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Teaching English to Adolescent Language Learners

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TEACHING ENGLISH TO ADOLESCENT LANGUAGE LEARNERS

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Abstract

Teaching English to multilingual adolescent learners has its challenges. Pedagogy for English language learners is based on outdated language learning research. Curriculum available for the English language teacher (ELT) has relied on research related to monolinguals acquiring first language (L1). For the practitioner, these resources were not proving themselves to be effective in the classroom. The practitioner came to the literature review with these questions: What does the current brain research tell us about the language learning process for adolescents 10-24 years of age? What influence does L1 literacy skills have on the second language (L2) learning experience? What are the best practices for teaching English language to adolescent learners? This thesis pursues the research question: Based on current brain research and language development theories, what research-based pedagogy could be designed for teaching linguistic awareness skills of phonology and morphology to adolescent English language learners? Most recent brain research reveals how neuroplasticity in the brain makes learning language possible across the lifespan. The Critical Period Hypothesis (CPH) is no longer the end of the discussion when considering if older students can successfully learn a new language. The teaching and learning methods must be different though in order to stimulate the brain's plasticity. Specifically, the practitioner reviewed how phonology and morphology contribute to the language learning experience and the framework for effective pedagogy for these literacy skills. Recent research related to the language theory of crosslinguistic transfer shows that adolescent learners do transfer L1 literacy skills to the L2 learning experience many years after acquiring L1. As a result of the literature review, the practitioner adopted the best practice of using metacognition to guide the learning experience for phonology and morphology in the classroom. Metacognition facilitates the brain's plasticity and helps the adolescent language learner grow in the literacy skills of phonology and morphology.

Keywords: adolescent, brain plasticity, crosslinguistic transfer, phonology, metacognition, morphology

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Chapter I: Introduction

Teaching English language to adolescent multilingual learners is a unique experience. Particularly in oral cultures, multilinguals may be semi-literate or non-literate in their first language (L1), and their academic language often serves as a bridge to learning English. Multilinguals tend to make cognitive associations between their non-native languages. The learning process has been similar across multiple languages which allows for the brain to transfer non-native language skills into the target language (TL) learning experience (Kopečková, 2018). Older students come to the learning experience needing to learn the target language in different ways than when they acquired L1 (Rawski, 2015). The brain's design of plasticity has the perfect architecture for this kind of learning experience (Wolf, 2007). Due to the brain's capacity to build new circuitry during learning experiences, recognize and organize patterns in information, and then automatically recruit and connect stored patterns, human beings have the ability to learn new languages.

Currently, I teach English language at a secondary school for girls in Niger, West Africa. The classroom is full of multilingual learners. Many of the students speak three languages, and there is a segment that speaks four languages. Some of them are non-literate in their L1. In all, Teaching English as a foreign language (EFL) at Grace Academy has been a laboratory for gaining understanding into the language learning experience.

In the midst of explicitly teaching English vocabulary, the students often vividly manifest the phenomenon of crosslinguistic transfer. Recently, one student tried taking an unknown English word that looked exactly like a French word and applied the English pronunciation and French definition to gain comprehension of the English text presented. The English word looked like the French word she knew. It worked! With her metalinguistic skills, she was successful in

her attempt because English and French share many words in their lexicons. Using the academic language of French is one metacognitive strategy which reveals the crosslinguistic transfer phenomenon during the language learning experience. Studies cited by Yi (2012) concluded that the acquisition of lexis appears to be facilitated if L1 and second language (L2) are related languages.

Reflection on the learning environment and the literature review conducted for this thesis provided deeper meaning to many of the classroom experiences for me as the English language teacher (ELT). The literature review was not only a filter for the classroom experiences, but also a guide to designing research-based pedagogy for adolescent language learners. I came to the review with these questions: What does the current brain research tell us about the language learning process for older students? What influence does L1 literacy skills have on the L2 learning experience? What are the best practices for teaching English language to adolescent learners?

Chapter One lays out the purpose of this project, defines a few key terms, and introduces the statement for the thesis. Chapter Two is a literature review that surveys current brain research and the language learning experience, the crosslinguistic transfer phenomenon, and the influence of phonology and morphology literacy skills on the language learning process. Chapter Three, includes applications from the gleanings of the literature review by presenting three research-based learning activities. Finally, Chapter Four discusses the findings and applications with anticipation of the thesis work impacting the classroom now as well as future research.

Rationale

Classroom experiences and observations made during times of teaching older multilingual language learners were the impetus to review the current research related to the

language learning experience for adolescents. Efforts to teach literacy skills were slow-going and seemed ineffective. Often the learners had not developed phonological or morphological awareness skills in their L1, for they belonged to an oral culture. Without these skills, students would memorize long lists of vocabulary without a deeper understanding of words and how they function in the language. Students were not able to generalize; consequently, their language skills were limited to the classroom context.

The omission of explicit phonology and morphology instruction in English language curricula for older learners is a conundrum. As Coates et al. (2017) stated: Despite all the prior research which supports the strong relationship between phonology and orthography in L1 acquisition, decoding skills are still absent in much of the Teaching English to Speakers of Other Languages (TESOL) literature. From these experiences, I began to ask: How do phonological and morphological awareness skills influence the language learning experience for adolescents?

In my experience, the English language program's leadership and curricula disregarded the crosslinguistic transfer phenomenon occurring in the learning experience. The learner's L1 was not utilized or recognized as activated during the language learning experience. With the proliferation of worldwide migration and the exponential growth of multilingual societies, researchers are paying more attention to the L1-L2 connections (Sparks et al., 2008).

Earlier research posited that one language could be independently activated without the other. It was thought that multiple languages in the brain were mutually exclusive, that the brain had a language switch mechanism to move from language to language (Hayakawa & Marian, 2019). However, current research presents a more integrated view of bilingual cognition showing that multiple languages are in fact activated in parallel (Hayakawa & Marian, 2019). As an ELT,

I desired to understand how the crosslinguistic transfer phenomenon could be recognized and utilized in the language learning experience.

Classroom observations caused me to consider how the age of the students impacts the language learning experience. Are adolescents too old to learn L2 and attain native-like speech? Do they not have the capacity to successfully learn L2? One of the most controversial issues in the field of L2 learning swirls around this variable of age of acquisition (AoA). Simply, to what extent does the learner's age impact their ultimate L2 attainment level?

In the late 1990s, the Critical Period Hypothesis (CPH) was introduced, and educators implemented programs designed around the hypothesis (Rawski, 2015). This narrowly defined critical period has negatively impacted the language learning discussions and ultimately the implementation of pedagogy in the classroom (Rawski, 2015). Today's language learning programs are based on research that is extremely outdated, and curricula lags behind the current brain research. The current knowledge of neuroplasticity firmly disproves the research related to the Critical Period Hypothesis. Recent brain research encourages practitioners to have a critical stance regarding the CPH and the work that seems to overwhelmingly support it (Steinhauer, 2014).

This is encouraging news for ELTs and older language learners. In this project, I endeavored to discover how older language students actually process the language learning experience and what that means for classroom pedagogy.

Definitions of Terms

For the purposes of this thesis project, the following terms are defined.

Best Practices

Throughout this thesis, the term best practices refers specifically to well established practices in the classroom; they have historically possessed a high level of widely-agreed upon effectiveness. These practices have been tested, reflected upon regarding their outcomes, and improved on over the past decade or longer. They are validated by data of achievement (Alber, 2015).

Metacognition

Metacognition is the "knowledge and beliefs about one's own cognitive processes" (Coleman, 2015). The term is also used to describe the regulation of the cognitive functions: planning, checking, or monitoring. A person is using metacognition when planning goals for language learning, checking one's progression in the learning goals, and monitoring accuracy of language skills.

Morphology

Morphology is the study of the grammatical structure of words and their relationships to other words in a language; it analyzes for the smallest units of meaning which are morphemes (Matthews, 2014). For example, a word sum analyzes *learners* = learn + er + s. The base form is the verb *learn*. The suffix *er* is added to create the noun, and the -*s* is added to show the plural form of the word.

Native Language

Native language refers to a language acquired naturally as a child, as opposed to one learned later through formal education (Matthews, 2014). For a specific language group, a person is referred to as a native speaker. A person's native language may differ from the language used at school or work.

Phonology

Phonology is the study of sounds in a language. A phoneme is the smallest unit of meaning in phonology (Matthews, 2014). The English word *teacher* has four phonemes t/ea/ch/er; whereas the word *student* has six phonemes st/u/d/e/n/t.

Statement of Research Question

This thesis pursues the research question: Based on current brain research and language development theories, what research-based pedagogy could be designed for teaching linguistic awareness skills of phonology and morphology to adolescent English language learners?

Chapter II: Literature Review

I conducted a literature review with the anticipation of creating research-based pedagogy for adolescent English language learners. Specifically, I intended to construct learning activities that would develop linguistic awareness skills in older learners. Here, "Linguistic awareness refers to the learners' reflection on and manipulation of the language code" (Masny, 1997, p. 105). Specifically, linguistic awareness includes the learner's awareness of phonology, morphology, and orthography as they relate to not only L1 but also the target language.

This literature review begins with a look at current research regarding the Critical Period Hypothesis (CPH) and the wonder of the brain's plasticity. Then I consider the impact of crosslinguistic transfer of language skills on the language learning process. Finally, I explore the specific linguistic awareness skills of phonology and morphology.

Critical Period Hypothesis

A popular belief about non-native language learning is that children are superior language learners to adults, meaning younger students will more quickly achieve success in L2 and have better outcomes. The CPH asserts that there is an optimal period for language acquisition, with this window opportunity ending at puberty (Abello-Contesse, 2009). The view holds that once puberty is complete, the brain will have completed its structural and formational architecture and will no longer have the ability to change in structure and form new connections during the L2 learning process. This loss of the brain's plasticity will inhibit native-like language skills (Steinhauer, 2014).

The CPH in its original formulation was based on research related to relearning impaired L1 skills rather than in the context of learning a second language under normal circumstances (Abello-Constesse, 2009). Current research in this area of CPH reveals: "...most classroom-based

studies have shown not only a lack of direct correlation between an earlier start and more successful/rapid L2 development but also a strong tendency for older children and teenagers to be more efficient learners" (Abello-Contesse, 2009, p. 171). More mature students usually have more capacity to make faster initial progress in learning the grammatical and lexical structures of the L2 due to their higher level of cognitive development and greater analytical skills (Abellos-Contesse, 2009).

Steinhauer (2014) discussed the methodological problems within the research body of L2 learning which supported CPH. First the research assumed that the language learning problems were age-related and not proficiency-related. The studies found evidence for a causal relationship between biological constraints and L2 achievement. The results of these earlier studies really only reinforce that less proficient L2 learners do not process L2 morpho-syntax like native speakers (Steinhauer, 2014). The second major problem with the earlier studies supporting CPH is that the linguistic components being investigated – native-like automatic syntax processing – may indeed not even be related to syntactic processing. The unbalanced experimental design from earlier studies makes it prone to certain research artifacts that may only resemble syntax-related components.

Through the current brain research (Steinhauer, 2014), the CPH has been critically reexamined. In more recent studies (Rossi et al. as cited in Steinhauer, 2014) with corrective measures to the previous problems related above, the results suggest that late L2 learners at high proficiency level do converge to native-like skills. And as predicted, lower proficiency L2 learners do not reach this milestone. From this later CPH research, the general pattern suggests that language proficiency rather than AoA predicts observable brain signatures. Native-like L2 proficiency begets native-like brain signature profiles.

"The loss of the brain's plasticity after a critical period in childhood has often been argued to prevent late language learners from using the same neurocognitive mechanisms as native speakers, and therefore, from attaining a high level of second language proficiency" (Nickels et al., 2013 p. 107). One specific study conducted by Nickels et al. (2013) established evidence against such a strict interpretation of the CPH and for the notion that attained proficiency is the relevant factor to predict similarities or differences in the brain's work to process language. Their research demonstrated that even late L2 learners can display native-like performance.

Regarding language pedagogy, it can be concluded that "there is no single 'magic' age for L2 learning" (Abellos-Contesse, 2009, p. 171). Both older and younger learners have capacity to achieve advanced levels of proficiency in L2. However, this critical period mindset has influenced the language learning process over the past five decades. "It is difficult to reconcile the negative consequences this traditional view entails for learning after a sensitive period with our current understanding of the brain's plasticity for experience-dependent plasticity across the lifespan" (White et al., 2013, p. 1).

A broader view of language development allows for sensitive periods which are stages in the language learning experiences that have long-lasting effects on behavior and the brain. Sensitive periods are considered optimal times for learning and involve gradual shifts in sensitivity to environmental input outside of which learning is still possible. This broader term underscores the potential for learning and the brain's plasticity to continue throughout the lifespan.

In response to the CPH, Steinhauer (2014) argued that current brain research shows evidence for the convergence hypothesis and reveals that "L2 learners initially differ from native

speakers and then converge on native-like neurocognitive processing mechanisms" (p. 393). This hypothesis is defined by some researchers as the convergence of all languages in contact; whereas, others would define the convergence hypothesis as the coming together of only certain aspects (i.e. phonology or morphology) of all languages in contact (Bullock & Toribio, 2004).

