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BILINGUAL LANGUAGE DEVELOPMENT AND LANGUAGE IMPAIRMENT IN CHILDREN

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SUMMARY

Language acquisition, and second language acquisition in particular, encompasses a spectrum of factors including age, environment, and the correlation between fluency in one language and competence in a second. Consequently, the study and application of language acquisition theory necessarily incorporates a comprehensive and evolving spectrum of language and language-related neurology research. Neurological research in particular confirms that the processes and elements of language acquisition, including that of a second language, are tangible and quantifiable so these factors can and should be collectively considered in any applied theory of language acquisition.

This is particularly relevant in the field of education and school psychology, where a growing number of children ages 5 to 18 are placed in an environment in which their first and second language acquisition is assessed, monitored and choreographed according to, and limited by, the perspective and paradigm of school administrators. It is important to move away from a well-meaning but kaleidoscopic view of language acquisition toward a more comprehensive model. This article incorporates and builds upon a foundation of research in language acquisition, neurology and language impairment, presenting a framework of considerations from which to evaluate language acquisition. Particular issues include bilingualism, bilingualism with language impairment, and ESL policies in education.

Key words: bilingualism, language acquisition, language neurology, language impairment

LANGUAGE DEVELOPMENT THEORIES

Language development has been studied for decades; various schemes have surfaced and were propagated in an attempt to explain the phenomenon. Nonetheless, many disagreements hover in the field as evident in the various language development theories that have developed. The four main theories that are widely recognized include behavioral theory, nativist linguistic theory, social interactionist theory, and cognitive theory. This article will highlight the main points of each.

The behaviorist theory presents language learning through conditioning whereby the use and expression of language is in response to stimuli. B.F. Skinner, the most well-known behaviorist associated with this theory, theorized that children are conditioned by their environment (parents) to respond to certain stimuli with language (KENPRO, 2010). Behaviorists also propose that the child learns language through imitation. The adult conditions the child to use correct language forms by rewarding efforts to imitate adult language (Frost et al., 2008). It is logical to agree that a language-rich environment helps children develop communication skills, and for this reason the behaviorist approach has been criticized for ignoring many and varied influences on a child's language learning (KENPRO, 2010).

Nativist linguistic theory posits that humans are biologically programmed to gain knowledge. The main theorist associated with this perspective is Noam Chomsky who proposed that all humans are born with a language acquisition device (LAD), an innate mechanism or process that allows children to develop language skills (Language and Communicative Development, 2002). Kaczmarek & Pachalska describe that Chomsky viewed language as a big warehouse of ready-made "biological bounded" structures ready to be chosen by the speaker (2014). According to this theory, children are born with the major principles of language in place, making it possible for them to set the parameters and deduce the grammatical principles, which are innate (Bigge & Shermis, 1998). In other words, because of this hard-wired background in grammar, children can easily acquire a language when they are exposed to its particular grammar.

Interactionist theory claims that language development is both biological and social (Frost et al., 2008). This theoretical view maintains that although children have an innate ability to learn language, it cannot be acquired without socialization and without a social context (Language and Communicative Development, 2002). The main theorist associated with interactionist theory is Lev Vygotsky. His model of collaborative learning states that the use of conversations with older people can help children both cognitively and linguistically (Shaffer, 2002). Other researchers also recognized the significance of environment. Leon Kaczmarek, a researcher in the 1960s, viewed language as complex process and went beyond typical language development (Kaczmarek & Pachalska, 2014) in normally developing persons. He emphasized not only social aspects of language, but also individual significance in persons with communication disorders (Kaczmarek & Pachalska, 2014).

The cognitive theory of language development was proposed by Jean Piaget who theorized that language is made up of symbols and structures, but exhibits itself as a child's mental abilities mature (KENPRO, 2010). This theory found extended application in understanding various domains of child development. Piaget indicated that language is only one of many human mental or cognitive activities and that as children progress through maturation stages, the increasing cognitive development leads to the growth of language (KENPRO, 2010).

The spectrum of theories illustrates attempts to explain the complex and multifaceted phenomenon of language development. Each one of them has brought new perspectives that were considered, incorporated into the body of knowledge regarding language, and have led to deliberations of new knowledge. Nevertheless, each theory has its own unique perceptions as they are also each based on various philosophical positions that might have quite different underlying assumptions (Tahriri, 2012). Tahriri stresses that "'universality' and 'uniformity' are two defining characteristics of first language acquisition and any theory of language acquisition should consider them; otherwise, it falls short of the requirements necessary for an adequate theory of language acquisition" (Tahriri, 2012: 8).

