

# Haptic Pronunciation Teaching: Neuroscience, Praxis and Touch

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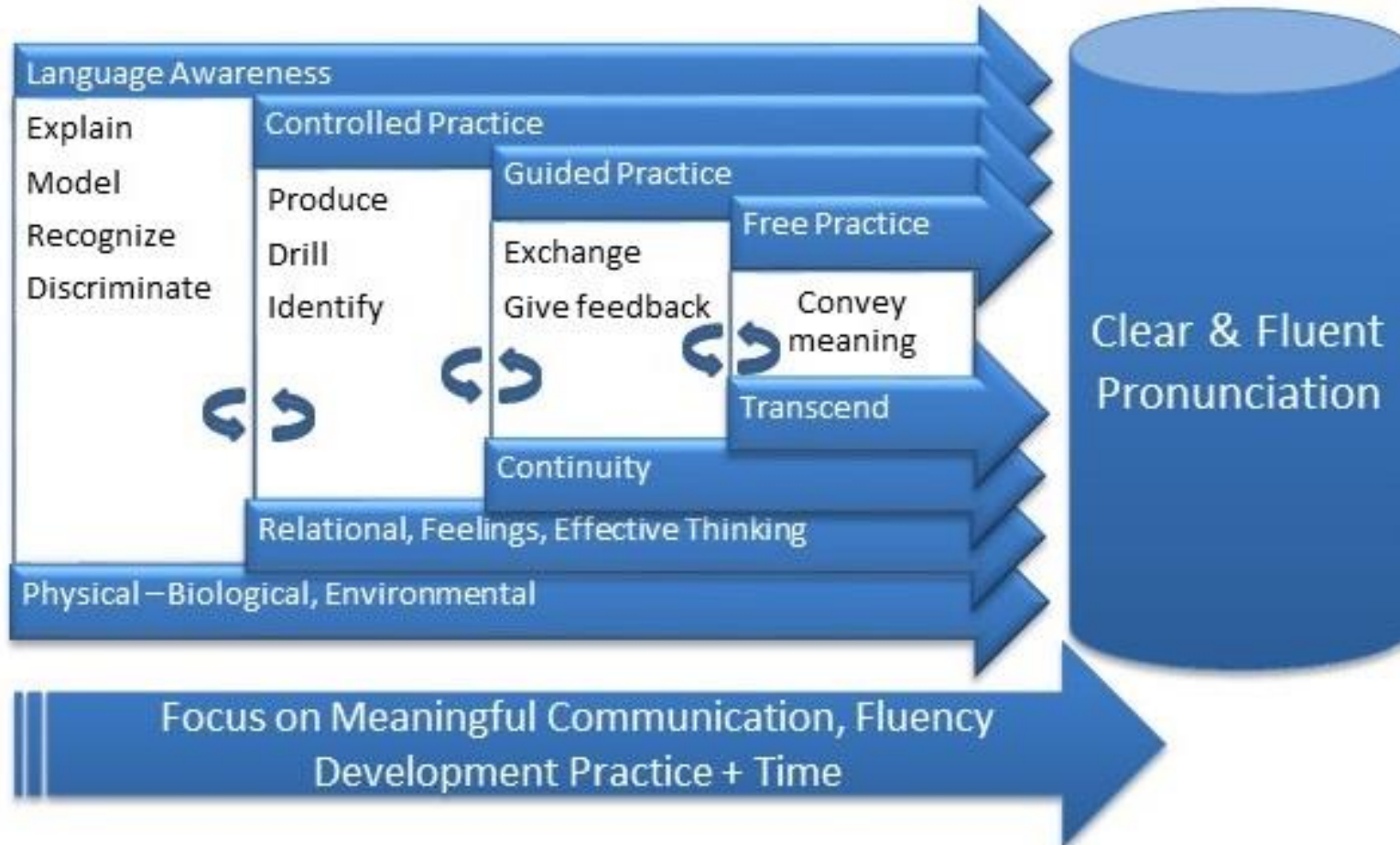
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# Introduction: Haptic Pronunciation Teaching