Steinhauer's (2014) model used for this hypothesis predicted that increasing levels of proficiency in L2 morpho-syntax (grammar) should be reflected by systematic changes in brain imaging of learners. As the L2 learner becomes more proficient, the brain will start to process more efficiently the L2 morpho-syntax rules. As a result of the proficiency level advancing, a convergence of L1 and L2 occurs in the brain's processes which allows for native-like achievement. More recent brain imaging supports the convergence hypothesis, revealing that systematic neurocognitive changes come from an L2 proficiency level. It is possible for older language learners at high levels of L2 proficiency to attain native-like linguistic skills. These findings reveal weaknesses in the CPH which claims that brain maturation constraints are responsible for difficulties in L2 learning for older students (Steinhauer, 2014).

The Wonder of the Brain's Plasticity

Within the body of research regarding the topic of age of acquisition, hardly anyone disputes the affect that age has on language learning. Rather, the question becomes: Do the effects of age point to loss of brain plasticity at a certain period early in life, or do they point to other factors? The CPH supports the premise that maturational constraints after puberty result in loss of plasticity in the brain's mechanisms needed for native-like language achievement. In the early 2000s, interest in neuroplasticity followed the growing evidence which reveals the brain's plasticity throughout the years of one's life; therefore, challenging the traditional view that attaining language skills after puberty can be problematic (White et al., 2013). If the CPH lacks

sufficient evidence, Steinhauer (2014) argued, language learners and teachers may have more influence on the language acquisition process than postulated by this hypothesis. Steinhauer (2014) advocated that applied linguists should indeed care about neuroscience for this may help to determine the best ways of teaching and learning languages.

Neuroplasticity and Language Learning

Recent convincing empirical evidence suggests that plastic changes may occur in the brain; however, the roots of the concept of neuroplasticity may be traced back to the later part of the 19th century (Papagno & Vallar, 2014). Neuroplasticity refers to the plastic nature of the human brain. When external force (or experience) is applied, plasticity occurs in the structure and function of the brain, creating lasting changes to the connectivity required for novel functions. "Experience modifies internal representations in the brain, as in procedural learning…this phenomenon is not unique to sensory and motor systems, but also applies to cognitive functions" (Papagno & Vallar, 2014, p. 249). All behaviors are linked to multiple cognitive processes. Each process must rapidly integrate information from specific neurological structures in the brain. This relies on billions of neurons which are able to make trillions of possible connections, which are programmed by genes (Wolf, 2007).

The brain is a glorious example of open architecture where the human comes into the world programmed with a capacity for change and adaptation (Wolf, 2007). Because of the brain's plasticity, one is forever changed physiologically and intellectually. Through neuronal pathways created in the brain, these changes occur. The brain's design has at its disposal three important principles for language learning: the capacity to connect original brain circuitry to new connections, the capacity to store specialized patterns of information, and the ability to recruit and connect information with a high level of automaticity.

These are the building blocks for learning to read – which the brain is not naturally designed to do. The brain's ability to make new connections among its structures and circuits originally devoted to vision and spoken language allowing one to learn to read is an example of the brain's plasticity. Reading is an orderly development of specific cognitive processes. "The generative capacity of reading parallels the fundamental plasticity in the circuit wiring of our brains" (Wolf, 2007, p. 17). One's brain begins to change at the first attempts to learn to read. For the learner to establish sound-symbol correspondence, the brain requires new circuitry. The brain must register that "all words are actually composed of tiny individual sounds and that symbols can physically signify each of these sounds for every word" (Wolf, 2007, p. 26). To read a symbol requires the brain to connect each of the four lobes. Brain imaging shows that reading in any language rearranges the structure of the brain and creates new pathways of function. This is just one example of the brain's capacity for change.

Neuroplasticity and Second Language Learning

Structural and functional changes that occur in the multilingual's brain recorded through neuroimaging provide another example of neuroplasticity. The design of the brain to allow for neuroplastic modifications acts as a main role in the person's ability to cope successfully with both environmental and internal changes. Due to an increase in globalization, multilingual societies are advancing. "More than half of the world's population is actively learning or speaking a second language in addition to their native tongue" (Li et al., 2014, p. 301). The world is ever increasingly globally connected and a multilingual environment. Others are learning a language later in life due to an era of great mobility through travel, business, or immigration. This increase in cross-cultural communication presents a need to learn a second or

third language. Through plasticity, the brain forms new connections between cortical neurons which allows for an ever-adaptable brain in a constantly changing environment.

How does neuroplasticity occur in the brain during an individual's experience with a second language (Papagno & Vallar, 2014)? Brain imaging in the last two decades has revealed both anatomical changes and functional neural patterns created by learning and use of multiple languages. The neuroimaging captures the increased gray matter (GM) density and white matter (WM) integrity in children, young adults, and the elderly who have experiences with learning a second language. These changes can occur rapidly in the short-term, are sensitive to age and proficiency level, and relate to language-specific skills and individual differences. Through neuroimaging, research of language learning in adulthood is ongoing. "The encouraging evidence for learning…is that the brain can continually modify and reconfigure its function and structure, even at a later stage, as reflected in changes in GM, WM, and connectivity among regions" (Li et al., 2014, p. 318). The research revealed the occurrence of structural and functional changes during the L2 experience which allowed for approximation in patterns of the non-native language. Anatomical structural changes alone in a few of the brain's regions does not lead to native-like language abilities. However, if there is sufficient, consistent, and long-term, stimulation from the L2 across an extended period of learning, the brain changes allow for functionality of language abilities that approximate a native speaker.

"Language has the power to shape cognition, behavior, and even the form and function of the brain" (Hayakawa & Marian, 2019, p. 1). Again, neuroimaging reveals the consequences of multilingualism in the structure and function of the brain. The key feature of multilingual cognition is that two or more languages can become activated at the same time; this requires mechanisms to control interference. Hayakawa and Marian (2019) discussed the neurofunctional

and neurostructural changes due to the experience of juggling multiple languages within a single cognitive system.

Multiple languages can be, and are often, co-activated, and this phenomenon has been observed across the linguistic skills of phonology, orthography, and morphology. Managing language conflict is among the most essential functions for bilingual language processing. “The frequent practice managing competition not only within, but also between languages may make bilinguals more efficient at resolving linguistic conflicts, leading to less reliance on networks associated with cognitive control” (Hayakawa & Marian, 2009, p. 3). The bilingual experience can result in greater and more flexible coordination of different neural regions and networks. This represents functional changes in the brain’s activity due to plasticity.

There are also structural differences that come from the bilingual experience. Gray matter in the executive function region of the brain appears in greater density for bilinguals compared to monolinguals. This is associated with conflict monitoring processes that are utilized when parallel language activity happens. Bilingual experience can facilitate more distributed functional connectivity throughout the brain which provides more efficiency to the linguistic processes. Practice in learning and managing multiple linguistic systems thus influences how individuals resolve conflict and can lead to more efficient cognitive control (Hayakawa & Marian, 2019).

Structural brain matter has also been redesigned to support both auditory and speech processes. Therefore, bilinguals are able to identify faster and more successful non-native speech sounds. There is also reliable evidence that bilingual experience can enhance attention to speech stimuli and result in more consistent and robust encoding of sound in the brainstem. This suggests that the “bilingual experience has (often beneficial) effects on the neural functions underlying both cognitive control and speech processing” (Hayakawa & Marian, 2019, p. 12).

How does this affect learning? Bilinguals are better able to learn novel words, inhibiting interference from letter-to-sound mappings of their native tongue, and more easily learn novel syntax. Enhanced cognitive control could once again play a role, as bilinguals may be better able to reduce interference from the syntax of known languages (Hayakawa & Marian, 2019). Overall, a lifetime of managing multiple linguistic systems can have dramatic effects on both the function and structure of the bilingual neural architecture.

Perhaps the most surprising is the discovery that such changes can develop with relatively brief amounts of exposure to another language. This highlights the incredible plasticity of the human brain even into adulthood. The ongoing discriminating processes conducted by the executive functions reveals how bilinguals engage in high-level brain function which is considered a top-down process. Whereas, the encoding of L2 phonology stored in the brain stem exhibits the low-level or bottom-up processes happening in the brain. For older learners, the top-down attentional control and lower-level sensory functions are required to successfully learn L2.

The Brain's Learning Processes for Older Learners

Learning after Sensitive Periods

The most controversial discussions in the field of L2 acquisition have to do with the extent to which a learner's age impacts the ultimate L2 attainment level and whether there may be one or more sensitive periods in language development that limit lifelong L2 learning (White et al., 2013). In 2013, White et al. sought to "better understand the mechanisms by which learning and plasticity occur both during and after sensitive periods in auditory development" (p. 2). The research they reviewed provides evidence that L2 phonology is highly sensitive to the age at which learning begins, while achievement of morpho-syntactic skills does not seem to depend on age of acquisition. They concluded that L2 learning after a sensitive period is unlikely

to occur through bottom-up processes triggered by exposure only to L2. The brain's neural systems have been optimized during the sensitive period for performance (automaticity) of L1, and these bottom-up processes may not be the most effective pathway to learning L2.

This led the researchers (White et al., 2013) to ask: Does this mean that it is impossible to successfully learn L2 after a sensitive period has closed? "Not necessarily. Although delayed L2 exposure may reduce the likelihood of successful learning and plastic changes occurring through exposure alone, many studies have shown that explicit L2 phonetic training can induce both functional changes in brain activity and successful learning in adult learners" (p. 5).

The human brain has the capacity to acquire the skills necessary to process language early in life as a result of exposure and interaction with sounds. For the multi-sensory systems of the brain, learning and plasticity during sensitive periods is a bottom-up process (White et al., 2013). The auditory cortex takes in all kinds of sounds, listens for repeated tones, and conducts perceptual narrowing, using discrimination and underlying neural representations to selectively store sound information. In contrast to other sensory systems, the auditory cortex seems to have the ability for developmental plasticity throughout one's lifetime. White et al. (2013) stated: "However, the conditions that induce plasticity appear to change with age and experience; namely, the bottom-up learning of the sensitive period becomes increasingly influenced and gated by top-down processes" (p. 2).

On the continuum of processes, one end being bottom-up and the other being top-down, the relative weight of external environmental signals versus internal cognitive processes driving plasticity are measured. Once the initial structures of the auditory cortex are developed during a sensitive period, the brain's plasticity will develop in the top-down processing way. Plasticity

occurs through top-down processes such as higher-order auditory representations and attention regulation capacity.

White et al. (2013) argued that after sensitive periods of developing language skills like phonology, explicit phonetic training can induce L2 learning. This metacognitive strategy utilizes the top-down processes that ignite the brain's plasticity. The research they reviewed reported that when learners are trained to redistribute their attention to L2 speech sounds through perceptual training, neuroimaging reveals that functional changes in auditory processes have occurred. This suggests the potential for brain plasticity even after a sensitive period.

Plasticity outside of the sensitive periods requires both the automaticity of bottom-up processes (implicit) and top-down processes (explicit) in order to generate functional and structural changes in the brain. With explicit training in L2, students will develop metacognitive skills to learn the language. This kind of training is goal-oriented and adapts as learners grow in L2, provides feedback and directs attention to the relevant L2 features that require encoding. Through processing the mismatches in L1 and L2 phonology, plasticity is initiated (White, et al., 2013). "After a sensitive period, learning is largely a top-down process that depends on attention to enhance the salience of features in order to encode them. It is a process of changing the structure and efficiency of pre-existing circuits to more optimally process a new input source, creating a completely new circuit" (White et al., 2013, p. 12). White et al. (2013) concluded that both bottom-up and top-down processes influence learning and plasticity during and after a sensitive period, though the relative reliance on each may change across development.

Metacognitive Processes for Language Learning

The brain is an amazing, malleable organ. It can develop and reshape itself over a lifetime through experiences. These experiences create more efficient pathways in the brain's

circuitry. When repeated patterns are recognized by the brain, cortical mapping is established (Rawski, 2015). By the end of puberty, a child has developed behaviors necessary for life including language skills. These behaviors are so well mapped in the brain that they become common and require no conscious effort (automaticity) to perform. After this period, the brain still has plasticity, but learning occurs in a new way. Rawski (2015) argued that the methods for learning must change, for after puberty, an entirely new paradigm of behavior development emerges.

Specifically, Rawski cites the example of learning an L2 phonology. What must happen to adjust one's phonology to a new language? The learner has the same mouth and the same ears to use either L1 or L2, and the auditory system is presumably the same. He concluded that the difference must lie in the brain and how it processes sounds. The brain already performs phonologic discrimination but is challenged by the task of relearning to discriminate when L2 is introduced. He asked: Why does learning seem to become more difficult? What about learning has changed?

At this life stage, plasticity in the brain now requires metacognitive processes which depend on mental functions to execute the goals the brain wishes to accomplish. Through executive functions, the brain continues to change and adapt to the environment. Rawski presented a new model for adult L2 learning called the Attention Model. "This model focuses on linguistic awareness between L1 and L2, and builds up a new language based on recognition of linguistic form" (Rawski, 2015, p. 24).

