

What Young Bilingual Children Know About the Meanings of Words¹

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Abstract



Determining the meaning of words is a problem that has perplexed philosophers and scientists for centuries. Monolingual early word meanings: Vibrant study. Bilingual early word meanings: Scant study.

First-Time Methods

were applied to evaluate all babies' semantic and conceptual knowledge underlying early word meanings across each of their languages.

Novel Populations

Two groups of bilingual babies were studied over time, and over multiple contexts and language users.

Bilingual babies acquiring two spoken languages. Bilingual babies acquiring a signed and a spoken language—as they provide an unique lens into the knowledge underlying all childhood bilingualism.

We Found

"First-word" milestone occurred at similar times across babies' two languages, and was on the same time course as monolinguals. Remarkable absence of semantic and conceptual confusion across all early dual lexicons as revealed through cross-language synonyms. Similar (i) conceptual constraints along "kind" boundaries and (ii) semantic organization, across each child's two lexicons, suggesting possible universals of semantic and conceptual organization underlying all human language acquisition.

Questions Old & New

OLD Do bilingual infants know that they are acquiring two languages?²⁴
OR
Do young bilinguals begin by thinking that words from their two languages constitute one single language system?²⁴
NEW How bilingual babies acquire word meanings in their two languages?
How word meanings are conceptually constrained and semantically organized for each language?
What research methods might best help us gain this knowledge?

How can researchers study the bilingual child's word meanings?

Three Key Semantic-Conceptual Analyses

- Cross-language synonyms, or Translation Equivalents (TEs)^{24,25}
YIELD insights into what bilinguals know about the meanings of words across their two languages, and whether they "know" they are acquiring one language or two.
 - Conceptual constraints on early lexical + referent pairings^{24,25}
YIELD information regarding whether early word meanings are conceptually constrained.
 - Categorization of word meanings and semantic concepts^{24,25}
YIELD relative information about the young bilingual's categorization of semantic concepts across each language over time, and identifies universal patterns in what topics children select to talk about first.
- Methodological considerations
Use of multiple data sources is crucial
Comparisons of bilinguals to monolingual norms is justifiable

Novel Population

Bilinguals acquiring a signed and a spoken language are in a bilingual situation comparable to a child exposed to two spoken languages. Signed Languages & Spoken Languages

Similarities

language organization and acquisition²

Differences

produced and perceived in different modalities

Hypothesis Testing One Example

Speaking-Speaking Bilinguals: Produce two distinct phonetic systems in one single modality.
Signing-Speaking Bilinguals: Produce two distinct phonetic systems in two distinct modalities.

Hypothesis

High degree of "neutrals" in young bilinguals acquiring two spoken languages (or, linguistic productions that are uncodable, as it cannot be determined to which of the child's two languages they belong) are not due to underlying semantic and conceptual confusion. Instead, they are due to surface motoric requirements of producing two phonetic systems in the same modality.

Predictions

If neutrals result from the motoric requirements inherent in the production of two distinct phonetic systems in a single modality, the modality differences in the signing-speaking infants should block their occurrence, thereby revealing the true age when language differentiation first begins in all bilingual babies.

Subjects

3 acquiring English & French, 3 acquiring LSQ & French



| TABLE 1 Ages at recording sessions | | | |
|---------------------------------------|----------------|-------|-----|
| | English-French | Start | End |
| Ed | 1;1 | 2;1 | |
| Jane | 0;7 | 1;11 | |
| Sue | 1;0 | 2;2 | |
| LSQ-French | | | |
| Amy | 0;11 | 1;11 | |
| Val | 0;11 | 1;11 | |
| Ol | 0;11 | 2;1 | |

Data Collection

Monthly videotapes of babies until the production of their first words, and then thrice monthly until approximately age 2 years.
Three sources of data, plus validity measure.

Primary

Videotaped sessions: Parents and unfamiliar monolingual experimenters (native speakers/signers of infants' two languages).

Secondary

Parental checklists: MacArthur CDIs.

Parental reports: Detailed videotaped interviews.

External validity measure

Experimenter notes: Confirmed above; assessed other developments.