BILINGUAL LANGUAGE DEVELOPMENT THEORY

The underpinning theories of first language development are very important foundational structures on which understanding of second language development can be built. Bilingual development is an ever-growing field with significant changes in its paradigm. Fluctuating views on bilingualism range anywhere from beliefs predominant decades ago that bilingualism may cause cognitive, social, and emotional damage in children (Hakuta, 1990) to more recent beliefs in the cognitive benefits in bilingual children. Adverse views on bilingualism in the United States developed not only based on theoretical perspectives, but also societal beliefs that can be traced back to the turn of the last century (Hakuta, 1990). Societal beliefs developed mainly from concerns about the new immigrants coming from Southern and Eastern Europe who were not adapting adequately to the new society (Hakuta, 1990). Results from inadequate assessment practices of immigrants (McLean, 1995) only enhanced such beliefs. As bilingualism was becoming more prevalent in the United States in mid to late twentieth century, more educators, psychologists, and researchers were interested in studying second language development and its effects in children and adults. With the increased knowledge, today there is a generally positive view on the effects of bi- or multi-lingualism. The United States itself has undergone several societal orientations towards bilingualism over the past few centuries, ranging from a permissive period in the 18th and 19th centuries, through a restrictive period in late 1800's and mid 1900's, a short opportunist period of the 1960-1980s, to a dismissive period that continues in the present time (Ovando, 2003). It is reasonable to speculate that other countries could have undergone through similar or quite different experiences.

Due to the diverse nature of bilingualism, a single universal theory of second language acquisition may not be realistic or adequate. There is a clear need for an increased awareness of the complexity of bilingualism and second language acquisition, particularly within the multicultural and multilingual environments. Presented theories in this article are drawn from recognized theories in the United States.

Early research generally found that monolinguals academically outperformed bilinguals, which ultimately served as the foundation for balance theory development. The Balance theory represents a view that two languages may be co-existing in equilibrium, but the second language increases at expense of the first. This theory usually has visual representation of two linguistic balloons inside the head of the learner; the monolingual individual has one large balloon whereas the bilingual individual has two smaller ones (Baker, 2011).

Cummins challenged this theory in the early 1980s by developing a separate underlying model of bilingualism where the two languages are operating separately, yet linguistic competence is transferred and is interactive (Baker, 2011). The Common Underlying Proficiency model of bilingualism developed by Cummins presents the belief that concepts learned in one language transfer to another language. To visually understand this theory, an Iceberg Analogy is commonly used. Although both languages are visibly different in outward conversation (two iceberg peaks), underneath the surface level the two icebergs come together so that the two languages operate through the same central system (integrated source of thought) (Baker, 2011).

Related theory used to understand bilingual language development is the Threshold theory proposed by Cummins in 1976 and Skutnabb-Kangas in 1977 that describes the relationship between cognition and the level of bilingualism where second language competence depends on the level of competence in first language (Baker, 2011). This theory also maintains that there are language proficiency levels. From this belief, a Linguistic Interdependence Hypothesis developed suggesting that competence in a second language is partly dependent on the level of competence already achieved in the first language (Baker, 2011; Rhodes et al., 2005). This means, the more developed a person's skills are in their native language, the easier it will be to develop the second language. From this concept the concept of Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP) was developed.

BICS represents social and informal language skills and functions that allow speakers to communicate in everyday social contexts. Cummins called BICS context embedded because participants can provide feedback and the situation itself can further understanding (Cummins, 1984). CALP is described as academic language needed to perform school tasks successfully (Cummins, 1984). Cummins called CALP context-reduced (abstract and decontextualized) communication because there are few concrete cues to aid in comprehension and involves a systematic thought process (Cummins, 1984). The CALP language is representative of language proficiency skills that are necessary to be fully functioning

in the second language. Both BICS and CALP proficiencies have been used as very important guides in working with bilingual individuals in educational settings.

The above discussed theories are important illustrations of trajectories regarding bilingual education. Newer theories will probably develop based on what has already been explored and learned. Still, understanding the underlying theories of bilingualism can assist in the process of deciding on the course of action and strategies to implement and support an effective second language learning process.

NEUROLINGUISTIC BASIS

As evident in the highlighted theories, language development is a complex and a unique human quality that no theory is as yet able to comprehensively explain. Still, there is another layer in understanding language development, and such is based in neurology and the anatomy of the brain. Many scientists have performed various studies to help localize which parts of brain are involved in language. Brain imaging techniques like magnetic resonance imaging (MRI), positron emission tomography (PET), and functional magnetic resonance imaging (fMRI) have been used to study the neurology and functioning of brain. To understand language development, the primary focus has been on determination of the brain activation during specific language tasks.