Executive functions in the brain control and manage both automatic processes (automaticity) and controlled processes (attention). This area of the brain is the nexus of thought organization (Rawski, 2015). When a goal or task is presented to the brain that contradicts

preordained responses, executive functions act to inhibit programmed automaticity in the brain and allow new behaviors to develop alongside or in place of the old. Because of the brain's capacity for plasticity in the executive region of the brain, humans can still mentally develop into old age.

Before puberty, executive functions are not at full capacity, so learning requires more bottom-up processes to create cortical mapping. This happens rapidly through bottom-up processes. However, once puberty is reached and executive functions begin to manage the brain's plasticity, "extremely high-order thought becomes possible, but requires a more complex pattern of behavior integration" (Rawski, 2015, p. 28). Thus, the cortical mapping of the brain takes longer. Fortunately, executive functions overcome this disadvantage by using top-down processes to allow for quicker processing times of newly mapped brain circuits.

Rawski concluded that when the critical period ends, behavior development does not plateau. Learning must be accomplished through different strategies, using top-down processes. Language acquisition of L1 has occurred and now L2 will be learnt using executive functions. Language learning becomes a discrimination process between new behavior goals and prior behavior frameworks (Rawski, 2015). The brain must store this new information about L2 in an organized and efficient way. Executive functions will inhibit reaction unless the input matches the L2. Through these discriminating processes, the brain will reteach every linguistic concept.

The linguistic skill that demands significant retraining is phonology. Phonology is unique in that it requires the reciprocity of both speech and hearing processes. L2 phonology learning is a conscious process that must create a neural network that: recognizes sound input in L2; differentiates these sounds from L1 sounds; and applies differentiation to the speech and hearing processes (Rawski, 2015). The key task going on in the brain is differentiation. The learner must

create a system for discriminating between L1 and L2 phonology. Rawski (2015) argued that an older learner's capacity in the executive functions' region of the brain is perfectly primed to make these distinctions. L2 Phonology integration into a person's language skills cannot be accomplished through bottom-up strategies by forcing repeated processes into a learner. Such a complex relationship between L1 phonology and L2 phonology cannot rely solely on practice and repetition.

"While almost every other discipline recognizes the students' ongoing development of high-level thought, language learning curricula stand alone as anomalies in the education spectrum" (Rawski, 2015, p. 31). Curricula lags behind the current research. Pedagogy is built on language learning theories related to CPH which inferred that L2 learning required bottom-up processes, simulating how children acquired L1. The current knowledge of neuroplasticity firmly disproves the research related to the Critical Period Hypothesis. Forcing a learner to draw relationships solely through practice is inefficient and ultimately unsuccessful. Parameter discrimination can occur and be as competent in L2 as in L1. "The critical difference is that the parameter must be shown in a multifaceted and integrated manner" (Rawski, 2015, p. 31). L2 learners need additional information to take advantage of their new mental abilities. "But this is not a disadvantage; far from it. When presented with linguistic concepts systematically in a multifaceted way, learners have the capability to process information quickly and more completely than ever" (Rawski, 2015, p. 31).

Crosslinguistic Transfer in Language Learning

Language transfer is best thought of broadly as a whole class of behaviors, processes and constraints. These then are manifested through crosslinguistic influence, which is the use of prior linguistic knowledge (Yi, 2012). This influence helps build the interlanguage (IL) structure in the

multilingual brain. “Odlin (1989) has proposed a working definition of transfer: Transfer is the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired” (as cited in Yi, 2012, p. 2372). While teaching Somali English language learners, this phenomenon manifested itself when students would add the long *e* sound at the end of an English noun creating words like apartmente, milke, and appointmente. The Somali language does not have words that end in a double consonant; most words have vowel endings.

Recent research regarding crosslinguistic transfer reveals that L1 does play a role in learning L2. L1 knowledge does interact with L2 input to shape the learner’s IL system. The IL designed through the language learning process connects L1 and L2 in unique ways to effectively manage the multilingual experience (Yi, 2012).

Crosslinguistic Transfer of Literacy Skills

Many of the Somali learners were semi-literate or non-literate in their L1. Their proficiency level of L1 literacy greatly affected their L2 learning. Their low proficiency level limited their proficiency level in English. Sparks et al. (2009), in their seminal study regarding the crosslinguistic transfer phenomenon, reinforced this classroom experience. After investigating the relationship of L1 skills in elementary school and L2 learning in high school, findings from Sparks et al. (2009) showed that L1 skill differences emerged early in elementary school and are related to L2 proficiency and achievement several years later in high school. These findings provide support for long-term crosslinguistic transfer of L1 to L2 skills.

“Some researchers have speculated that overall proficiency in the L1 plays the largest role in one’s overall proficiency in the L2” (Sparks, 2009, p. 204). Cummins’ language hypothesis of linguistic interdependence states: L2 language and literacy skills are dependent in

part on L1 literacy competence at the time of the critical exposure to the L2 (as cited in Sparks, 2009). Further, Cummins stated the threshold hypothesis: if a student's L1 competence is low, the competence in the L2 will also be low. Sparks et al. (2009) argued that there are few studies which have explored this relationship in a systematic manner within a longitudinal study by following students from their elementary school years into high school when they begin the study of an L2.

Sparks et al. (2009) hypothesized that there would be long-term crosslinguistic transfer of L1 skills developed in elementary school to L2 skills several years later when students first encountered an L2 in high school. Such findings would support the hypothesis of long-term crosslinguistic transfer in alphabetic languages from L1 to L2 (Sparks, 2009). The study (Sparks et al., 2009) specifically examined whether students who have different levels of L2 proficiency after two years of L2 study in high school exhibited significantly different levels of L1 skills from 5-10 years earlier in elementary school. In particular, the research addressed whether there would be differences in early L1 skills of students identified as high-, average-, and low-proficiency L2 learners according to their performance on measure of oral and written L2 proficiency.

The findings revealed that students with different levels of L2 proficiency exhibited significantly different levels of L1 skills even several years after they have acquired L1 skills. The findings supported Cummins' linguistics threshold hypothesis; low L1 competence led to low L2 competence. Not only do the results support the linguistic threshold hypothesis, they also support the crosslinguistic transfer hypothesis. L2 learning may depend on basic language learning mechanisms that are similar to both L1 and the target language.

Crosslinguistic Transfer of Word Decoding and Phonological Awareness

While teaching Somali English language learners, it was quickly evident that they lacked phonological awareness skills and phonics capability in L1 due to their low levels of literacy. Teaching literacy skills to these learners seemed impossible. The research Sparks et al. (2008) conducted added understanding and was relevant to me as their language teacher. The study examined the relationships between early first-language (L1) reading and spelling skills and later second-language (L2) reading and spelling skills.

Findings revealed that the best predictors of L2 spelling were L1 spelling and L1 phonological awareness and that the best predictor of L2 decoding skill was a measure of L1 decoding. "The findings suggest that even several years after students learn to read and spell their L1, word decoding, spelling, and reading comprehension skills transfer from L1 to L2" (Sparks et al., 2008, p. 162). In their longitudinal study, Sparks et al., 2008 recorded data about students over a 10-year period to determine whether performance on measures of L1 reading skills (decoding, comprehension), spelling, phonological awareness, vocabulary, and listening comprehension are predictive of L2 reading skills and spelling.

The researchers referred to the connectionist theory as they developed their hypotheses. This theory states that the human brain is designed with the inclination to search for and establish connections between different things (Yi, 2012, p. 2375). The idea is language learners will discover the regularities or predictabilities of the target language. Some elements occur more frequently than others. From there, the brain will abstract those probabilistic patterns from L2. These patterns will create new pathways in the brain and language learning becomes possible through the development of an interlanguage system.

In the connectionist model, the brain forms units of language and they are linked to one another to form a network in order to develop automaticity for reading skills (Sparks, 2008). For

example, retrieval of specific activation patterns stored in memory like letter strings or letter–sound correspondences have been automated in L1. And, they are likely to be activated by L2 input, regardless of the orthographic distance between L1 and L2. The connectionist model offers a way to study and analyze L2 reading competence and its development. The capacity to read in L2 requires the ability to "map between language forms and their functions...with increased experience in the L2, form–function mapping procedures are activated automatically irrespective of the learner's intention" (Koda, 2005, p. 18). Automation is a mighty strength of the brain, but it also can serve as a challenge in the multilingual mind.

Building on this connectionist framework, the researchers hypothesized that because the fundamental competencies—decoding and comprehension—are the same in L1 and L2 reading, the expectation follows that there will be long-term crosslinguistic transfer of L1 reading and spelling skills developed in elementary school to L2 reading and spelling skills several years later when high school learners first encounter an L2. Specifically, students' decoding and spelling skills in their L1 will likely account for a large part of the variance in their decoding and spelling skills in L2. Likewise, L1 decoding and L1 reading comprehension skills will likely account for part of the variance in L2 reading comprehension skills. However, Sparks et al. (2008) argued that as the students' exposure to the L2 increases over 2 years of L2 study in high school, their L2 decoding skill may account for a larger part of the variance in L2 reading comprehension than either their L1 decoding or L1 reading comprehension skills.

After examining the role of L1 literacy skills in predicting L2 word decoding, spelling, and reading comprehension for high school students who had learned to read and spell their L1 several years earlier, the findings were organized into the following categories: L2 Word Decoding, L2 Spelling, and L2 Reading Comprehension.

The results of the study (Sparks et al., 2008) revealed that the measure of L1 word decoding (phonics) was the best predictor of L2 word decoding at the end of the first and second year L2 courses. These results support the hypothesis that there is long-term crosslinguistic transfer of L1 phonological processing skills to L2 word decoding. These findings are consistent with the growing body of literature regarding skills used to read words in L1 which states there is a high correlation between L1 skills used to read words with skills used to read words in an L2.

Regarding L2 spelling, the research indicated that the measure of L1 spelling was the best predictor of L2 spelling at the end of the second year L2 course. The findings from the measure of L1 phonological awareness in elementary school also contributed to the results in L2 spelling. "The fact that L1 phonological awareness in elementary school was predictive of L2 spelling ability several years later in high school suggests that long-term transfer of phonological awareness skill is important for spelling and decoding words in an alphabetic L2" (Sparks et al., 2008, p. 169). Phonological awareness is one of the best predictors of learning to read, not only in English but also in several alphabetic languages.

Sparks et al., (2008) revealed that L1 reading comprehension in elementary school was a significant predictor of L2 reading comprehension skills several years later in high school. The research also analyzed the data to determine whether L1 first- and second year L2 decoding skills would be predictive of L2 reading comprehension. The results showed that L1 reading comprehension skills were the best predictors for L2 word decoding skills for the first year of language learning. However, for the second year of language learning, L2 word decoding became the best predictor in L2 reading comprehension.

Sparks et al., (2008) suggested that mastery of L1 decoding skills early in the primary school years may be beneficial for students who attempt to learn L2 in high school years.

Second, direct and explicit teaching of the phonology and orthography of the L2 to students may be beneficial in learning to read and spell the L2, especially if the L1 was mastered several years earlier. Likewise, direct and explicit teaching of the grammar of the L2 may be beneficial for comprehending an L2. Third, after learning to decode the L2, new L2 learners may benefit from reading as much L2 text as possible because they would be more likely to increase their fluency, acquire the vocabulary and grammar of the L2, and learn the background knowledge they will need to comprehend the L2.

Linguistic Awareness

Linguistic awareness includes learners' awareness of phonology, morphology, and orthography as they relate to not only L1 but also the target language. From the body of research not all linguistic domains are affected in the same way by age when learning L2. Two areas that have received considerable research attention are: phonology (accent) and morpho-syntax (grammar). Both proponents and opponents of the CPH have focused their language learning research on these two domains. This section will consider the literature regarding phonological awareness and morphological awareness.

Phonological Awareness

Phonological Awareness Transfer in Language Learning

Gorman (2012) examined the impact of short-term phonological awareness (PA) instruction in L1 on gains of the English language learners' (ELLs) L1 (Spanish) and L2 (English) literacy skills. The study included a second aim of determining whether relationships exist between vocabulary size, verbal working memory, and phonological awareness in two languages. Results from the study indicate that phonological awareness instruction in Spanish led to a general increase in PA skills across both languages and that Spanish vocabulary size was

significantly related to PA gains in both languages. In fact, the Spanish vocabulary size had a greater impact on English gains than the child's English vocabulary size. Gorman (2012) argued that although there is extensive documentation regarding the role of phonological awareness in literacy development, relatively little has been researched and presented about phonological awareness development in ELLs.

This same reality exists in the body of research regarding the dynamic relationships between vocabulary size, working memory, and phonological awareness in the context of ELLs. Gorman (2012) noted that previous research in the context of English speakers had shown a significant relationship between phonological awareness and vocabulary size. Gorman (2012) sought to substantiate two different views from prior research among native English speakers. First, both short-term memory and vocabulary size contribute to learning about the phonological structure of new words, and second, enhancing literacy skills in one's L1 may benefit literacy acquisition in both L1 and L2.

