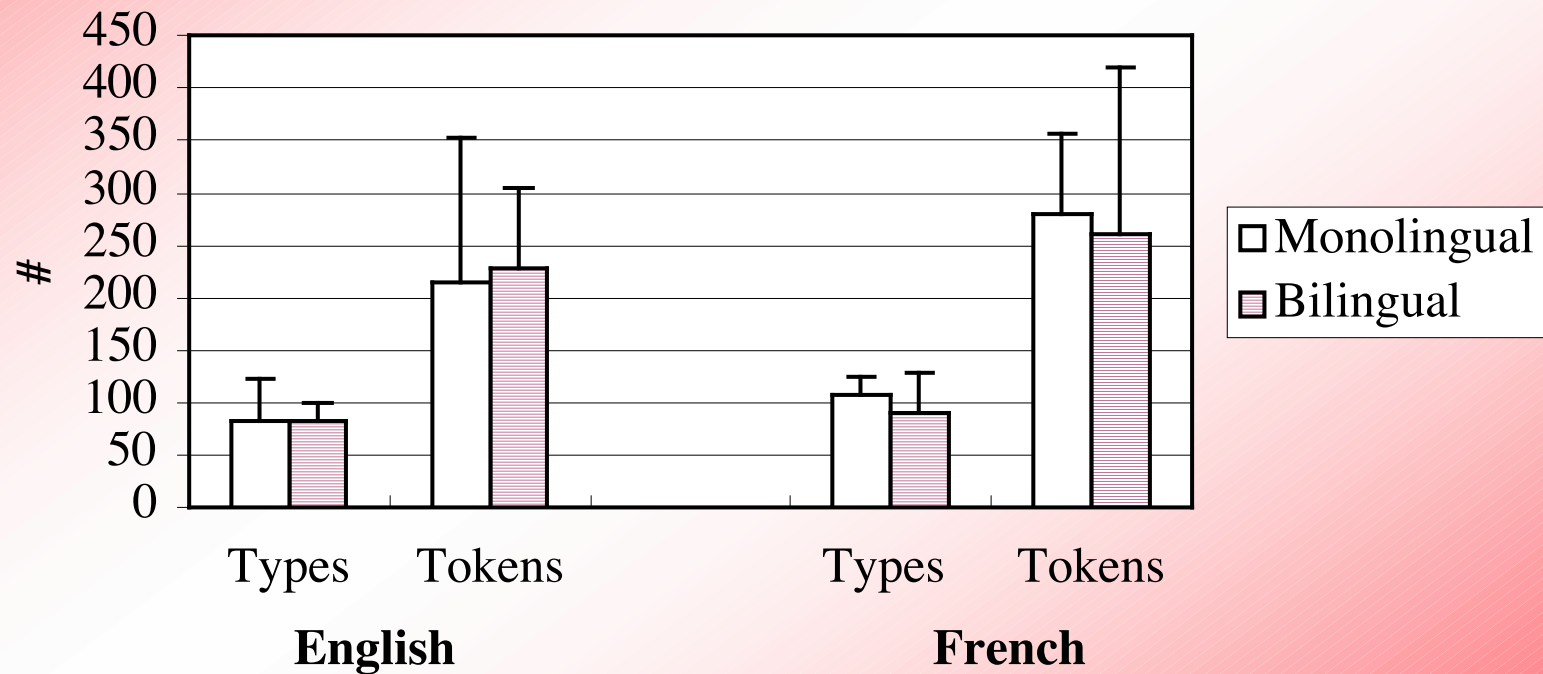
Transcription and coding

- The speech in the videotapes was transcribed
- Gestures were coded:
 - Iconic = gesture resembles referent
 - Non-iconic:
 - Conventional = gesture used within a cultural group
 - Deictic = indicating a stable location