Scientists have documented that the area of the brain which contains the cerebral structures for communication has been identified as Broca's, Wernicke's, arcuate fasciculus, angular gyrus, supramarginal gyrus, subcortical areas, motor cortex, corpus callosum (Mayeux & Kandel, 1991). The perisylvian region holds the majority of language tissue. Broca's area (located in the frontal portion of the left perisylvian area) is believed to be involved in grammatical processing and structure rather than the specific units of meaning (Swenson, 2006). It seems to be involved in the function aspect rather than the content areas of language. Wernicke's area on the other hand (in the lower posterior part of the perisylvian region) controls comprehension, as well as the selection of content words (Swenson, 2006).

Based on ongoing research, it is believed that being bilingual yields changes in the anatomy of the brain. Neuroimaging and neurophysiological techniques allow researchers to study brain structure and function as it relates to language development. As a result, there is evidence indicating abnormal asymmetry in the perisylvian areas, subcortical anomalies, atypical gyral morphology, and deviant linguistic and nonlinguistic processing in persons with language impairment (Schwartz, 2009). Patterns of brain activation measured by brain imaging studies suggest that second language learned after the age of seven activates the various brain regions associated with language processing to different extents than does their first language (Paradis, 2003).

Neuroscientists have found that people who speak two languages have more gray matter in the language region of the brain. In 2004, Mechelli and her re-

search team from University College in London identified an increase in the density of grey matter in the left inferior parietal cortex of bilinguals relative to monolinguals, which is more pronounced in early rather than late bilinguals, and have also shown that the density in this region increases with second-language proficiency but decreases as the age of acquisition increases (Mechelli et al., 2004). It is known that grey matter in the brain is made up of neurons, or brain cells, but scientists do not know whether the change means there is an increase in the size of the cells, the number of cells, or the connections between them (Mechelli et al., 2004).

Imaging technology studies show individual differences in second language proficiency resulting from different language acquisition and use. More right hemisphere participation may be seen in earlier and less proficient stages of second language acquisition (Paradis, 2003). Learning a second language increases the density of grey matter in the left inferior parietal cortex and the degree of structural reorganization in this region is modulated by the proficiency achieved and the age at acquisition (Mechelli et al., 2004). This relation between grey-matter density and performance may represent a general principle of brain organization (Mechelli et al., 2004). At the same time, findings from Mechelli's research suggest that the structure of the human brain is altered by the experience of acquiring a second language and are consistent with growing evidence that the human brain changes structurally in response to environmental demands (2004). Therefore, the ability to learn a new language is influenced by functional experience rather than structural, plastic changes in the brain.

BI- AND MULTILINGUAL LANGUAGE DEVELOPMENT

The majority of the world's population today are bilingual or multilingual, with monolinguals being the exception (Baker, 2006). Many countries have long histories of bi- or multilingualism; many traditionally monolingual countries are experiencing increasing bilingualism due to immigration (August & Shanahan 2006). For instance, according to U.S. statistics, more than 18% of individuals over the age of five speak a language other than English in the home (U.S. Bureau of the Census, 2000). By the year 2030 estimates are that 40% of U.S. children will learn English as their second language (U.S. Department of Education & National Institutes of Child Health and Human Development, 2003 as cited in Kohnert, 2010). Therefore, before discussing bilingualism in greater detail, it is appropriate to address definitions of bilingualism as they vary from Bloomfield's (derived in 1933) insistence that a bilingual is a person who has full fluency in two languages to the more pragmatic assertion by Grosjean in 1989 that a bilingual is someone who can function in each language according to given needs (Bialystok, 2001). Commonly defined bilingualism is the use of at least two languages (ASHA, 2004).

It is a popular view that children learning language in a bilingual environment have both similarities and differences in comparison to monolingual acquisition.

Still, looking at language from a global perspective, many believe that all children learn language in the same sequence although the timing may vary for different languages (Language and Communicative Development, 2002). For example, from the moment of birth, an infant uses cries and facial expressions to communicate his needs, can distinguish his mother's voice from other voices, and can discriminate among many different speech sounds (Berger, 2000). Subsequently, steps toward speech and the use of language develop at regular intervals (Berger, 2000).

Understanding first language development is very important in aiding understanding second (or consequent) language development. Many impatiently question how long it should take to become proficient in a second language. Answering the question may benefit from looking through a framework of first language acquisition which takes up to 12 years in the English language (Collier, 1989). Within this process simple and complex skills are developed, often requiring ongoing expansions (i.e., vocabulary or reading skills). Within the estimated 12 years of learning a native language, phonology, vocabulary, grammar, semantics, pragmatics, rules of morphology, syntax, reading, and writing are learned (Collier, 1989).