Overall, the results from this study (Gorman, 2012) provide support for the assertion that enhancing students' PA skills in the native language also benefits their skills in L2 English. The results illustrate the dynamic relationships between vocabulary, working memory and PA development in both languages. English PA gains were most strongly tied to total vocabulary size. When students interact with L2 words which are unfamiliar, they may access phonological templates of L1 words and transfer this phonological knowledge to support PA performance in L2. These results support "the view that a central more general cognitive mechanism or metalinguistic ability underlies PA in both languages" (Gorman, 2012, p. 117). Surprisingly, ELLs' total vocabulary and phonological storage skills were stronger predictors of English PA gains than Spanish gains.

Phonology and Metalinguistic Awareness

Metalinguistic awareness is a fundamental component of multilingual competence and a key skill needed to acquire additional languages (Kopečková, 2018). The author examined the role of metalinguistic awareness in the acquisition of Spanish phonology by young multilingual learners. This study aimed to contribute to this under-researched area of third language and beyond (L3/Ln). 20 multilinguals aged 13 who were native speakers of German were asked to attend to, improve, and reflect on their initial reading abilities in L3. Findings revealed different types and degrees of phonological awareness in the multilingual learners.

Multilingual learners are those who have already gained conscious linguistic knowledge and language learning experiences on which they rely when learning an additional language. And though phonological awareness has a strong emphasis in metalinguistic awareness, there are few studies regarding the topic of phonological awareness and multilingual learners. In this present study, therefore, the learners were asked to reflect metalinguistically on their phonology skills in L3.

Kopečková (2018) used two questions to guide the research. One, to what extent is the phonological awareness of young multilingual learners developed and how exactly is their phonological awareness revealed? Two, are the learners utilizing L1 or L2 phonology and so allowing for crosslinguistic phonological awareness? The researcher desired to not only examine these questions but also delineate implications for teaching multilingual learners.

The students were asked to reflect on their own pronunciation skills produced three years prior through a reading task in L3; this allowed for focus on production problems. The stimulated recall protocols were also designed to evaluate the complexity levels of phonological awareness and evidence of crosslinguistic awareness. The results showed young multilinguals were able to

detect their pronunciation errors at both the global and segmental levels. The students' comments showed that they were cognizant of the fact that this reading was from the beginning of their Spanish learning experience. They spoke of how their pronunciation skills had improved since the beginning stage of learning Spanish. Overall, the reflections of the learners were very positive, and they displayed a good sense of self-observation as well as a fair amount of self-appreciation as language learners. These traits mark multilingual learners and are distinct and qualitatively different from bi/monolinguals (Kopečková, 2018).

Results showed that these multilingual learners, after three years of Spanish instruction, were sensitive mainly to segmental features. They were highly accurate in identifying their phonological errors from three years earlier. These results (Kopečková, 2018) also confirm the expectation of multilinguals: learners who exhibit an advanced analytic orientation and controlled attention to one's own pronunciation. Multilinguals are able to accurately self-diagnose their linguistic abilities due to an enhanced linguistic and metacognitive knowledge.

Regarding the complexity levels of phonological awareness, 83% of the learners' comments fell into the low-level range (Kopečková, 2018). The comments noted just the auditory aspect of speech. The remaining 17% of cases fell into the advanced level of meta phonological awareness. These comments stated phonetic features of the Spanish language which were possibly presented during instruction as learning challenges specific to the language. Half of the advanced level comments related to the crosslinguistic interaction among the sound systems of the multilinguals.

Regarding the crosslinguistic phonological influence, the learners' comments revealed that they compared their L3 to their non-native language (L2) more often than their L1. These findings (Kopečková, 2018) followed the hypothesis that multilinguals tend to make a cognitive

association between their non-native languages due to the similarity of the acquisition processes. This association of foreignness influences the transfer of non-native features into the target foreign language. The learners in this study had been recently exposed to English and Spanish in a formal learning environment which may have accounted for the frequency voiced influence of English in the Spanish reading production. These L3 learners demonstrated a considerable degree of phonological awareness when recognizing their phonological errors at both segmental and suprasegmental levels regardless of their specific language background. Kopečková's (2018) findings clearly point to the relevance of teaching and exploring phonetic and phonological similarities between languages L1 and the target language. With explicit instruction of phonetic and phonological parallels between different languages, learners may advance in their multilingual skill set and knowledge.

Pluralistic approaches to language learning would be an effective way to implement phonological awareness and phonics in the classroom. This is an innovative approach to developing young multilinguals, using learning activities that aim at exploration, manipulation and enjoyment of languages and diversity (Kopečková, 2018). Phonological awareness by means of crosslinguistic exploration in the multilingual learning environment is desirable for an effective and enjoyable classroom experience (Kopečková, 2018). With such innovative approaches, students are able to observe, explore, manipulate, and enjoy languages and diversity, while at the same time they develop metalinguistic skills, such as phonological awareness (Kopečková, 2018)

Metacognitive Phonics Techniques

Despite the voluminous body of research which demonstrates the vital relationship between phonology and orthography and in particular phoneme-grapheme code is crucial,

decoding skills are not explicitly taught in the Teaching English Speakers of Other Languages (TESOL) classroom and these skills remain on peripheral of the TESOL literature. “This lack of instruction on the phonemic structure of English or phonics rules, means that there is no systematic knowledge at any level or age of basic literacy skills as conceived in L1 educational system” (Coates et al., 2017, p. 32). Design of curriculum and pedagogy for this important skill is left to language teachers who often do not have current research available to inform construction of the learning activities.

Coates et al. (2017) wrote: “Recent neurological breakthroughs in our understanding of the Critical Period Hypothesis (CPH) and prosody may suggest strategies on how phonics instruction could improve L2 language learning and in particular phoneme/grapheme decoding” (p. 29). The research conducted aimed at creating a classroom environment to test the validity of these inter-disciplinary findings. The researchers hypothesized that within a short classroom course concentrating on phoneme-grapheme decoding skills, basic communication and literacy skills for older learners would improve. The authors asked the question: Will learners benefit from explicit instruction of L2 phonics techniques? “We believe that these inter-disciplinary insights, considering neurological and psychological data need to be tested empirically in a TESOL classroom in order to consider their full practical significance” (Coates et al., 2017, p. 35).

The emphasis of the trial class was to present the phonics patterns metacognitively, allowing students to recognize the patterns in the language and then create prosodic exercises to reinforce retention and overcome the CPH. Students were taught word families and word creation to be able to recognize or even invent new vocabulary intuitively. Using this pedagogy would give confirmation to Hensch’s theory that older students could overcome CPH barriers to

learning by relying on cognitive reasoning rather than rote learning (as cited in Coates et al., 2017). “During feedback from the students they expressed the sentiment that they had become aware of simple language procedures for the first time. It was the importance of raising awareness of phonics patterns that the students instinctively already knew, and subsequent reinforcing them with ERP material that seemed to have been most effective” (Coates et al., 2017, p. 51).

The results showed statistically significant improvements overall for both pronunciation and orthography for those who participated in the trial cohort as compared to the control group (Coats et al., 2017). General improvements were found in two categories: long vowels and digraphs; whereas, short vowels and consonant-plus-vowels showed no statistical improvement. The researchers analyzed the reasons for these results. For the short vowel instruction, there was not enough time in the trial period to effectively teach this aspect of phonics. Regarding the consonant-plus-vowel component, the curriculum lacked teaching methods for this specific area of development. Even with these weaknesses, the trial teaching methodology was shown to be statically effective as a preparatory technique. In particular, it was an effective means of improving orthography and pronunciation as well as general oral skills.

The results from Coates et al. (2017) have many implications for the TESOL classroom. First, the findings suggest that presenting phonics in a metacognitive way as opposed to rote format provides the learners with the ability to retain and reproduce phoneme-grapheme skills in a variety of contexts. Also, it is crucial that the teacher determines some of the differences in phonemes between L1 and L2, defining three to four areas for concentration of explicit instruction (i.e. digraphs). Their study provides evidence that students benefit from the

understanding of patterns in language through prosody rather than individually learned sight words or rote practice.

Morphological Awareness

Morphological awareness is an understanding on the part of the learner regarding how words can be broken down into smaller units of meaning – morphemes. Words are made of roots, prefixes, and suffixes which can either signal grammatical information (inflectional morphemes) or change the meaning of the word (derivational morphemes).

Morphological Awareness in Older Learners with Low Literacy Levels

Tighe & Binder (2012) investigated the morphological awareness and processing in adults with low levels of literacy. Though prior research within the Adult Basic Education (ABE) students had revealed strong orthographic abilities and consistent deficiencies in phonological abilities, no studies had been conducted to learn more about this population's morphological abilities. Tighe & Binder (2012) assessed morphological processing and the contribution of morphological awareness in adults with low levels of literacy.

The researchers had two primary aims. First, they investigated among adults enrolled in an ABE program how morphological awareness influenced their reading comprehension independent of phonological awareness and decoding. Previous research found that morphological awareness is an important predictor of reading comprehension among children. This study "wanted to assess if morphological awareness was also a unique contributor to reading comprehension for adults with low literacy" (Tighe & Binder, 2012, p. 251). Second, the authors aimed to examine morphological processing accuracy and speed in adults with low literacy through an oral reading passage and single-word naming task. They hypothesized that morphological awareness would make a unique contribution to reading comprehensions

independent of phonological awareness and decoding skills for adults with low literacy (Tighe & Binder, 2012).

The results revealed that both morphological and phonological awareness were significant and unique predictors of reading comprehension. The findings also confirmed that morphological awareness contributed additional variance beyond phonological awareness. Regarding the second aim of the study – to assess morphological processing in adult learners, the participants were faster and more accurate at reading matched control words than the morphologically complex words in the oral passage and word-naming task. The results show that adult learners are vulnerable to morphological complexity. "This study is the first to examine morphological awareness and morphological processing in adults with low literacy and has important implications for understanding adults' acquisition of literacy skills and for instructional practices in adult literacy programs" (Tighe & Binder, 2012, p. 264).

Incorporating explicit teaching of inflectional and derivational morphemes is imperative to help older learners parse complex words. Learning activities which explicitly present morphological rules and provide practice for students to decompose words into morphemes creates an environment to improve their morphological awareness, vocabulary, and ultimately reading comprehension. Some reading curricula emphasize spelling abilities by directly teaching morphemic spelling rules, allowing students to focus more on word structure and enable them to apply the rules to deepen reading comprehension and build vocabulary. Tighe & Binder (2012) recommended an integrative instructional approach, incorporating learning activities for each area of literacy awareness – morphological, phonological, and orthographic - in order to ensure a well-balanced literacy program for adult learners.

Morphological Awareness and L2 Reading Comprehension

Many studies have documented the strong link between morphology and reading comprehension, determining the vital role morphology plays in L1 reading comprehension. Jeon's (2011) research explored the contribution of L2 morphological awareness to foreign language reading comprehension. There is a limited body of research regarding morphological awareness and L2 development. Jeon (2011) addressed the gap by intending to assess the unique contribution morphological awareness brings to L2 reading comprehension.

Jeon (2011) assessed 188 tenth graders at a South Korean private high school. The students were given assessments relating to six L2 reading and language-related variables (i.e. phonological decoding, listening comprehension, metacognitive reading awareness). The average age of the participant in this quantitative study was 16 years old. Two morphological tests were used in this study to widen the number of aspects of morphological awareness captured during the assessment. Additionally, a set of control variables – phonology, vocabulary, listening comprehension, and metacognition reading awareness – were used in order to verify the independent contribution of morphological awareness.

The results of this study revealed that morphological awareness is a significant predictor of L2 reading comprehension when the other variables are controlled. The aspect of derivational morphological knowledge showed the strongest predictability. These findings suggest that morphology is not only a variable that contributes to reading comprehension independent of phonology but also is a powerful contributor to L2 reading comprehension among older learners. The results of this L2 study yielded comparable results found in L1 studies. The study's findings clearly indicate the need for increased attention to morphological awareness in L2 reading instruction of older readers.

Crosslinguistic Impact of Morphological Awareness

Kahn-Horwitz & Saba (2017) examined the extent to which morphological awareness skills in L1 transferred to L2 word recognition and reading comprehension. They considered background factors when looking at the data regarding crosslinguistic transfer of literacy skills in adolescent English language learners. The authors advocate that linguistic abilities as well as home environment explain successful English language reading development (Kahn-Horwitz & Saba, 2017). The aim of this study (2017) was to observe the extent to which morphological awareness in Arabic first-language predicted English as a Foreign Language (EFL) word recognition and reading comprehension among high school age girls from low socioeconomic background. They specifically looked at derivational morphological awareness which indicates learners' sensitivity to roots and word patterns in Arabic or affixes in English. They factored in the background variables of socioeconomic status (SES) and home English exposure through leisure reading and television viewing. The research revealed the crosslinguistic role of morphological awareness together with the background variables on EFL literacy skills.

Morphological awareness impacts English literacy, and Kahn-Horwitz & Saba (2017) hypothesized that this same awareness may apply cross-linguistically, aiding the language learners to more effectively decode and recognize words with reading comprehension as the end goal. Previous research with adolescent EFL students has exposed that phonological awareness and orthographic knowledge predicted EFL literacy; however, the body of research regarding this topic of morphological awareness in predicting language proficiency is very limited. This study looked at the missing independent variable of morphological awareness to explain further the crosslinguistic phenomenon (Kahn-Horwitz & Saba, 2017).