Transcription & Coding

All sessions were fully transcribed four times; twice by a native speaker of the child's two languages, and coded for:

- Lexical Attribution (All Vocal & Manual Productions)^{24,25}
- Translation Equivalents (Semantic concept analyses)^{24,25}
- Lexical + Referent Pairings (Conceptual constraints analyses)^{24,25}
- Nelson Semantic Classification (Semantic categorization analyses)^{24,25}

Results A. Bilingual Milestones

All six bilinguals' first-word milestone in each language, and the age at which 50 words were obtained using words from both languages were the same across their dual languages, and similar to monolingual norms^{24,25,26}.

| | First-Word | 50-Words | 50-Words (2 languages) |
|----------------|------------|----------|------------------------|
| English-French | 1;01 | 1;09 | 1;08 |
| LSQ-French | 0;11 | 1;08 | 1;08 |
| Monolinguals | 0;9-1;02 | 1;07 | — |

Results B. Semantic Concepts Underlying Early Word Meanings: Translation Equivalents

TEs were robustly present in all bilingual babies and, surprisingly, the exclusion of neutrals obscured this fact in the bilingual babies acquiring two spoken languages.

Table 3: Average percentage of TEs present at 50-word stage by including neutrals (+Neutrals), excluding neutrals (-Neutrals).

| | +Neutrals | -Neutrals |
|----------------|-----------|-----------|
| English-French | 27% | 5% |
| LSQ-French | 29% | 29% |

Signing-speaking babies did not produce neutrals.

Results C. Conceptual Constraints Underlying Early Word Meanings

Most all words (signs) were "appropriate" lexical + referent pairings (extension/intensional) and, crucially, most of these were constrained along natural kind boundaries from the very first lexical productions. Fewer lexical + referent pairings were "inappropriate" and, of them, even fewer were possible violations of natural kind boundaries.

| | Tokens | | | |
|----------------|--------|-------------|---------------|------------|
| | Total | Appropriate | Inappropriate | Violations |
| English-French | | | | |
| Ed | 952 | 937 | 15 | 1 |
| Jane | 2113 | 2043 | 70 | 4 |
| Sue | 923 | 860 | 63 | 1 |
| LSQ-French | | | | |
| Amy | 1344 | 1304 | 40 | 5 |
| Val | 706 | 689 | 17 | 0 |
| Ol | 1343 | 1289 | 54 | 4 |

Results D. The Categorization of Word Meanings & Semantic Concepts

All six bilingual babies' two lexicons exhibited similar categorical organization, and were similar to monolinguals. Bilingual babies' early word meanings across each of their two languages were categorized into Nelson Semantic Trees at 3 times: First 10 (T1), 30 (T2), and 50 (T3) words. Figure 1 provides representative trees from (a) one speaking-speaking as compared to (b) one signing-speaking baby.



All babies first acquire meanings for things that are related to them.

Table 5 provides the percentages of words that two representative infants used for things that were related to them at 3 times: First 10 (T1), 30 (T2), and 50 (T3) words.

| | T1 | T2 | T3 |
|----------------|-----|-----|-----|
| English-French | 80% | 64% | 80% |
| LSQ-French | 80% | 60% | 62% |

Conclusions

Powerful similarities existed—where differences could have reined—between young bilinguals acquiring two spoken languages and those acquiring a signed and spoken language.

Similar

classic early milestones across each language, and similar to monolinguals.
robustness and nature of semantic Translation Equivalents.
conceptual constraints along natural kind boundaries across each language from the start, with rare violations.
categorical organization of word meanings across each of their languages.
propensity to "talk" first about meanings for things that are related to them.

Different

Neutrals were not present in signing-speaking babies, suggesting that, in young speaking-speaking bilinguals, they result from motoric factors of having to produce two spoken language phonologies at the same time—and are not an index of underlying semantic confusion due to early bilingual language exposure.

Summary

Early bilingual language exposure yields a child who is not semantically confused.
can differentiate her languages from the very first language productions.
Semantic and conceptual universals underlie all early human word learning—semantic: children first talk about things that are of interest to them; conceptual: early word learning is constrained across kind boundaries—and most certainly traverses the semantic landscape of the young bilingual mind.



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