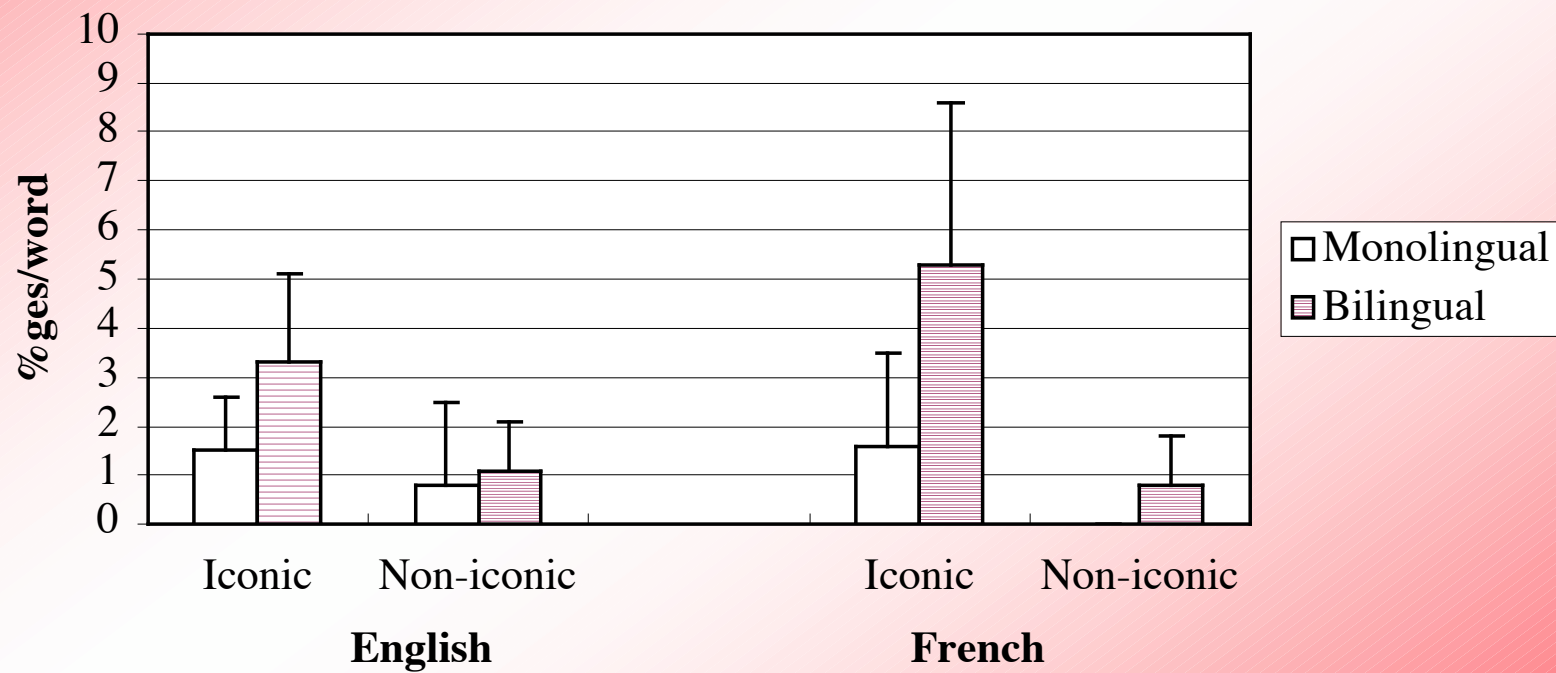
Gesture rate

- Some children told longer stories than others
- We calculated the gesture rate for each child
- That is, the number of gestures per word tokens

Results: Word types and tokens



Results: Gesture rate



Results: Age

- With a wide age range, it is important to check for possible effects of age
- Age did not correlate significantly with children's gesture use
 - There were small negative correlations between age and non-iconic gesture use for the bilingual children in English ($r = -.4$) and in French ($r = -.5$)

Summary of results

- Bilingual children gestured more in both French and English than monolinguals
- There was no difference in the rate of gestures between French and English monolinguals
- Bilingual children told stories just as long and with just as varied vocabulary as monolinguals

Discussion

- We knew that bilinguals might have to reduced interference between the two languages when speaking (Nicoladis, 2006)
- The results here suggest that bilingual children between 4 and 6 years can use gestures to aid in language access or retrieval
- Like adults (Pika, Nicoladis, & Marentette, in press)

Discussion

- Gestures might be one (implicit) strategy used by bilinguals to help them produce words after fewer exposures than monolinguals (Gollan & Silverberg, 2001)
- The bilinguals used more iconic *and* non-iconic gestures than monolinguals (cf. Nicoladis, 2002)
- If this finding is replicated in future studies, it will be necessary to rethink how gestures might aid language access

Discussion

- Gestures might help the speaker NOT by creating an image that he/she can talk about
- An alternative possibility is that the movement of gestures helps memory for language (Rappoport, 1999)

Take-home message

- Bilinguals gesture more than monolinguals and, here, used as many words as monolinguals
- The use of manual gestures might facilitate language access or retrieval
- Helping explain how bilinguals can access words after fewer exposures than monolinguals (Gollan & Silverberg, 2001)

Future research

- Similar language pairs might result in more interference (--> more gestures) than dissimilar language pairs
 - Swedish-English bilinguals can attain same vocabulary scores in both languages as monolinguals (Cromdal, 1999)
- Examples from my children:
 - “I will transform you in a princess”
 - “I detest tomatoes”

Future research

- Bilingual children in TOT state
 - More TOT than monolinguals
 - More items with gestures than monolinguals
 - Once the rate of TOT is accounted for, the gesture rate should be equivalent
- In other words, bilinguals and monolinguals gesture to aid in language access. Bilinguals just do it more.

Acknowledgements

- Paula Marentette
- Simone Pika
- Caroline Jansen
- Natasha Tuck
- Stephanie Yan
- All the storytellers
- SSHRC