The analysis of the data revealed that L1 phonological awareness, orthographic knowledge and derivational morphological awareness judgment all directly contributed to EFL

word recognition. “Higher morphological judgment was associated with higher word recognition and vice versa” (Kahn-Horwitz & Saba, 2017, p. 1858). The data also revealed that English home language and derivational morphological awareness production directly predicted EFL reading comprehension. In addition, morphological awareness mediated the connection between first-language phonological awareness, orthographic knowledge and EFL reading comprehension. The context of this research exposed the reality that poorly developed linguistic skills along with limited EFL home exposure may result in low EFL reading scores.

These results also support the linguistic coding differences hypothesis. Even when orthographies between L1, L2, and L3 are quite different, linguistic components such as morphology cross-linguistically explains proficiency levels of word recognition and reading comprehension. This reality should impact the pedagogy in the classroom. The authors (2017) suggested that universal properties of reading need to be understood and modified when applied to languages that differ in linguistic and orthographic properties. Also, curriculum development must include morphology alongside phonology and orthography, so students can enter the English language classroom better prepared to learn a foreign language (Kahn-Horwitz & Saba, 2017). One unique aspect of this study is that the results show the impact of the home environment on EFL reading comprehension; therefore, the EFL curriculum needs to include a home exposure component.

Conclusion

In order to answer the research question, a literature review was conducted in preparation for designing research-based pedagogy for adolescent English language learners. This literature review began with a look at current research regarding the Critical Period Hypothesis (CPH) and the wonder of the brain’s plasticity. Through neuroimaging, the research revealed that the brain

has capacity to continually modify and reconfigure its function and structure, even at a later stage, as reflected in changes in GM, WM, and connectivity among regions (Li et al., 2014). The research also revealed that structural and functional changes occur during the L2 experience which allows for the achievement of native language skills due to the brain's plasticity.

From there, the impact of crosslinguistic transfer of language skills was reviewed. Recent research regarding crosslinguistic transfer reveals that L1 does play a role in learning L2. L1 knowledge does interact with L2 input to shape the learner's interlanguage system. The IL designed through the language learning process connects L1 and L2 in unique ways to effectively manage the multilingual experience (Yi, 2012).

Finally, the specific linguistic awareness skills of phonology and morphology were reviewed. Coates et al. (2017) findings suggested that presenting phonics in a metacognitive way as opposed to rote format will provide the learners with the ability to retain and reproduce phoneme-grapheme skills in a variety of contexts. It is crucial, then, that the teacher determines some of the differences in phonemes between L1 and L2, defining 3-4 areas for concentration of explicit instruction (i.e. digraphs). Their study provided evidence that students benefit from the understanding of patterns in language through prosody rather than individually learned sight words or rote practice.

Regarding morphology, Kahn-Horwitz and Saba's research (2018) revealed that L1 morphological awareness skills impacts the development of L2 literacy skills. There is a crosslinguistic relationship between L1 morphological awareness and the development of EFL literacy skills. They advocate for explicit instruction in L1 morphology to facilitate L1 development and ensure the student is prepared for EFL instruction. "With the onset of EFL instruction, comparisons could be made between L1 and EFL morphological structures,

highlighting similarities and differences" (Kahn-Horwitz & Saba, 2018, p. 1864). Students stronger in L1 literacy skills should ultimately achieve higher proficiency levels in L2.

Chapter III: Application Materials

Designing effective teaching strategies based on current research for adolescent language learners is essential for their success. Research shows that effective pedagogy for older learners requires top-down processes in order to stimulate the brain's plasticity (Hayakawa & Marian, 2019). Recognizing their prior language experiences and the crosslinguistic phenomenon in developing literacy awareness must be a part of any research-based pedagogy. Moreover, the research has revealed that literacy awareness in both L1 and L2 strengthens the language learning process. As a result of this literature review, I am implementing the best practice of metacognition for adolescent English language learners. Additionally, I have designed research-based pedagogy to facilitate the development of phonological and morphological awareness in adolescent English language learners.

Metacognition

White, et al. (2013) observed that the conditions which induce the brain's plasticity appear to change with age and experience. The bottom-up processes utilized during the sensitive periods become increasingly influenced and regulated by top-down processes. These processes (bottom-up and top-down) represent a continuum that measures the weight of external environmental signals versus internal cognitive processes that drive the brain's plasticity. As the brain matures, there is a progressive decline in capacity for bottom-up processes to stimulate brain change and a developmental shift occurs. The brain's plasticity now occurs by the maturation process of the brain, using top-down processes to bring about change to the cortical map structure.

After a sensitive period, learning becomes mainly a top-down process that depends on the attention function of the brain. The executive functions will work hard to store the new language.

Sometimes when learning a new language, the brain creates a completely new circuit for optimal processing power in the brain. Through explicit training, language learners direct their attention to relevant information regarding L2 in order to initiate plasticity in the brain (White et al., 2013). Rawski (2015) argued that approaching language learning from a metacognitive basis provides a more successful pathway to learning. Through linguistic awareness between L1 and L2, the language learner builds up a new language based on recognition of linguistic forms. The development paradigm switches from bottom-up to top-down.

No longer does the brain change through experience alone. That time of cortical mapping at such a rapid pace will slow down when top-down processes through the executive functions occur. Rawski (2015) stated, "Extremely high-order thought becomes possible, but requires a more complex pattern of behavior integration. This yields slower cortical mapping rates, and longer processing time" (p. 28). However, executive functions overcome this longer processing time by recognizing overarching concepts in language learning and applying them in a top-down model which takes less time.

White et al. (2013) reason that through explicit training of linguistic skills, top-down processes are activated; the language learner is attending to the L2 features in a way that causes metacognition of the learning process. Through metacognition, the language learner establishes goals for progress. After explicit training and feedback, the learner reflects on progress and attends to the mismatch between their goal and current performance. This metacognitive process invokes the brain's plasticity.

Researchers increasingly point to the importance of metacognition in supporting the language learning process (Haukås, 2018). Flavell defined metacognition as "one's knowledge concerning one's own cognitive processes and products or anything related to them" (as cited in

Haukås, 2018, p. 12). This cognition is divided further into three parts – knowledge, experience, and strategies. These domains overlap and work together in metacognition. As related to language learning, then, metacognition is "an awareness of and reflections about one's knowledge, experiences, emotions, and learning in the contexts of language learning and teaching" (Haukås, 2018, p. 13). This definition closely follows the concept of language awareness. The Association of Language Awareness defines language awareness as "explicit knowledge about language, and conscious perception and sensitivity in language learning, language teaching and language use" (Haukås, 2018, p. 14).

Understanding and controlling one's cognitive processes (metacognition) during language learning may be one of the most essential skills that the teacher can help language learners develop (Anderson, 2002). From the research reviewed by Haukås (2018), the following principles comprise an effective metacognitive instructional framework: 1) Activation of learner's prior knowledge, 2) Reflections by learner about what they know or want to learn, 3) Modeling of metacognitive strategies by the teacher, 4)Learner's responsibility of making goals, monitoring learning, and evaluating the learning process.

Metacognition in the language learning context consists of five primary components (Anderson, 2002). In order for this to be successful, the teacher must play a major role in explaining, modeling, and creating a learning environment which encourages reflective discourse (Haukås, 2018). The primary components are:

1. Preparing and planning for learning – during this time the teacher models setting learning goals for the class and guides the students in setting their own learning goals.
2. Selecting and using learning strategies – the teacher is responsible for explicitly teaching the students a variety of learning strategies, modeling when to use them in the learning.

3. Monitoring strategy use – students are to remain reflective during the learning process, asking themselves if the strategy is helping them to accomplish their learning goals and if they are still using the strategy.
4. Orchestrating various strategies – coordinating, organizing, and associating various strategies is a major distinction between strong and weak second language learners.
5. Evaluating strategy use and learning – when students are evaluating whether what they are doing is effective, they are involved in metacognition. Students are trained to ask questions like: What am I trying to accomplish? What strategies am I using? Do I understand how to use the strategy? What else could I do to accomplish my goal? (Anderson, 2012, p. 2)

Anderson (2012) gives the important reminder that metacognition is not a linear process, moving from one component to another; more than one metacognitive process may be occurring at once during the language learning task. Taking instructional time to help language learners develop metacognition will empower them to be stronger learners. The key to facilitating a learning environment where metacognition may occur is to give learners opportunities to try out a variety of learning strategies for themselves, allow them time to reflect on their learning with others, help them to set goals for their own learning, and ultimately, allow them to evaluate their own performance/learning achievements. The students must be allowed to explore and reflect on their own knowledge and learning (Haukås, 2018), and this gives the learner an active role in the learning process.

In order to incorporate the best practice of metacognition into the classroom, the teacher will facilitate the learning activity of analyzing grammar in context. An example of the learning activity is below.

Analyzing Grammar in Context

The following learning activity will be conducted with the 3rd year English language students at Grace Academy in Niamey, Niger to facilitate an environment for metacognition. The lesson plan follows the five-step lesson plan of: Anticipatory Set, Introduction of New Material, Guided Practice, Independent Practice, Closure. The Anticipatory Set will engage students in the lesson, connect prior knowledge, and explain what students will learn, do, and apply in future learning. The Introduction of New Material will provide explicit instruction of new content, model new skills, and check for understanding. The Guided Practice section will be facilitated by the teacher. This is a time for students to begin to use the new information or skill. Independent Practice allows for the student to synthesize the new concepts or apply them in a new context. Closure gives students a time to summarize their learning and give feedback to the teacher which will inform future lessons.

Step 1 – Anticipatory Set

Learning Objective: Students will be able to analyze for prepositional phrases in a short text that they have written.

Activation of Prior Knowledge: The teacher will present a short text in French (Psalm 100) and the students will analyze it for prepositions, circling all prepositions in the text. The teacher will draw attention to the words that follow the prepositions (object/noun). The formula for a prepositional phrase will be written on the board: preposition + object of preposition = prepositional phrase. Note: The students are multilingual; however, French is their academic language. For learning purposes, the students' academic language will be used as their literacy skills are often strongest in French.

Psaume 100

Psaume de reconnaissance.

Poussez des cris de joie en l'honneur de l'Eternel,

habitants de toute la terre!

Servez l'Eternel avec joie,

venez avec allégresse en sa présence!

Sachez que l'Eternel est Dieu!

C'est lui qui nous a faits, et nous lui appartenons:

nous sommes son peuple, le troupeau dont il est le berger.

Entrez dans ses portes avec reconnaissance,

dans ses parvis avec des chants de louange!

Célébrez-le, bénissez son nom,

car l'Eternel est bon: sa bonté dure éternellement,

et sa fidélité de génération en génération.

Step 2 – Introduction of New Information

Explicit Vocabulary Instruction: The students will be given a list of the frequently used English prepositions. They will be responsible for writing the French preposition alongside the English word. They will be required to memorize the English prepositions and will be tested on them in the weekly spelling and sentence writing quiz.

Prepositions

about	before	into	since
across	beside	like	to
after	between	near	through
against	by	on	under

among	during	of	until
around	for	opposite	via
as	from	out	with
at	in	over	without

Explicit Instruction of Learning Strategy: Analyzing in Context. The students will be taught how to analyze for prepositions / prepositional phrases in the Bible story used in the English language curriculum. The teacher will model for the students how to analyze for prepositions / prepositional phrases in the first part of the Bible story (one to two sentences).

Bible Story from Mark 1:21-28 (NIV)

They went to Capernaum, and when the Sabbath came, Jesus went into the synagogue and began to teach. The people were amazed at his teaching, because he taught them as one who had authority, not as the teachers of the law. Just then a man in their synagogue who was possessed by an impure spirit cried out, "What do you want with us, Jesus of Nazareth? Have you come to destroy us? I know who you are—the Holy One of God!"

"Be quiet!" said Jesus sternly. "Come out of him!" The impure spirit shook the man violently and came out of him with a shriek.

The people were all so amazed that they asked each other, "What is this? A new teaching—and with authority! He even gives orders to impure spirits and they obey him." News about him spread quickly over the whole region of Galilee.

Step 3 – Guided Practice

Students will analyze two sentences in the Bible story on their own during the lesson as the teacher monitors their work. The teacher will give feedback on the students' work.

Step 4 – Independent Practice

Students will complete analyzing for prepositional phrases in the Bible story as their homework (seven to ten sentences).

Then, students will analyze two different texts – their written Bible memory text and their own paragraph writing for the week. First, they will correct their written Bible memory for the week to evaluate if they correctly wrote all prepositions/prepositional phrases in that text. Second, they will analyze their weekly paragraph writing to evaluate if they correctly wrote the prepositions/prepositional phrases in that text.

Students will orally give comments in class regarding their evaluations of the two tasks. Depending on the areas of errors, the teacher will help the students consider ways to strengthen their ability to correctly write using prepositions / prepositional phrases. If students had trouble spelling the prepositions, they will need to go back and memorize the spelling for them. If they used the preposition incorrectly (i.e. She sat on her desk), the teacher will guide the student to consider how the preposition is used in French and whether its usage is similar or different in English. Through comparing the differences and similarities, the interlanguage system will be strengthened.

