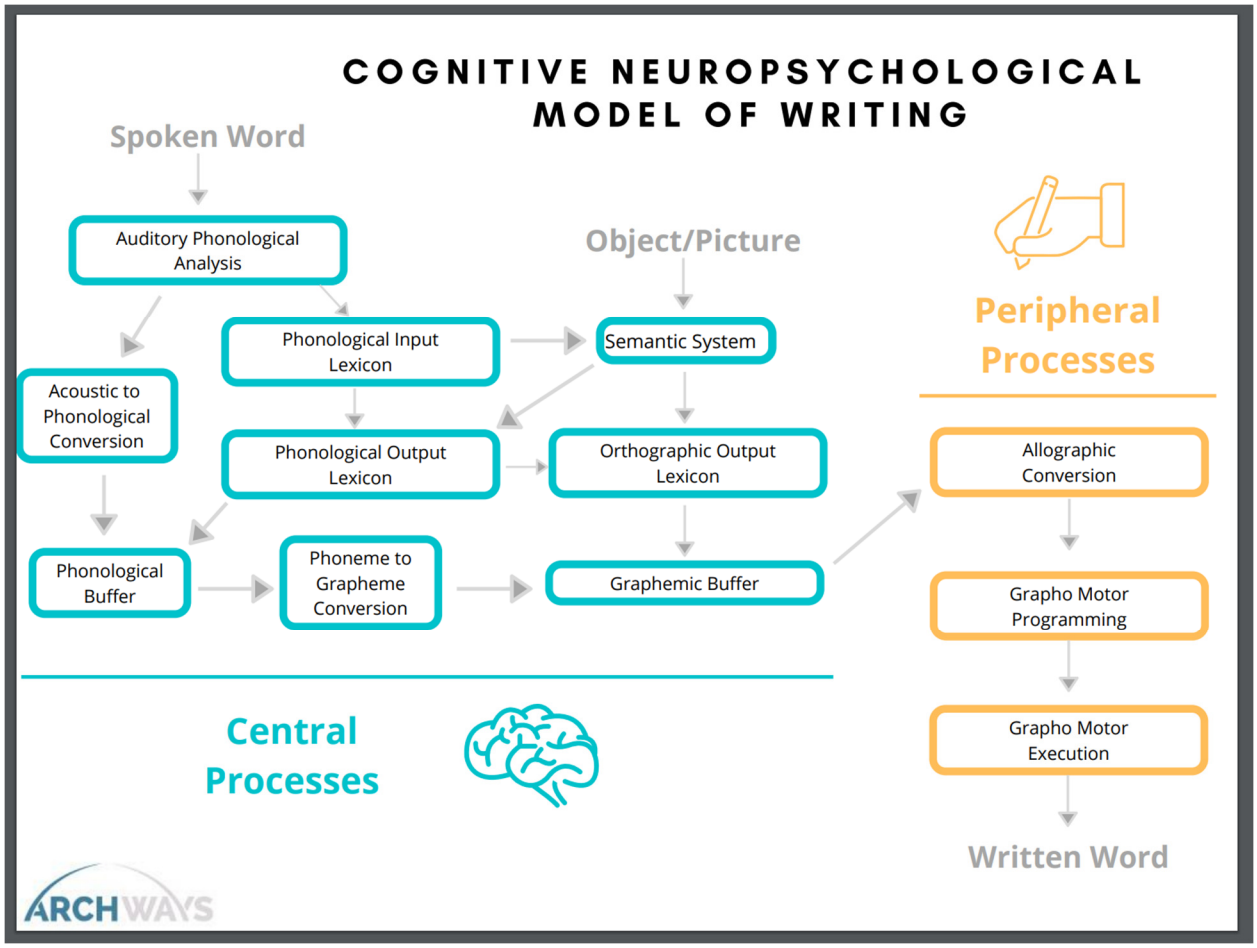
COGNITIVE NEUROPSYCHOLOGICAL MODEL OF WRITING

The ability to write is a complex process, and there are many factors at play that determine a person's ability to form a written word. To better understand the writing process, several different cognitive neuropsychological models have been developed. One influential model is demonstrated here (adapted from Whitworth, Webster, and Howard, 2014; Papathanasiou and Coppens, 2017):



In this model of both writing to dictation and written confrontation naming, the writing process is conceptualized as a series of different language processing components that each play a unique role. These processes and their respective roles are:

Auditory Phonological Analysis: Identifies and discriminates between the speech sounds heard

Phonological Input Lexicon: Decides whether a heard word is known or not

Acoustic to Phonological Conversion: Allows for repetition of an unknown heard word

Phonological Buffer/Assembly: Breaking down the word into its individual sounds so that it is ready for pronunciation

Phonological Output Lexicon: Knowing how a written word should sound before saying it

Phoneme-Grapheme Conversion: Sound-Letter Correspondence (what letter goes with what sound)

Semantic System: A store of word meanings and features that can be attributed to a word

Orthographic Output Lexicon: Knowing how a word should look before writing it (the "blueprint" for the word's spelling)

Graphemic Buffer: Working memory system where the spelling/graphemes of a word are temporarily held while the written word is being produced

Allographic Conversion: Selecting the appropriate letter shapes needed for the word

Grapho Motor Programming: Planning the movements needed to make the letter shapes

Grapho Motor Execution: Carrying out the movements needed to make the letter shapes

Additionally, some of these components can be categorized into Central and Peripheral Processes:

Central: Semantic System, Orthographic Output Lexicon, Graphemic Buffer

Peripheral: Allographic Conversion, Grapho Motor Programming, Grapho Motor Execution

All of these components then allow for distinct routes for *Writing Words to Dictation* and *Written Confrontation Naming.*

Writing Words to Dictation:

Lexical-Semantic: Writing a word that you hear that you know the meaning of (APA→PIL→SS→OOL→GB→AC→GMP→GME)

Lexical Non-semantic: Writing a word that you hear that you have heard enough times to be familiar, but don't know what it means (APA→PIL→POL→OOL→GB→AC→GMP→GME)

Nonlexical: Writing a word that you are unfamiliar with and do not know the meaning of (APA→APC→PB→PGC→GB→ AC→GMP→GME)

Written Confrontation Naming:

Lexical-Semantic: You know how the written word should look like (SS→OOL→GB→AC→GMP→GME)

Indirect Lexical-Semantic: You do not know immediately what the written word should look like, but once you say the name verbally, the phonological form triggers the orthographic form (SS→POL→OOL→GB→AC→GMP→GME)

Phoneme Mediated: You do not know immediately what the written word should look like, but once you say the name verbally, you attempt to spell out what you just said (SS→POL→PB→PGC→GB→AC→GMP→GME)

References:

Whitworth, A., Webster, J., & Howard, D. (2014). A cognitive neuropsychological approach to assessment and intervention in aphasia-Second edition. Hove, East Sussex: Psychology Press.

Papathanasiou, I., Coppens, P., & Potagas, C. (2017). Aphasia and related neurogenic communication disorders-Second edition. Burlington, MA: Jones & Bartlett Learning.