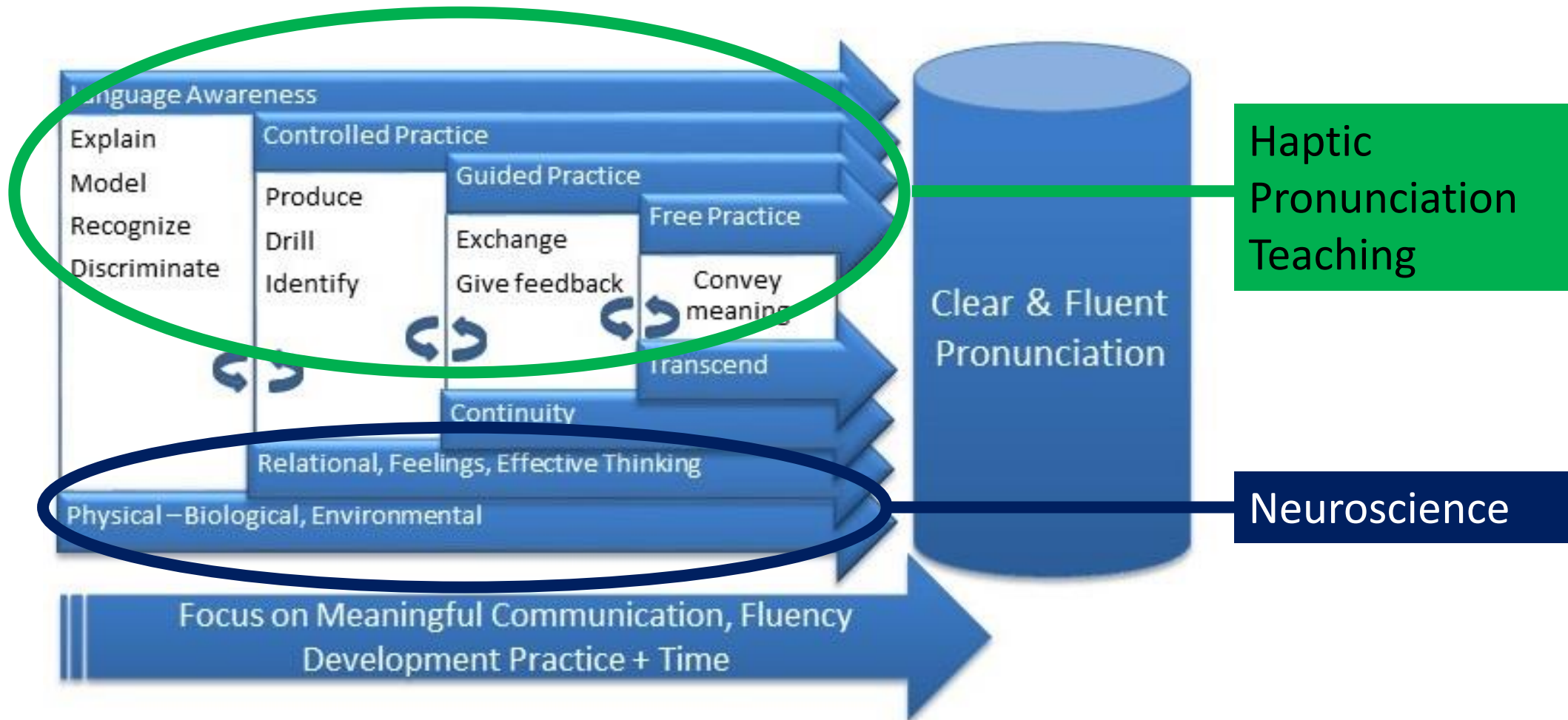
- Haptic (Speech-synchronized gesture + touch)
- Pronunciation teaching complemented by haptic engagement
- Systematization of what teachers and learners do naturally
- Gesture positioned on stressed syllables in words, phrases or sentences, regulated and modulated by touch
- Facilitates modelling, feedback and correction
- Can be applied with any learner population
- First proposed *Haptic approaches to Intonation Instruction* at the 2008 TESOL Convention, New York.
- (Relatively) easy to learn!