Step – 5 Closure

Through this exercise of analyzing grammar in context, the students will be using metacognition to process their ability to identify and write prepositional phrases. They will have an opportunity to evaluate their work and create a learning environment where they will successfully learn how to use English prepositions/prepositional phrases. They will be using their academic literacy skills to better understand English prepositions/prepositional phrases and ultimately strengthen their multilingual literacy skills.

Phonological Awareness

Coates et al. (2017) argued that although there is a long tradition of acceptance that the relationship between phonology and orthography is crucial in the language learning process, phonology is still considered peripheral in the language learning literature. There is often no formal instruction in phonology for older learners of English within the language program design. “This lack of instruction on the phonemic structure of English…means that there is no systematic knowledge at any level or age of basic literacy skills as conceived in L1 education systems” (Coates et al., 2017, p. 32).

In Sparks et al. (2008) seminal study, the weight of crosslinguistic transfer was examined and revealed in the language learning process. Their findings revealed that even several years after students have learned to read and spell in their L1, word decoding, spelling, and ultimately reading comprehension skills transferred from L1 to the L2 learning experience. Sparks et al. (2009) cited studies that found L1 phonological awareness to be a good predictor of reading and word decoding in another language. “Investigations of crosslinguistic transfer in the development of literacy skills have shown that phonological awareness skills are correlated across language” (p. 207).

In light of this research, educators must take into consideration the role that L1 plays in learning L2. This research (Sparks et al., 2009) also suggests that educators should consider theories of cognition that propose connections between L1 and L2 phonology when designing an effective language learning environment. One way learners are able to examine their L1 and L2 is through direct and explicit teaching of L2 phonology. Through exploration of distinct differences in languages, the learner’s brain creates new pathways to form the interlanguage (IL) system.

Phonological awareness (PA) is a phonological processing skill. It's an individual's awareness of the sound structure of spoken words (not written) that is revealed by such abilities as rhyming, matching initial consonants, and counting the number of phonemes in words (Stahl & Murray, 1994). Developing this skill helps learners to think about, focus on, and hear the sounds in a word, rather than just the meaning of the word. These skills help detect, manipulate, and analyze the auditory aspects of spoken language (Horst, 2016). See the Appendix for The SEEDS (Horst, 2016) Continuum of Complexity for Phonological Awareness.

Gorman's Model

Although there is limited research to guide the development of PA instruction with students learning L2, results from Gorman's study (2012) offer important insights for the classroom teacher. The following model for PA assessment and intervention grew out of this study; it can guide the development of research-based phonological awareness interventions and learning activities for adolescent ELLs.

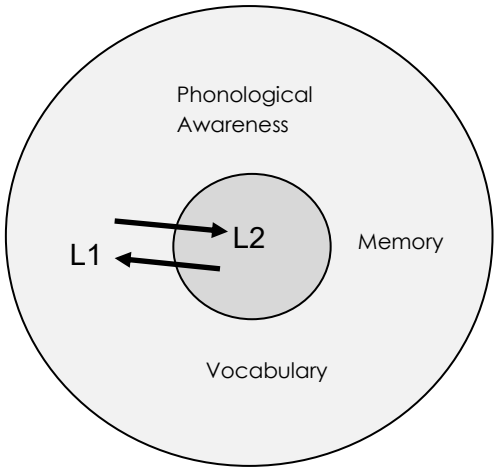

Figure 1. Model of phonological awareness development in English language learners.

First, this model represents the well-documented interrelationships between L1 and L2 literacy skills, which support the benefit of L1 literacy instruction. And because L1 and L2 are interdependent, it is possible for L2 instruction to strengthen L1 language skills. Though, in the

beginning of instruction, it may be helpful to teach new PA tasks and terminology in L1 so that the ELLs will better grasp the phonological concepts. Then, the teacher may gradually incorporate English instruction as the students' task comprehension increases.

Next, the model depicts the significant interrelationships between vocabulary, working memory, and phonological awareness. From Gorman's research (2012) both total vocabulary and memory predicted PA gains. Therefore, vocabulary and working memory must be incorporated into the development plan for phonological awareness skills. The lesson plan must have an integrated approach that considers this interrelationship. In addition, research-based interventions include both explicit and implicit approaches when contextualizing the phonological awareness activities into the reading and writing tasks (Gorman, 2012). When developing learning activities, teachers need to incorporate each component in the model to ensure phonological awareness development. An integrated approach that includes vocabulary, working memory, and phonological awareness will provide a learning environment for PA development.

Gorman's (2012) research identified that English PA gains were most strongly related to total vocabulary size. The development in and restructuring of the combined L1 and L2 lexicon contributes to children's overall PA development. When L2 words are relatively unfamiliar, ELLs may access phonological templates of L1 words stored in long term memory and transfer this phonological knowledge to support PA performance on these words. This supports "the view that a central, more general cognitive mechanism or metalinguistic ability underlies PA in both languages" (Gorman, 2012, p. 117).

Because strong vocabulary skills promote PA development, total vocabulary development is a high priority in the EL classroom. Explicit vocabulary instruction should include basic words, high-frequency words, and specialized vocabulary. A variety of teaching

methods are required to enhance both the depth and breadth of the students' total vocabulary knowledge. Reviewing and reinforcing new words through read-alouds, story retells, word books, story maps, narration, and dramatization ensures vocabulary growth.

To develop total vocabulary, the author discusses the importance of including the learners' families in the language acquisition process. Teachers and school leadership need to provide accurate information about the benefits of supporting their children's literacy development in the home language (L1). Teachers could provide effective ways for families to foster these skills outside of the classroom time through L1 vocabulary building activities.

Gorman's (2012) model includes the integration of working memory in order to develop phonological awareness. Specifically for this literacy skill, the working memory component will be referred to as phonological memory, which is "the ability to recognize and remember phonological elements and their order of occurrence" (O'Brien, 2007, p. 558). Phonological memory can be exercised through attention and recall, rehearsal, visual imagery, story creation, and grouping. PA training stimulates the phonological memory "muscles" and benefits students' memory skills (Gorman, 2012). For adolescent English language learners, phonological memory can be developed through rhyming raps, poetry, and Scripture memory.

Rawski's Attention Model

Finally, Rawski's Attention Model can be used to inform L2 phonology pedagogy. In this model, the learner is guided to build constant awareness of forms presented in L2 in a successive manner. Rawski (2015) stated: "Approaching the study of language learning from a cognitive basis (metacognition), as well as with a theoretical linguistic basis, will provide a more integrated and ultimately more successful pathway to language learning for any individual anywhere with access to it" (p. 32).

According to this model, the first step in phonology is to ensure that the L2 learner develops phonological awareness of both L1 and L2 forms. Without this awareness, the learner will be required to memorize the phonology of the new language without deep understanding. How is this accomplished? He suggested a dialogue-based program that begins with active, guided listening which must precede any output. The learner must listen actively and be prompted to compare sounds in the L2 with those in the L1. L2 learners are actively looking for relationships; the learner recognizes parameter differences internally and cements them.

Kopečková's (2018) research explored the relevance of teaching and exploring phonetic and phonological similarities between L1 and the target language, and concluded that including instruction of phonetic and phonological parallels between different languages may advance the language competence of multilingual learners. Explicit instruction may facilitate more effectively the multilingual learner's skill set and knowledge.

Pluralistic approaches to language learning would be an effective way to implement phonological awareness and phonics in the classroom (Kopečková, 2018). This is an innovative approach to developing phonological awareness, using learning activities that aim at exploration, manipulation and enjoyment of languages and diversity. Phonological awareness by means of crosslinguistic exploration in the multilingual learning environment is desirable for an effective and enjoyable classroom experience (Kopečková, 2018). With such innovative approaches, students are able to observe, explore, manipulate, and enjoy languages and diversity, while at the same time they are developing metalinguistic skills, such as phonological awareness (Kopečková, 2018).

In addition, Rawski's (2015) model has the language students build physical phonological awareness. By using a motor process, language learners will develop a difference

awareness of how the sounds are physically made in the mouth. The teacher can give a short description of what the mouth is doing, but physical examples must be shown. From individual phonemes, the teacher will start building segmental pairs – consonant/vowel, vowel/vowel, consonant/consonant and then segmental trios – consonant/vowel/consonant, consonant/consonant/vowel.

Based on this PA research, the EL teacher will facilitate learning activities for adolescent students to build physical phonological awareness. An example of such a learning activity is below.

Physical Phonological Awareness

The following learning activity will be conducted with the 3rd year English language students at Grace Academy in Niamey, Niger to explicitly teach physical phonological awareness skills. The lesson plan follows the five-step lesson plan of: Anticipatory Set, Introduction of New Material, Guided Practice, Independent Practice, Closure. The Anticipatory Set will engage students in the lesson, connect prior knowledge, and explain what students will learn, do, and apply in future learning. The Introduction of New Material will provide explicit instruction of new content, model new skills, and check for understanding. The Guided Practice section will be facilitated by the teacher. This is a time for students to begin to use the new information or skill. Independent Practice allows for the student to synthesize the new concepts or apply them in a new context. Closure gives students a time to summarize their learning and give feedback to the teacher which will inform future lessons.

Step 1 – Anticipatory Set

Learning Objective: The student will be able to develop an awareness of the mouth's form and tongue placement required to make the English short vowel sounds for *a*, *e*, *i*, *o*, and *u*.

Activation of Prior Knowledge: The teacher will review the French vowels with the students. Using a mirror, the teacher will ask the students to watch themselves in the mirror as they make the French vowel sounds. They will orally give a description of what their faces look like and what the shape of their mouths is for each vowel. The students will draw the shape of their mouths and the position of their tongues on the vowel chart. Note: The students are multilingual; however, French is their academic language. For learning purposes, the students' academic language will be used because their literacy skills are often strongest in French.

French Vowels

French vowel	shape of mouth	position of tongue
a		
e		
i		
o		
u		

Step 2 – Introduction of New Material

Physical Phonological Awareness Instruction: The teacher will say the phonemes for the English short vowels – *a*, *e*, *i*, *o*, and *u*. The students will attend to the shape of the teacher's mouth. The students will fill out the English short vowels table, drawing the shape of the teacher's mouth as she says the short vowel. For the position of the tongue, the teacher will draw the picture on the blackboard for each short vowel, explaining to the students the position of the tongue when saying each phoneme. The students will record the tongue positions on their table.

English Vowels

English Short Vowel	shape of mouth	position of tongue
a		
e		
i		
o		
u		

Step 3 – Guided Practice

The students will begin to physically practice each English short vowel. The short vowel sounds will be taught systematically, beginning with short *a* and ending with short *u*. The teacher will demonstrate the phoneme sound using the correct mouth shape and tongue position, and the class will repeat them. Then, a list of short *a* vowel words will be used to practice that specific phoneme. The list will be a part of their current English vocabulary. The teacher will say the words and the students will repeat the words. They will use the Rapid Automatic Naming (RAN) strategy to practice the words/short vowel sound.

past	last	fast	glad	dad
bad	family	yah		

To reinforce the practice of the phoneme, the teacher will introduce and model the short *a* vowel Family Rap to the students.

Step 4 – Independent Practice

Students will fill in the blanks in the rap with their family's details. The teacher will recite her family rap for the students to observe a model. Class will recite the rap as a large group. Then, students will work in partners to practice their family raps.

Family Rap

I was born in _____ ; that's in the past. (year)

I grew up in _____ ; the time went too fast. (village)

My _____ was born first ; my _____ was born last.

We will get together in December – I will be so glad

To see my aunt and uncle, my mom and dad.

I will take a bus; the bumpy road may be bad.

But I will see my family, oh yah, my family!

Step 5 – Closure

Students will memorize and recite the family rap for their weekly assessment in English class.

Morphological Awareness

Jeon (2011) conducted research that examined the contribution L2 morphological awareness makes to L2 reading comprehension. The results revealed the influence morphological awareness has on L2 reading comprehension. Jeon concluded that morphological awareness is a significant contributor to reading comprehension and should inform teaching approaches in the classroom. More specifically, the morphological test that influenced reading comprehension significantly was the test used for creating and interpreting complex words and not the test for identifying constituent morphemes of a complex word. Jeon acknowledged that the student must have knowledge of isolated morphemes in order to interpret the word. Another crucial consideration is that the morphological awareness learning process is best done in the context of an authentic text and not in isolation.

In the Kahn-Horwitz & Saba (2017) study, the results highlighted the crosslinguistic role of morphological awareness on reading skills. The study found that L1 derivational morphological awareness directly contributed to EFL word recognition and EFL reading comprehension. The authors argued that because morphological awareness makes a unique contribution to English literacy, transferring this ability from L1 to L2 will assist when reading morphologically complex words in English and learning word families. They suggested that "With the onset of EFL instruction, comparisons could be made between L1 and EFL morphological structures, highlighting similarities and differences" (Kahn-Horwitz & Saba, 2017, p. 1864). Students with stronger morphological awareness skills in L1 should ultimately become stronger English language learners.

Morphemes are the smallest unit of meaning in a language (Nagelhout, 2019). All words in the English language are comprised of morphemes. Morphemes are not syllables, which are units of sound. Morphemes are units of meaning. There are two kinds of morphemes – free and bound. As their identifying names intuit, a free morpheme is free to stand on its own. A free morpheme carries meaning on its own. It does not require a prefix or a suffix. A bound morpheme must be added to a free morpheme, for a bound morpheme cannot stand alone. Words can be made of a free morpheme, a free morpheme and a bound morpheme, or a free morpheme with two or more bound morphemes.