Second language development is impacted by various factors, including the timing and approach of learning. Bilingual language development is usually categorized as early or late, simultaneous early bilingualism and sequential (consecutive or successive). Simultaneous bilingualism is considered as early bilingualism as the child learns both languages from birth or shortly after (Rhodes et al., 2005). Consecutive bilingualism occurs when the second language is learned after the first language is learned or partially learned (Rhodes et al., 2005) (usually after age three). Sequential language learners have learned conceptual knowledge in their first language and can make use of the prior knowledge, skills, and tactics in learning the second language (Ervin-Tripp, 1974).

There is also a concept called passive bilingualism (or receptive bilingualism) which refers to being able to understand a second language without being able to speak it (Chin & Wigglesworth, 2007). For instance, children living in the United Kingdom, who respond in a relevant way in English when they are addressed in Polish could become passive bilinguals, as their mastery of oral expression in Polish decreases. The preference for not replying in the addressed language is often due to lack of confidence in their expressive skills. This is especially evident in subsequent generations of immigrant families.

In the 1960s yet another terminology emerged in attempt to describe individuals that appear to have limited proficiency in both languages. Later, researchers indicated that semilingualism is a product of the environment and not a consequence of bilingualism since a monolingual in the same environment would have faced the same degree of struggle (Chin & Wigglesworth, 2007). The term semilingualism is not fashionable anymore and is discouraged from use, but the idea of low-achieving bilinguals who are not linguistically competent in either the first language or second language is still discussed (Chin & Wigglesworth, 2007). Cummins acknowledges that labeling someone as a "semilingual" is highly neg-

ative and may be detrimental to children's learning; he proposes an alternative terminology, "limited bilingualism" to describe the same condition (Chin & Wigglesworth, 2007).

Another aspect associated with bilingualism is the way a second language is learned. Language can be learned through additive or subtractive methods. In additive or compound bilingualism the person learns the languages in the same environment and context and they are often used concurrently or even interchangeably (Flynn et al., 2005). Such an approach can be witnessed when a child is raised in a bilingual household by bilingual parents and both languages are used in the home. Such a person sees the languages are not separate and can be switched between.

Subtractive or coordinate bilingualism is a framework in which the languages are learned separately, in separate environments, and the separation is maintained after mastering both languages (Flynn et al., 2005). This could be illustrated by a child who speaks one language at home, acquired through his parents in the home environment, and then learns a second language in another environment like school. In this situation the first language is not used in the school environment and the second language is not used in the home environment. Ultimately, the languages remain separate in the learner's mind.

Second language learning is a complex process that involves multiple steps of learning. It is recognized that children learning a second language go through four stages: preproduction, early production, speech emergence and intermediate fluency (Rhodes et al., 2005). Each step may vary in length based on the frequency of the language use and the supportiveness of the environment in which this learning takes place. Within these stages several characteristics are observed: interference, interlanguage, silent period, code switching, language loss, and language differences (Rhodes et al., 2005). Understanding these learning processes will help in understanding the learning process and proficiency levels related to second language learning.

It is evident that language learners go through various stages of proficiency, which begs to define what language proficiency is. Bialystok defines it as the "ability to function in a situation that is defined by specific cognitive and linguistic demands, to a level of performance indicated by either objective criteria or normative standards" (2001: 18). According to that definition, complex demands are involved in demonstrating proficiency. Language proficiency includes both formal structure and communicative application (Bialystok, 2001). Language proficiency further fosters cultural knowledge and learning, and at the same time, cultural experiences shape the way children learn and see the world (ECLKC, 2014). It is a common agreement that a language-rich environment can enhance and expedite the language learning process. Learning language through consistent exposure in real life situations provides opportunities for meaningful application of newly learned skills in naturally existing situations.

Based on information presented so far, it is evident to see that since the age and way of learning the new language varies among bilinguals, their language lean-

ing needs will differ. It is very important that children who are learning two languages maintain their first language and continue to learn vocabulary and conceptual skills in their home language because without this continued development in the home language, they will have greater difficulty developing skills in the second language (Collier, 1989). One study found that language proficiency in the first language (Turkish in that study) predicted children's level of second language (Dutch in that study), concluding that linguistic skills in the first language support the development of linguistic skills in the second language (Verhoeven et al., 2012). Not only are there benefits to maintaining the home language while progressing in the acquisition of English, but there are also costs to losing the home language. It is important for young children to have access to their home language while they are making sense of new experiences and concepts. Without this, both language and intellectual development may be adversely affected (Sanchez, 2005). Loss of the home language could cause children's thinking and reasoning skills to suffer and could have potential impacts on developing self-concept (Bialystok, 2001).