# The Coaching Model to Clear and Fluent Pronunciation

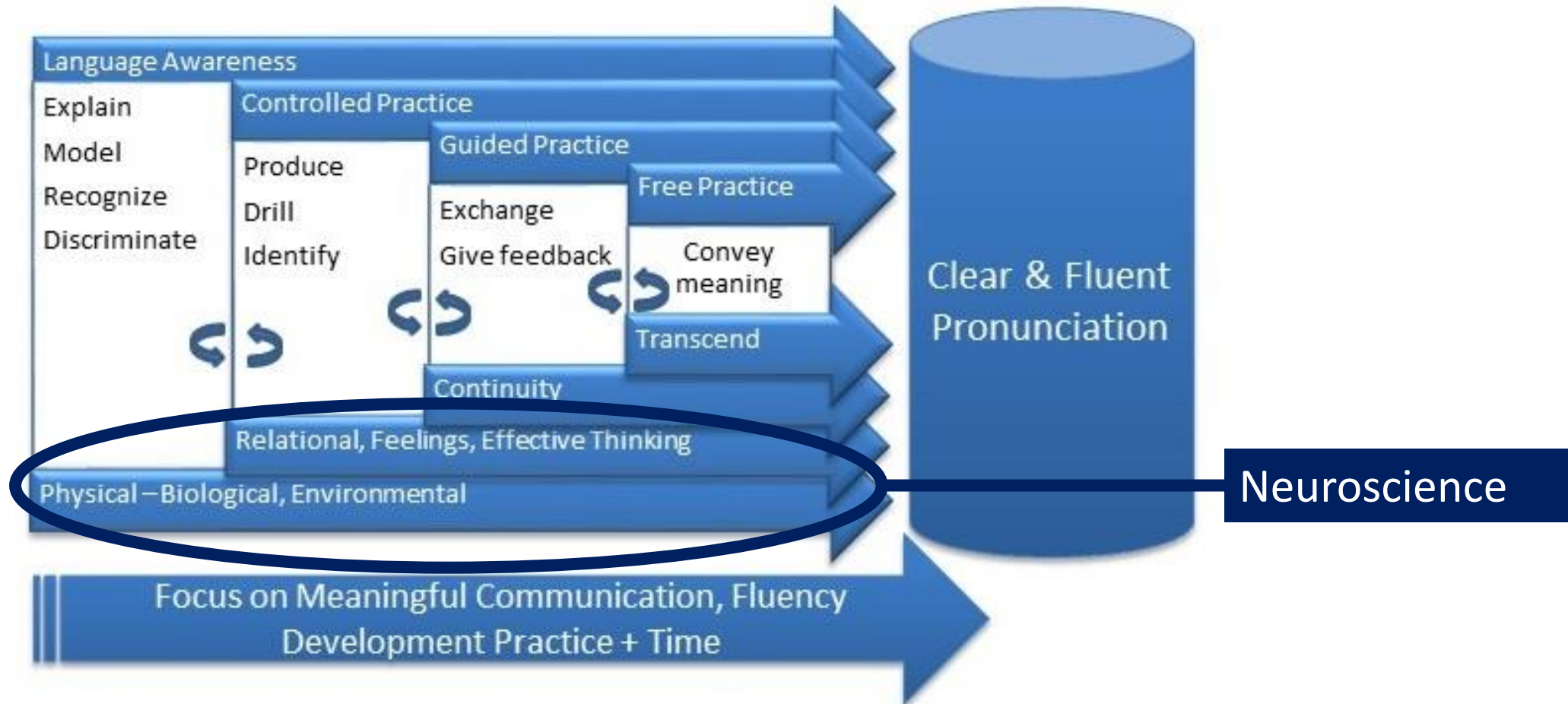


(Baker, 2021)