There are two main types of bound morphemes: derivational and inflectional. Derivational morphemes combine with free morphemes or other derivational morphemes to create a new word, change the meaning of the word, or change the form-class of a word. For example, the bound/derivational morpheme *er* can be added to the free morpheme *help* to create a new word which changes the word class from verb to noun. Derivational morphemes serve as

key markers for recognizing form-class words. The presence of a derivational morpheme is a key formal test for determining form-class words.

Inflectional morphemes create a variation on the word in order to mark grammatical information. They signal grammatical function of nouns, verbs, adjectives, adverbs, and pronouns. For example, the bound/inflectional morpheme *ed* can be added to the root word *help* to show the tense of the verb. The meaning of the word does not change. Inflectional morphemes always come after the derivational suffix. For example, to show possession of the noun *teacher* which has morphed from a verb by adding the derivational suffix *er*, the inflectional morpheme *'s* is added. The English language has eight inflectional suffixes.

Teaching English language learners to understand morphological rules and how to decompose words into constituent morphemes improves their morphological awareness (Tighe & Binder, 2015). As well, incorporating explicit teaching of inflectional and derivational morphemes is imperative to help language learners parse complex words (Tighe & Binder, 2012). Through learning activities which explicitly present morphological rules and practice in how to decompose words into constituent morphemes could improve their morphological awareness, vocabulary, and then ultimately their reading comprehension. Some reading curricula emphasize spelling abilities by directly teaching morphemic spelling rules, allowing students to focus more on word structure and enable them to apply the rules to deepen reading comprehension and build vocabulary.

Peter Bowers a scholar at WordWorks Literacy Centre in Ontario stated: "Instead of a 'scope and sequence' of morphemes to teach, what I recommend is starting with words in the children's vocabulary, analyzing such words to find their bases, then looking for other members of that family" (as cited in Shanahan, 2018). The goal is to teach the students how to analyze

words, looking for the base and identifying all free and bound morphemes, providing a brief description of concepts when teaching morphology as words are encountered. Every word is a base or a base with something else (another base or affix). Bases and affixes (morphemes) are the meaningful building blocks that construct words. We can analyze complex words into constituent morphemes with word sums and show their interrelationships with a matrix. English spelling prioritizes consistent spelling of morphemes over consistent pronunciation of morphemes; this requires an understanding of grapheme-phoneme correspondences from within the context of morphological families.

There are reliable conventions for the three suffixing conventions. Studying and understanding the suffixing conventions is not primarily about improving spelling accuracy, it is about being able to analyze hypotheses about connections between words. Furthermore, Bowers states that word analysis must look at both word structure (word sum) and meaning (etymology) to determine if words are in the same family. Evidence must come from both aspects during the analysis. Bowers (as cited in Shanahan, 2018) provided the example of the word *play*. Using a word matrix, the following words are identified: play, playing, playful, replay, playhouse. In the next step of the word analysis, it is discovered that the English root means plegan (frolic, move rapidly). Knowing the meaning of the root *play* helps when students encounter the word *display*. That word does not belong to the same word family as *play*. Further analysis will be required to find the word family of it.

Through Structured Word Inquiry (SWI), language learners are taught how to analyze the writing system for the English language. This inquiry uses the principles of scientific inquiry as the basis of word level literacy instruction. The students examine a word, looking for any features or conventions that govern the word structure. It is a structured inquiry; the teacher

structures the scientific inquiry of the word as the students discover the parts of the word. Bowers and Bowers (2008) gave guiding principles for SWI. The primary function of word parts (morphemes) is to represent meaning. These conventions of word parts are well-ordered and reliable so words can be understood through scientific inquiry. Through SWI, confidence of meaning in the word is obtained.

For instruction to meet the criteria listed above, Bowers and Bowers (2008) recommended two linguistic tools and practices: 1) Morphological analysis and synthesis with word sums; and 2) analysis of morphological families and etymological families using word matrixes, which permits the analysis of the morphological elements of a morphological family.

In order to incorporate these practices for morphological awareness into the classroom, the teacher will facilitate the learning activities analyzing for inflectional morphemes and writing word sums. An example of the learning activity is below.

Morphological Awareness Learning Activity

The following learning activity will be conducted with the 1st year English language students at Grace Academy in Niamey, Niger to explicitly teach morphological awareness skills. The lesson plan follows the five-step lesson plan of: Anticipatory Set, Introduction of New Material, Guided Practice, Independent Practice, Closure. The Anticipatory Set will engage students in the lesson, connect prior knowledge, and explain what students will learn, do, and apply in future learning. The Introduction of New Material will provide explicit instruction of new content, model new skills, and check for understanding. The Guided Practice section will be facilitated by the teacher. This is a time for students to begin to use the new information or skill. Independent Practice allows for the student to synthesize the new concepts or apply them in a

new context. Closure gives students a time to summarize their learning and give feedback to the teacher which will inform future lessons.

Step 1 – Anticipatory Set

Learning Objective: Students will be able to analyze and synthesize with word sums by identifying derivational and inflectional bound morphemes.

Activation of Prior Knowledge: The teacher will choose three to five complex words in French and have the students analyze them to identify the base word. The student will then be asked to identify the prefixes and suffixes (morphemes) attached to each complex word. As a class, the students will make a short list of other French words that have those same prefixes and suffixes. Note: The students are multilingual; however, French is their academic language. For learning purposes, the students' academic language will be used because their literacy skills are often strongest in French.

Step 2 - Introduction of New Information

Explicit instruction of inflectional morphemes: Inflectional morphemes create a variant form of a word in order to signal grammatical information without changing the meanings of words. An example of an inflectional morpheme is the verb conjugation of third person singular: She studies at Grace Academy. This lesson will begin with inflectional morphemes. There are eight English inflectional suffixes: plural -s, possessive -'s, comparative -er, superlative -est, 3rd person singular present tense -s, past tense -ed, present participle -ing, and past participle -en. The teacher will write a sentence for each inflectional morpheme on the blackboard, modeling how to use the suffixes. (The unit's vocabulary will be used throughout the lesson.) The teacher will demonstrate how to write word sums for each word used in the sentences. For example: study – y + ie + s = studies, third person singular verb conjugation.

Step 3 – Guided Practice

The teacher will use the family unit story from the curriculum to identify inflectional morphemes/suffixes. The class will analyze for suffixes under the guidance of the teacher. The students will use their highlighters to mark the inflectional morphemes, then they will write word sums for each word.

A Family Portrait

My family lives in a small village in Niger. My father, Moustapha, is a farmer. He works in his field every day. He plants millet and peanuts. My mother, Mariama, sells peanuts in the market.

There are six children in our family. Gatouma is the first child. She doesn't go to school. She is going to get married next year. Aboubacar is the next child. He's a student in the fourth year of middle school.

I'm Hanatou. I'm in the first year of middle school. Aboubacar and I are students at the same school. We're good students. When Aboubacar grows up, he's going to be a farmer. I'm going to be a teacher.

Zeinabour and Aissa are our little sisters. Zeinabou goes to primary school and Aissa is going to begin primary school in two years. The baby of the family, Souley, is two years old. He talks all the time, but nobody understands him!

Step 4 – Independent Practice

The students will analyze their own writing for inflectional morphemes. Here is an example of one of their paragraphs. Their homework will be to write word sums for each of the words with inflectional morphemes.

My Family Portrait

My family lives in Niger. My father's name is Sara. My mother's name is Salamatou. I have five sisters and two brothers. My brothers are Amadou and Assoumane. My sisters are Balkissa, Hadiza, Aichatou, Fati, and Zouéra. Assoumane is the youngest in my family. Amadou is the oldest. I don't have any grandparents. They have passed away.

Step 5 – Closure

The students will take an assessment after the independent practice to evaluate their comprehension of inflectional morphemes. The Bible story for the unit *The First Man and Woman* will be used for the assessment. The students will identify all inflectional morphemes in the story.

The First Man and Woman

God made Adam and Eve husband and wife. They became the first family on the earth. This is what God wanted to do. He wanted people to live as families. God wanted to talk with this family often. God came to their home every day. Their home was in a place called the Garden of Eden. It was a beautiful place with flowers, trees, water, animals and much food. Everything this family needed was in the garden. God wanted them to be very happy. He wanted them to learn how to use everything in the best way.

Conclusion

The use of metacognition practices throughout these individual lesson plans will help to create an effective English language learning environment for adolescent students. The students will use their prior language experiences for each learning activity, and the teacher will explicitly show similarities and differences in languages. Research has shown that effective pedagogy includes considering the age of the learner when deciding on or designing learning activities, and

that literacy awareness in both L1 and L2 strengthens the language learning process (Sparks et al., 2008). The literature review of this thesis was the foundation for the metacognitive strategies in this section. Through incorporation of these research-based practices in the classroom, the hope is that the learning activities designed for metacognition, phonological awareness, and morphological awareness will support adolescent learners in the English language learning process.

Chapter IV: Discussion and Conclusion

From my experience of teaching older English language learners, phonological and morphological awareness development is missing in the classroom. The reality of crosslinguistic transfer is underutilized, not even recognized, or stifled in the classroom. Learning tends toward rote and unauthentic exercises without higher order thinking skills such as metacognition. From the research reviewed in this thesis, I designed three research-based learning activities using metacognitive strategies for teaching linguistic awareness skills of phonology and morphology to adolescent English language learners.

I based the design of these lessons on three key points from the research. First, the role of the brain's plasticity and the processes used to develop language skills must be considered as learning activities are designed. Second, the background linguistic knowledge of the English language students must be reviewed and evaluated in order to develop effective learning activities. The teacher must be aware of the similarities and differences between all languages that come into the classroom, building linguistic awareness so that the vital role of crosslinguistic transfer may be harnessed for the good of the learners. Third, the practitioner is responsible for the establishment of a learning environment where metacognition is understood and used by the learners in the classroom.

Summary of Literature

In order to answer the research question proposed in this thesis, a literature review was conducted to create research-based pedagogy for teaching linguistic awareness skills of phonology and morphology to adolescent English language learners. The literature review began with a look at current research (Abello-Contesse, 2009; White et al., 2013) regarding the Critical Period Hypothesis (CPH) and the phenomenon of the brain's plasticity. Research delineating the

influence of crosslinguistic transfer of language skills and the specific linguistic awareness skills of phonology and morphology were also reviewed in order to develop effective learning strategies for the classroom (Bowers & Bowers, 2008; Rawski, 2015; Sparks et al., 2008; Sparks et al., 2009).

The CPH was reviewed with the purpose of better understanding the context of teaching older language learners. This hypothesis states that children are superior language learners to those students who have passed puberty. The CPH argues that there is an optimal period for language learning; essentially, after puberty, the brain's structural and formational architecture no longer has the ability to change. This loss of the brain's plasticity will inhibit native-like skills (Steinhauer, 2014). However, current brain research has revealed the efficiency of the brain's capacity to keep on learning language even after puberty. The research reveals that more mature learners have more capacity to quickly learn grammatical and lexical structures in the target language due to their higher level of cognitive development and greater analytical skills (Albellos-Contesse, 2009).

The brain's ability to make new connections is a marvel. Through its plasticity, neuronal pathways are created in the language learner's brain to allow for an interlanguage system (Wolf, 2007). The brain has the capacity to connect original brain circuitry to new connections, to store specialized patterns of information, and to recruit and connect information with a high level of automaticity. This wonder of the brain's capacity allows older students to learn a new language.

Both White et al. (2013) and Rawski (2015) presented the argument that after puberty, the brain increasingly uses top-down processes to learn. The bottom-up language development which relies on mostly environmental input during the early years of life makes a shift after

puberty to using more complex and efficient top-down processes to learn. Rawski asked this important question specifically about phonology: What must happen to adjust one's phonology to the target language? The learner has the same mouth and the same ears for L1 and target language. The auditory system would presumably be the same for either language. He concluded that the difference must lie in the brain and how it processes sounds. He argued that the methods for learning must change. After puberty, the brain's plasticity requires metacognitive processes which depend on mental functions to execute the goals in learning the target language's linguistic skills (Rawski, 2015).

The crosslinguistic research reviewed reveals that L1 proficiency does create a threshold for L2 learning. Low L1 competence leads to low L2 competence (Sparks, 2009). Their research supports the threshold hypothesis. Also, the research revealed support for the linguistic transfer hypothesis. L2 learning may be dependent on basic language learning mechanisms that are similar in L1 and the target language. Sparks et al. (2008) longitudinal study saw evidence that even several years after students learned to read and spell their L1, those linguistic skills transferred during the L2 learning experience.

Specifically, the literature review considered the linguistic skills of phonological and morphological awareness. In light of the more recent research around the CPH (Steinhauer, 2014) and the brain's ability to learn language through its plasticity (Li et al., 2014), I explored the literature regarding benefits to developing PA and MA skills in the language learning experience. I also wanted to understand the phenomenon of crosslinguistic transfer as it relates to these linguistic skills and their development in the classroom. Both linguistic awareness skills and crosslinguistic transfer are dynamic variables that have significant contributions to the language learning process.