Another common myth is the assumption that a child with a disability would be confused if exposed to more than one language. Some educators might even insist that these children be exposed to only the mainstream language (i.e. English) and not their home language (i.e. Spanish). However, this approach may actually harm the child's learning and social development (California Department of Education, 2007). Researchers have shown that children with disabilities can learn a second language and function as well in both languages as their peers who do not have disabilities (Candelaria-Greene, 1996). Still, some researchers acknowledge that bilingual children with speech and language impairments tend to have an additional disadvantage in their second language as they have to learn a second language with a specific language impairment in restricted conditions of input (Verhoeven et al., 2012)

It is widely agreed that it is better to learn a new language at a younger age due to brain plasticity. Kuhl described that babies carefully listen to the sounds surrounding them and determine the sounds that they need to communicate (2011). The most frequently occurring sounds are selected as being useful, and the less frequent ones are abandoned. The decline in phonetic discrimination occurs for nonnative phonemes by the end of the first year (Kuhl et al., 2011). Until the age of about six or seven years old, children are linguistic geniuses (Kuhl et al., 2011). The ability to learn a second language steadily declines (Kuhl et al., 2011) which partially may explain why children who become bilingual at an early age have no native accent and adults who learn a second language usually retain an accent. Other research has found that the level of children's bilingual proficiency is dependent on children's working memory (Brown & Hulme 1992 as cited in Verhoeven et al, 2012) and to a lesser degree on non-verbal intelligence (Genesee et al., 2004 as cited in Verhoeven et al., 2012).

LANGUAGE IMPAIRMENT

Researchers and practitioners are using various terminology addressing speech and language impairments, or communication disorders. The definition of specific language impairment specifies that it is impairment in language comprehension, language production, or both that cannot be accounted for by of hearing impairment, development delay, physical abnormality of the speech apparatus, autism spectrum disorder, or neurological impairment (Schwartz, 2009). Specific language impairment is also called developmental language disorder, language delay, or developmental dysphasia (NIDCD, 2011). The Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM 5) groups expressive and receptive impairments under Communication Disorders. Within this domain, five disorders are identified: Language Disorder, Speech Sound Disorder, Fluency Disorder (Stuttering), Social (Pragmatic) Communication Disorder, and Unspecified Communication Disorder (American Psychiatric Association, 2013). The United States educational system has its own diagnostic criteria guided by a special education federal law called IDEA 2004, which groups expressive and receptive impairments into one diagnostic category called Specific Language Impairment. Addressing all types of speech and language impairments and disorders would exceed the scope of this article. Therefore, after exploring theoretical bases and developmental trajectories, this article focuses on normal and abnormal language development as it relates to the children's general functioning, mainly in home and educational environments. Similarly, the most frequent terminology used will be general terminology called language impairments or disorders.

Language impairment is one of the most common childhood learning disabilities, affecting approximately seven to eight percent of children in kindergarten in the United States (NIDCD, 2011) and its impact persists into adulthood. No epidemiological studies could be identified addressing language impairment in children learning two languages (Kohnert, 2010). Language disorders have equal chances to develop in monolingual children as in bi- or mono-lingual children. It has been documented that in the U.S about 7% of English-only speaking school-age children are diagnosed with language impairments; therefore, it could be anticipated that approximately 7% of dual-language learners will have language impairments (Tomblin et al., 1997 as cited in Kohnert, 2010). A bilingual environment does not, in and of itself, put children with language impairments at either an additional advantage or disadvantage situation relative to monolingual children with a similar disorder, when all other factors known to affect language outcomes are equal (Kohnert, 2010).

The limited research on bilingual children with language impairments has concentrated on linguistic skills in the two languages (Verhoeven et al., 2012) but researchers try to expand beyond the existing research and address other components of language impairments as well. A majority of the available studies in the United States have focused on language impairment in the English language;

fortunately there are a growing number of cross-linguistic studies. This, along with existing research on other languages conducted in other countries, will aid in a better understanding of language impairment in bi- and multilingual children. A limitation of these studies that most of these cross-linguistic studies have focus on morphosyntactic structure rather than deficits in the semantic domain or narrative production (Bedore & Pena, 2008). Language impairment is evident as slowed vocabulary acquisition, language-specific morphosyntactic errors and reduced discourse organization (Bedore & Pena 2008). Studies document that bilingual children with language impairment have a slowed vocabulary acquisition (Thordardottir et al., 1997; Amberts, 1986; Restrepo & Kruth 2000, as cited in Bedore & Pena 2008), yet bilingual children with language impairment demonstrated similar difficulties with learning new words as did monolingual children with language impairments as documented in 1992 and 2001 studies conducted by Pena et al. (Bedore & Pena, 2008). Overall, research shows that children growing up in bilingual environments know the same number of words as monolingual children (Patterson, 2000).