# Haptic Pronunciation Teaching & Neuroscience within The Coaching Model



# Haptic Pronunciation Teaching & Neuroscience within The Coaching Model



# Neuroscience

- Brain is a social organ (Cozolino & Sprokay, 2006)
- In social discovery-driven activities, neurons fire and make new connections; consolidation of existing pathways in the brain (=learning)
- Stress & negative emotions impedes learning
- Neuroscience offers insights into brain's processing of suprasegmentals (processing of new and old information) (Hagoort, 2019)
- Connection between neuroscience and pronunciation has yet to be explored in depth

# Movement

- Reduces reduce stress – triggers brain to release dopamine and increases satisfaction/pleasure
- Increases learning/cognitive function – increased blood flow carries away neurotoxins in the brain
- Muscle movement: brain receives signals to pay attention & learn
- Contributes to the birth of new neurons (i.e., neural plasticity) in hippocampus
- Leads to more effective learning and retention of content (Ruiter et al., 2015)  
    Yet, cognitive tasks & physical activity are seldom connected in educational contexts/frameworks
- Pronunciation is a kinaesthetic activity (Underhill, 2005)

# Gestures

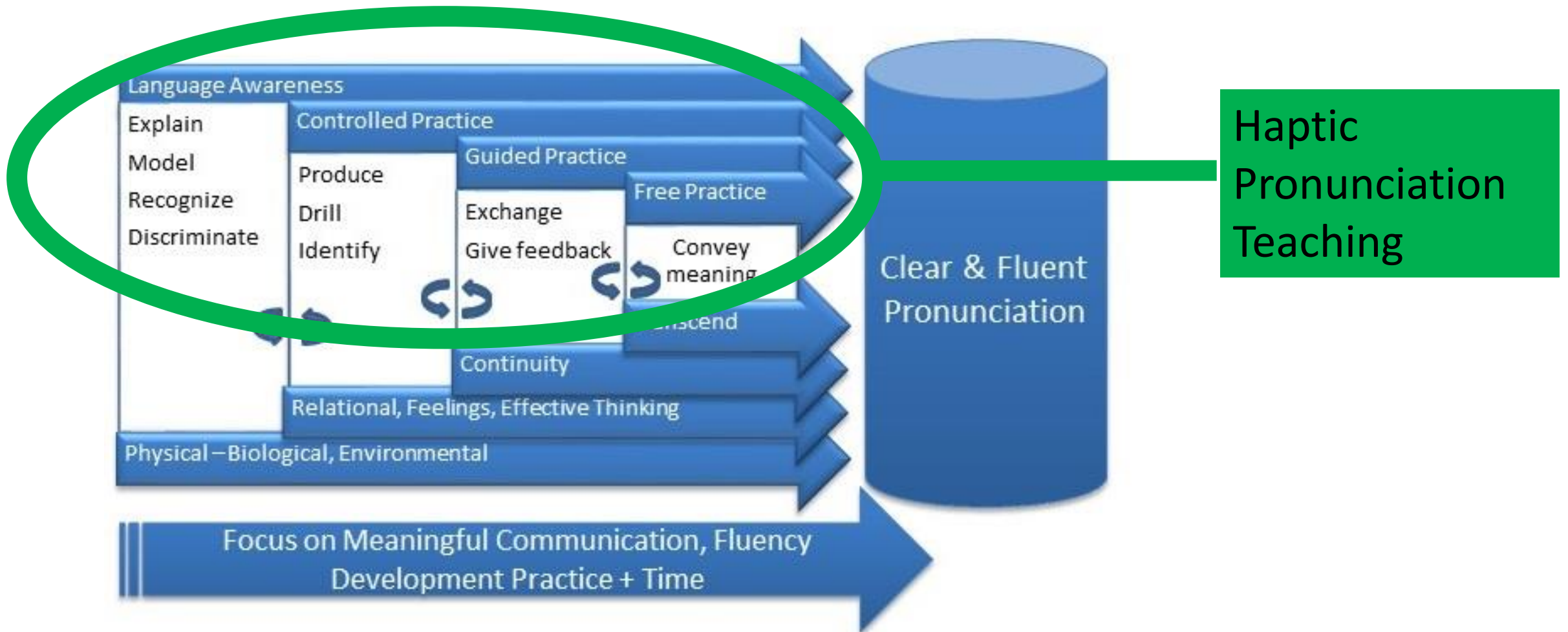
- Lower the load on students' working memory and enhance recall of newly learned content (e.g., Carlson et al., 2014)
- Facilitate:
  - listening comprehension (Dahl & Ludvigsen, 2014)
  - production of suprasegmental features (Smotrova, 2017)
  - L2 students' perception of vowel length (Hirata et al., 2014)