Professional Application

After completing the literature review, the following research-based practices were considered for implementation in the classroom for adolescent learners of the English language: metacognition, phonological awareness, and morphological awareness. White et al. (2013) argued that through explicit training of linguistic skills, top-down processes are activated. The language learner is attending to the L2 features in a way that causes metacognition of the learning process. Through metacognition, the student establishes goals for progress. After explicit training and feedback, the learner reflects on progress and attends to the mismatch between their goal and current performance. This metacognitive process invokes the brain's plasticity. The brain is creating new circuitry and connections for the new language.

To effectively learn a new language, students must engage in metacognition. They formulate goals for the language learning process alongside the teacher. The teacher prepares lessons that meet those language goals. Then a process for reflecting on the learning must be incorporated for the learners, attending to what was achieved and what is yet to be learned. This is an ongoing cycle for language learners. New goals are set, the teacher prepares learning activities for the goals, the learner reflects on the progress toward the goals and establishes new goals for learning language.

Regarding phonology, there is limited research to inform pedagogy for PA instruction with students learning multiple languages. Results from Gorman's (2012) study offer important insights for the classroom teacher. In language learning, L1 and L2 work together, relying on working memory, PA, and vocabulary. Gorman's model of the interrelationships between these language skills offers much to the practitioner and guides the design of research-based phonological awareness interventions and learning activities for adolescent ELLs.

Additionally, Rawski (2015) proposed a new model for using top-down processes to develop phonology in L2. The Attention Model will guide students to build constant awareness of forms presented in L2 in a successive manner. Rawski argued that approaching the study of language learning from a cognitive basis (metacognition), as well as with a theoretical linguistic basis, will provide a more integrated and ultimately more successful pathway for older language learners. The model starts with ensuring that the learners develop both L1 and L2 phonological awareness. Without this awareness, learners will be required to memorize the phonology of the new language without deep understanding. Development of both L1 and L2 PA can happen through a dialogue-based program that begins with active, guided listening. The learner must listen actively and be prompted to compare sounds in the L2 with those in the L1. L2 learners are actively looking for relationships; learners recognize parameter differences internally and cement them.

Rawski's model includes building physical phonological awareness. This could revolutionize how language instruction is currently implemented. By using a motor process, language learners will develop a difference awareness of how the sounds are physically made in the mouth. As the teacher gives a short description of what the mouth is doing, physical examples would be shown. From individual phonemes, the teacher will start building segmental pairs – consonant/vowel, vowel/vowel, consonant/consonant and then segmental trios – consonant/vowel/consonant, consonant/consonant/vowel. This systematic approach to teaching physical phonological awareness allows for motor memory to strengthen the learning process.

Furthermore, the literature review provided research on the benefits of morphological awareness skills for language learners. Incorporating explicit teaching of inflectional and derivational morphemes is imperative to help older learners parse complex words (Tighe &

Binder, 2012). Through learning activities which explicitly present morphological rules and practice in how to decompose words into constituent morphemes could improve their morphological awareness, vocabulary, and then ultimately their reading comprehension. Complementary to this research, Jeon (2011) states that building morphological awareness is best done in the context of an authentic text and not in isolation. And in light of the crosslinguistic transfer of language, comparisons could be made between L1 and L2 morphological structures, highlighting similarities and differences (Kahn-Horwitz & Saba, 2017). Therefore, comparison of L1 and L2 morphology will be included in the language learning, explicit teaching of morphological rules, and use of authentic texts will be the guide markers for creating pedagogy in the classroom.

Limitations of the Research

The literature reviewed for this thesis involved common limitations to the studies. First, many of the studies were small in sample size and limited in scope and balance on linguistic background (Graham et al., 2017; Gorman, 2012; Kopečková, 2018; Tighe & Binder, 2012). This reality did not nullify the findings in each study; however, the authors recommend future studies similar in format with larger sample sizes and cross-languages to verify findings.

Second, there was a limited supply of L2 testing instruments to conduct the research (Graham et al., 2017; Jeon, 2011). Preexisting L1 measurement tools had to be adapted for use with the L2 research. Also, the testing instruments had limits due to the complexity of the language processes. The complexity of the language production makes testing and isolating the linguistic skills' influence on language outcomes difficult. Once adapted, the measurement tools functioned differently for the testing, especially if it was a timed evaluation. Measurement of vocabulary knowledge in each language is challenging. The complexity of the

language skills also makes testing and isolating the skill's influence on language outcomes difficult.

Third, the researchers provided a balanced view to the topic of study, stating that prior research regarding language learning provided varying results regarding bilingualism and multilingualism (O'Connor, 2018). Bilingualism itself is a complex phenomenon. With its complexity, is it not surprising that language learning research continues to raise questions even as it seeks answers?

Implications for Future Research

There is a need to develop specific testing tools for future research regarding the language learning process (Coates et al., 2017). Future research should attempt to collect data from a multilingual context by using methodologies optimal for this specific learning context. Ideally longitudinal and cross-language in nature studies would trace the development of linguistic skills in young language learners and for pedagogical purposes. Future research would benefit from diverse samples such as seeking a more heterogeneity of bilinguals (Gorman, 2012). Research primarily conducted among sequential bilinguals may procure different results if the scope of research would be broader. By examining the impact of multilingualism at multiple levels of processing, future work may further illuminate the interconnected and cascading effects of language experience that result in widespread consequences for cognition and the brain (Hayakawa & Marian, 2019).

Future research into brain networks, along with the study of individual characteristics of languages and individual differences of learners, will provide important pathways to a deeper understanding of the brain's connectivity for bilingualism and second language learning. The study of neuroplasticity as a function of second language learning has significant

implications for our globalized society, as well as providing a window into the adaptive nature of the human mind and brain (Li et al., 2014).

Conclusion

In a classroom full of multilingual students, I see evidence daily of the wonder of the brain's capacity to learn. Many of my students are post puberty in age and are functioning in as many as three languages. The impetus for this thesis came from my determination to understand how the brain's ability to change across the lifespan influences the language learning experience for adolescents. This research intersects with language learning theories, giving a framework for designing research-based pedagogy for teaching adolescent English language learners.

Through the literature review, I discovered that the experience of learning language is what initiates neuroplasticity in the brain. "The brain's ability to be shaped by experience, this plasticity at the heart of the brain's design forms the basis for much of who we are and who we might become" (Wolf, 2007, p. 3). With this design, human beings come into the world with the preexisting capacity to change what is given initially in the brain's function and structure. The brain's capacity to make new connections among older structures, to form areas of exquisitely precise specialization for recognizing patterns in information, and to learn to recruit and connect information from these areas automatically allows human beings to learn and grow over the lifespan. From the start, the brain is poised for adaptation (Wolf, 2007). Language learning can be an intensive experience, occurring on a daily basis and throughout one's life, and as such, it provides a powerful environmental input to the nervous system to induce changes in the human brain (Li et al., p. 313).

Through observations in the multilingual classroom of adolescent learners and in response to the literature review, I have not only come to a deeper understanding of how the

brain processes language skills but also how the wonder of the brain's design intersects with language learning theories. First, the research reviewed provided evidence that the Critical Period Hypothesis (CPH) was based on L1 remedial learning circumstances and not set in the context of learning L2. More recent research disputes the CPH and argues that older learners actually have more capacity to make faster initial progress in acquiring the grammatical and lexical structures of the L2 due to their higher level of cognitive development and greater analytical skills (Abellos-Contesse, 2009). Furthermore, regarding language pedagogy, it can be concluded that "there is no single 'magic' age for L2 learning" (Abellos-Contesse, 2009, p. 171). Both older and younger learners have capacity to achieve advanced levels of proficiency in L2.

Second, the literature review presents evidence that L1 literacy skills do in fact transfer during the language learning experience and can inhibit or accelerate language learning. For students who struggle in their L1 literacy skills, there may be a threshold for learning L2 and their proficiency potential in L2. However, language learning may be accelerated for multilinguals if metacognition is used to connect the students' background knowledge or metalinguistic skills with the target language's similarities and differences. Through metacognition of the multilingual's language skills, the language learning process may be accelerated.

Finally, the research reviewed for this thesis supports the metacognitive learning theories essential for developing linguistic awareness skills. "Understanding and controlling cognitive processes may be one of the most essential skills that classroom teachers can help second language learners develop" (Anderson, 2002, p. 2). Getting language learners to think about their thinking regarding language learning will influence their development of the linguistic skills phonology and morphology. Metacognition allows students to plan, control, and evaluate their

own language learning process. Through explicit teaching of phonology and morphology skills and guidance by the teacher, older learners are able to advance in their target language skills of phonological awareness and morphological awareness.

With great anticipation, I look forward to implementing these newly discovered research-based practices in the classroom. First, the role of the brain's plasticity and the processes used to develop language skills must be considered as learning activities are designed. Second, the background linguistic knowledge of the English language students must be reviewed and evaluated in order to develop effective learning activities. The teacher must be aware of the similarities and differences between all languages that come into the classroom, building linguistic awareness so that the vital role of crosslinguistic transfer may be harnessed for the good of the learners. Third, the practitioner is responsible to establish a learning environment where metacognition is understood and used by the learners in the classroom. In this learning environment, the adolescent language student will have the support needed to successfully learn English.

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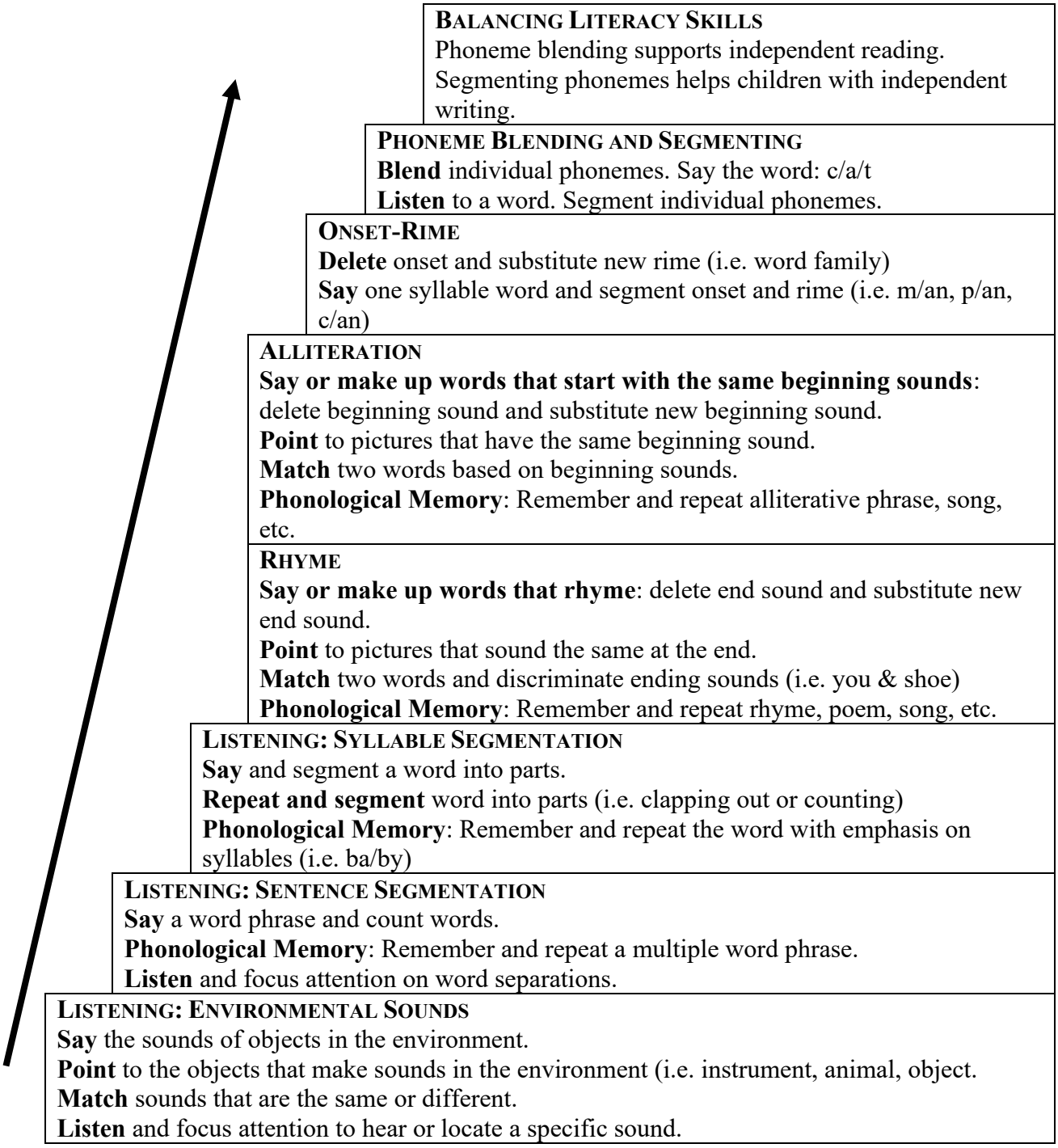
Appendix A: Phonological Awareness Continuum of Complexity



Kate Horst, SEEDS 2003, Revised 2016