Until recently, it was perceived that when bilingual children were mixing elements of different languages into the same sentence (code mixing) it was a sign of speech-language disorder. It is more widely recognized now that it is common among children in the early stages of bilingualism. However, there are some differences between code mixing as part of bilingual development and code mixing associated with language impairment. Bilingual children may mix languages, but do not mix up lexical classes or switch between grammatical boundaries (Paradis et al., 2000), so the grammar stays compatible.

It is not unusual for the structure, syntax and pronunciation of a child's first language to affect their emerging language. In monolingual children with language impairment, several areas of language may be affected including vocabulary (e.g., Gray, 2004; Rescorla, 2005, as cited in Kohnert, 2010), morphosyntax (e.g., Bedore & Leonard, 2001; Cleave & Rice, 1997, as cited in Kohnert, 2010), discourse (e.g., Scott & Windsor, 2000, as cited in Kohnert, 2010), written language (e.g., Mackie & Dockrell, 2004, as cited in Kohnert, 2010), and social language (e.g., Fujiki et al., 1999, as cited in Kohnert, 2010). Furthermore, children with language impairment also process language more slowly and less efficiently than unaffected peers (e.g., Graf Estes et al., 2007; Kohnert et al., 2004; Lahey & Edwards, 1996 as cited in Kohnert 2010).

For bilingual children with language impairment, the underlying impairment manifests in both languages. Therefore, children with language impairment learn both their languages at a slower pace compared to their typically developing bilingual peers (Hakansson et al., 2003).

IDENTIFICATION OF LANGUAGE IMPAIRMENT

Identification and assessment are integral parts of the discourse on language impairment. This article will focus on identification and assessment in clinical and

educational settings rather than medical assessments involving more intrusive methods that are mainly conducted for research purposes. Although non-medical assessment is less intrusive, at the same time it is more subjective than medical procedures. Difficulties in identifying language impairment in bilingual children have been widely documented (e.g. Crutchley et al., 1997; Damico & Oller, 1983; Schiff-Meyers, 1992, as cited in Bedore & Pena, 2008) and still are a focus of ongoing research. Having a fundamental understanding of first and second language development, understanding what a language impairment is, and how it manifests itself in monolingual versus bilingual children, are tremendous foundations for appropriate and sensitive assessment practices. It is extremely important to understand and employ appropriate assessment practices to avoid unnecessary over-identification or under-identification of bilingual children with language impairment.

Through specialized research there is evidence that genetic and neurological conditions correlate with language impairment, but language impairment is identified solely on the basis of behavioral data (Schwartz, 2009). Assessment is the process of gathering and interpreting relevant data to make informed decisions about a course of clinical action. Generally, the process has three common aims: (1) to determine if the referred child's language abilities are substantially below the performance range expected for typically developing peers; (2) to determine the nature of an identified language disorder (e.g., differentiating language impairment from low language associated with more global developmental delays); and (3) to plan a course of action that will maximize the child's long-term language, learning and social outcomes (Kohnert, 2010).

Data gathering usually can be separated into informal and formal assessment process, most often consisting of informal, non-standardized procedures that include observational notes, checklists, rating scales, student work samples, and portfolios. Diagnostically, standardized assessments where all children are assessed in the same way are commonly used as part of the assessment process. Criterion-referenced measures in which a child's performance is compared to predetermined criteria indicating what skills children should have at their age and/or established learning standards (Espinosa & Lopez, 2007). Norm-referenced measures in which a child's performance is compared against the performance from a national or other large standardization sample (Espinosa & Lopez, 2007) is also frequently used.

Assessment tests, which have been normed on bilingual children, may be used to complement informal language evaluation. It is a common practice to use standardized norm-referenced tests assessing bilingual children although usually they are not normed on bilingual populations. Frequently, evaluators do not apply norms to obtain standard scores, but use the findings qualitatively. However, it is problematic when these findings are used without recognition that the obtained results are dependent on cultural familiarity with the materials, and that instructions may not be perfectly understood or may require the child to perform an unfamiliar task (De Lamo et al., 2011).

Researchers agree that multiple assessment approaches should be employed with comprehensive, integrated, bilingual assessment system (Espinosa & Lopez, 2007) that will look at the entire language system in both languages. Because sequential bilingual children are more likely to score in the at-risk range on these tests, it becomes difficult to distinguish between children who are struggling to learn a new language and children with true language impairments. Assessors need to be familiar with common milestones in monolingual language development and adopt them to the bilingual child (Fierro-Cobas & Chan, 2001).

