

Understanding Coarticulation and its Effects on Speech

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What is coarticulation:

Also known as Connected Speech

Coarticulation refers to how speech is influenced by its neighboring sounds, which causes an overlap in articulatory gestures. In ordinary speech, coarticulation does not occur in isolation but is intertwined with a continuous stream of articulation.

Types of Coarticulation:

Elision Sounds are lost (the omission of sounds, syllables, and/or words in speech)	Assimilation Sounds change (sounds are influenced by and become similar to a surrounding sound)
- Police → /p l`is/</li><li>Different→ /dɪfr`ənt/ - Did you eat yet? → /dʒɪtʃɛt/	- Handbag→ /'hæm.bəg/ - Fourth Sunday→ / fɔ:s sʌndeɪ/ - Grandpa→ /græmpa/

- Coarticulation is important in making speech sound natural and fluid
- It also allows faster and smoother speech production
- Coarticulation patterns differ between languages
- Coarticulation also differ between regional dialects and accents.
- It helps reduce cognitive load reduction
- It also helps humans develop better communication technologies

Negatives Aspects of Coarticulation:

- Hard for language learners who expect a more precise and isolated sound. Sounds are harder to distinguish when blended.
- Automatic Speech Recognition (ASR) has difficulty interpreting speech commands which can influence accuracy and interpretation
- It is difficult for researchers to study sounds in their "pure" forms. Neighboring sounds impact sounds. It can be difficult to isolate these individual sounds.
- Miscommunication can occur. Regional dialects and accents influence the way a person speaks and can cause misunderstanding of a speaker's intentions and subtle word differences.

Fast spontaneous speech

Example 1 (Br. Eng)

weak forms: "you"
final d in "would" not produced
final k in "like" not produced
"a" and "of" not produced

"Would you like a cup of tea?"
X [ə] X X X

[wʊdʒəlaɪkəʔpəti]

Example 2 (Am. Eng)

syllabic "m" in "I'm"
"trying to" produced as [trʌnə]
h in "her" not produced

"I'm trying to help her."
[m] [trʌnə] X

[ɪmtrʌɪntəhelpər]

Careful speech model

Example 1 (Br. Eng)

weak forms: "you" "a" "of"
"would you" connected with [dʒ]

"Would you like a cup of tea?"
[dʒ][ə] [ə] [ə]

[wʊdʒəlaɪkəʔpəti]

Example 2 (Am. Eng)

weak forms: "to"
h in "her" not produced
"ing" produced as "in"

"I'm trying to help her."
[n][ə] X

[aɪmtrʌɪntəhelpər]

Research 1:

Researchers investigated how the quantity and quality of children’s spoken language experience influence their ability to coarticulate sounds. They discovered that children who vocalize more throughout the day exhibit less coarticulation in their speech. Children with larger vocabularies also have a reduction in coarticulation. As children’s experience with vocabulary and language grows, they develop more precise phonological representations. Children with more extensive speaking practice and vocabulary knowledge help refine motor control, improve their ability to control individual sounds, and increase articulation.

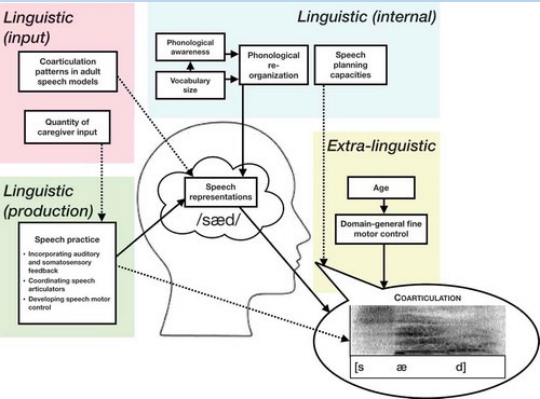
Research 2:

Researchers examined how a child's ability to learn to read interacts with a child's spoken fluency. Researchers focused on young learners' co-articulatory abilities. Though the research focused on German speakers and languages with shallower orthographies, the researchers observed how reading influences children's spoken language. Researchers heavily emphasized connecting speech development with reading, especially in languages that have consistent letter-sound correspondence. Results also show that a child's coarticulatory patterns are influenced by their reading proficiency. By exploring the connection between reading and speech development, researchers better understand language proficiency skills.

Further Research Possibilities:

- 1.Classroom Observations and Long-term Studies: Researchers can conduct studies that observe how coarticulation awareness develops over time. By following students throughout their different stages of educational development, researchers can better understand how coarticulation skills change and influence different aspects of reading, comprehension, and pronunciation.

2.Comparative Studies in Multilingual Education: Researchers can compare how coarticulation skills in a first language affect fluency and pronunciation in a second language. This research can provide better strategies and insights into more effective bilingual education.



Solid arrows indicate known connections and dotted arrows indicate hypothesized connections.
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