# Touch

- Most common & powerful sense for people to interact with physical environment
- Skin & receptor system send information to the brain through touch
- Enhances learning & produces detailed & lasting memories (Hutmacher & Kuhbandner, 2018)
- Complements movement and gestures in the creation of meaning & making L2 learning more memorable (Holme, 2012)
- Increases learner confidence more effectively than vision in ambiguous phonological situations: e.g., difference between [iy] and [ey] (Fairhurst et al., 2018)
- "surprisingly little used as a vehicle for conceptual learning, particularly in higher education" (Shaikh et al., 2017, p.2).
- Unexplored area in pronunciation instruction (clapping: see Zhang et al., online first)

# Haptic Pronunciation Teaching & The Coaching Model



# General HaPT Pedagogical Model

- Embodied Class Context or actual warm up
- Embodied Pronunciation schema **+ TOUCH**
  - Brief HAPTIC, introduction to pedagogical movement patterns (PMP)
- Initial Inter-diction/review
  - First time PMP is used in class, usually with some explanation/review and then implemented in context, in content
- Subsequent/spontaneous Inter-dictions
  - Use PMP anytime for modeling, feedback and correction
- Homework/practice uptake

# ActonHaptic Model: Pronunciation aka Complement

A. **Embodied setting** (classroom context or w/warm up)

B. **Embodied introduction** of PMPs, in or outside of class)

## C. Embodied content

- PMPs mapped on meaning/content **by design**
- (For content or pronunciation enhancement)

D. **Spontaneous interdiction** within content


E. **(Embodied) Homework** for Uptake!

# Embodied content

- **FIRST:** Rhythm-based (identified/embodied)
- **Pronunciation complements content**
  - Enhanced intelligibility, expressiveness and memory
- **Content as platform for pronunciation** work (modeling, feedback, correction)
  - Provides context, practice material and (student) relevance

# Demons – spation!

## Haptic Mapping process

- Ident - rhythm group parsing
- Ident - stressed syllable
- Ident - Main stress (if in sentence w/2 or more rhythm groups )
- Select PMP (e.g., Butterfly for memory/expressiveness or syllable-rhythm focus)
- Sync

The quick brown fox / jumps over / the lazy dog.

## Five (of about 24) other PMPs

- **Butterfly**/weak & strong syllables
- **Fight Club**/expressiveness/focal stress PMP
- **Taichi**/fluency PMP
- **Touchinami**/intonation/expressiveness PMP
- **Hand off**/vowel/consonant PMP ([i]/[I])
  - Taichi/fluency PMP follow up

The quick brown fox / jumps over / the lazy dog.

# Haptic Pronunciation Teaching

- What is HaPT?
  - A *complement* to pronunciation teaching, i.e., becomes an inseparable part of the process, like a . . . virus (Complement Of Verbal/Instructional Department - COVID)
  - Not a method, not an “add on” ...



# HaPT Theory

- **Neuroscience basis**
  - Gesture and touch (meaning and memory enhancement)
- **Interpersonal engagement framework**
  - Learning trajectory and complementary pedagogical intervention (coaching)
- **Basic Haptic and ActonHaptic Heuristics**
  - Complement to content and context for pronunciation

# Discussion



# Haptic Resources

Acton, W. (forthcoming). *ActonHaptic English Pronunciation: Content and Rhythm First System!*

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<https://www.youtube.com/channel/UCnMTK06gmce2zXxXLojc1XQ>

UOW Scholar: [https://scholars.uow.edu.au/display/michael\\_burri](https://scholars.uow.edu.au/display/michael_burri)

Research Gate: [https://www.researchgate.net/profile/Michael\\_Burri](https://www.researchgate.net/profile/Michael_Burri)

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