All children sometimes make various kinds of mistakes as they learn language and even adults make language errors once in a while. But the pattern of errors is a prominent feature of the language of someone who has language impairment. Some of the commonly made errors are also characteristic of common errors made during the process of first language and a second language acquisition. Therefore, it is important to establish the degree of errors (Bedore & Pena, 2008). A general guideline rule provided is that when children are making more than 20-25% errors in their dominant language then it is a sign of possible language impairment (Bedore & Pena, 2008). Children with language impairment make errors in both of their languages and as with monolinguals, the errors occur frequently and not sporadically (Bedore & Pena, 2008). Detecting speech and language delays or disorders in multilingual children is usually challenging due to limited knowledge about bilingual language development, limited knowledge about characteristics overlapping in second language learning and language disorder, limited availability of bilingual assessors familiar with the child's culture, limited availability of assessment tools in languages other than the mainstream language, limited culturally sensitive assessments, and/or lack of uniform assessment procedures.

As indicated earlier, bilingual children may have distributed vocabulary knowledge across their two languages, and examination of only one language may underestimate a child's language skill (Bedore & Pena, 2008). Assessment of both languages of bilingual children is necessary for correct decision making. Inaccurate assessment tools and procedures can lead to unnecessary evaluations and misdiagnosis.

CONCLUSION

In order to have an adequate understanding of normal and abnormal language development leading to possible disorders, it is important to understand the underlying theories of first and subsequent language development, have awareness of neurolinguistic development, and be cognizant of environmental factors influencing development. It is difficult to escape the conclusion that language is part of our biological heritage, an achievement that depends upon the unique characteristics of the human brain (Bates, 2002), yet with growing research support it is impossible to ignore the role of environment. Researchers recognize unfavorable environments during the child's formative years as main

causes of delayed development (Glozman, 2013).

Exposure to bilingual environments does not disproportionately affect children with language impairment (Paradis, 2010), but language-rich environments have positive effects on both first and second language acquisition. Neuroimaging studies confirm that the structure of the human brain is altered by the experience of acquiring a second language and that the human brain changes structurally in response to environmental demands (Mechelli et al., 2004). Consequently, based on this evidence it seems appropriate to teach children with language impairments multiple languages. Furthermore, it has been suggested by research since 1960 that there are a positive relationship between bilingualism and cognitive development (Caraballo, 1982).

It is commonly known that monolingual children with language impairment are challenged in learning and using their language; similarly, bilingual children with language impairment are challenged in learning or using two languages. When there is persistent concern regarding a child's language skills, it is recommended to complete an evaluation to confirm or rule out language impairment. Assessment has to be culturally sensitive employing recommended best practices for evaluation of linguistically and culturally diverse children. As part of such evaluation, the amount of time of exposure and content of the first and second languages influence acquisition patterns need to be considered. There needs to be awareness that there are overlapping characteristics between language impairment and second language acquisition. It is imperative to use best assessment practices, appropriate assessment tools, and multiple sources of data in order to obtain reliable results that eventually will lead child-centered decision making.

REFERENCES

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- American Speech-Language-Hearing Association (ASHA). (2004). Knowledge and skills needed by speech-language pathologists and audiologists to provide culturally and linguistically appropriate services [Knowledge and Skills]. Retrieved from www.asha.org/policy.
- August, D., & Shanahan, T. (2006). *Developing literacy in second language learners: Report of the National literacy panel on language-minority children and youth*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Baker, C. (1993). *Foundations of bilingual education and bilingualism*. Clevedon, UK: Multilingual Matters.
- Baker, C. (2006). *Foundations of bilingual education and bilingualism* (4th ed.). Clevedon, UK: Multilingual Matters.
- Baker, C. (2011). *Foundations of bilingual education and bilingualism* (5thed.). Bristol, UK: Multilingual Matters.
- Banich, M. T., & Mack, M. (2003). *Mind, brain, and language: multidisciplinary perspectives*. Mahwah, NJ: Taylor & Francis.
- Bates, M. (2002). Toward an integrated model of information seeking and searching. *The New Review of Information Behaviour Research*, 31-15.
- Bedore, L. M., & Peña, E. D. (2008). Assessment of Bilingual Children for Identification of Language Impairment: Current Findings and Implications for Practice. *International Journal of Bilingualism and Bilingual Education*. 11 (1), 1-29.

- Bedore, L., Peña, E., Joyner, D., & Macken, C. (2011). Parent and teacher rating of language proficiency and concern: Accurate interpretations from different observations. *International Journal of Bilingualism and Bilingual Education*, *14*, 489-511.
- Berger, C. R. (2000). Goal detection and efficiency. Neglected aspects of message production. *Communication Theory*, *10*, 156-166.
- Berger, K. (2000). *The developing person through childhood and adolescence* (5th ed.). New York: Worth Publishers.
- Bialystok, E. (2001). *Bilingual development: language, literacy, and cognition*. Cambridge University Press. New York, NY. ISBN 521 63 507 1.
- Bigge, M. L., & Shermis, S. S. (1998). *Learning theories for teachers* (6th ed.). New York: Addison Wesley Longman, Inc.
- California Department of Education: Child Development Division. (2007). *Preschool English learners: Principles and practices to promote language, literacy, and learning – A resource guide*. Sacramento, CA: CDE Press.
- Candelaria-Greene, J. (1996). A paradigm for bilingual special education in the USA: Lessons from Kenya. *The Bilingual Research Journal*, *20* (2, 4), 545-564.
- Caraballo, J. N. (1982). *Bilingualism and cognitive development* (Doctoral Dissertation). Retrieved from <http://files.eric.ed.gov/fulltext/ED226575.pdf>. (ED226575)
- Chin, N. B., & Wigglesworth, G. (2007). *Bilingualism: An advanced resource book*. London, UK: Taylor & Francis Ltd.
- Collier, V. P. (1989). How long? A synthesis of research on academic achievement in second language. *TESOL Quarterly*, *23*, 509-531.
- Cummins, J. (1984). *Bilingualism and special education: Issues in assessment and pedagogy*. San Diego: College-Hill.
- De Lamo White, C., & Jin, L. (2011). Evaluation of speech and language assessment approaches with bilingual children. *International Journal of Language and Communication Disorders* *46*: 613–627.
- ECLKC. (2014). *Dual language learning: What does it take?* Head Start, An Office of the Administration for Children and Families; Early Childhood Learning. Knowledge Center, ECLKC. Retrieved from <http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/eecd/Dual%20Language%20Learners%20and%20Their%20Families/Learning%20in%20Two%20Languages/DualLanguageLea.htm>.
- Espinosa, L., & Lopez, M. (2007). *Assessment considerations for young English language learners across different levels of accountability*. Paper prepared for The National Early Childhood Accountability Task Force. Retrieved from <http://www.first5la.org/files/AssessmentConsiderationsEnglishLearners.pdf>.
- Ervin-Tripp, S. M. (1974). Is second language learning like the first? In E.M. Hatch (Ed), *Second language acquisition* (pp. 190-206). Newbury, UK: Rowley.
- Fierro-Cobas, V., & Chan, E. (2001). Language development in bilingual children: A primer for pediatricians. *Bilingual Children. Contemporary Practices*, *18* (7). Retrieved from http://courses.washington.edu/sop/Bilingualism_PrimerPediatricians.pdf.
- Flynn, S., Foley, C., & Vinnitskaya, I. (2004). The cumulative-enhancement model for language acquisition. *International Journal of Multilingualism*, *1* (1), 3–16.
- Friederici, A. D. (2006). The neural basis of language development and its impairment. *Neuron*, *52*(6), 941-952. doi:10.1016/j.neuron.2006.12.002.
- Frost, S. C., Wortham, S. C., & Reifel, S. (2008). *Play and child development*. Upper Saddle River, NJ: Pearson/Merrill Prentice Hall.
- Glzman, J. (2013). The history of developmental neuropsychology. *Acta Neuropsychologica*. *11*(3), 231-137. doi: 10.5604/17307503.1084373
- Hakansson, G., Salameh, E., & Nettelblatt, U. (2003). Measuring language development in bilingual children: Swedish-Arabic children with and without language impairment. *Linguistics*, *4* (1), 255–288.

- Hakuta, K. (1990). Language and cognition in bilingual children. *Advances in Language Education*. Retrieved from [http://web.stanford.edu/~hakuta/Publications/\(1990\)%20-%20LANGUAGE%20AND%20COGNITION%20IN%20BILINGUAL%20CHILDREN.pdf](http://web.stanford.edu/~hakuta/Publications/(1990)%20-%20LANGUAGE%20AND%20COGNITION%20IN%20BILINGUAL%20CHILDREN.pdf)
- Hasson, N., Camilleri, B., Jones, C., Smith, J., & Dodd, B. (2013). Discriminating disorder from difference using dynamic assessment with bilingual children. *Child Language Teaching and Therapy*, 29(1), 57-75.
- Kaczmarek, B. L., Pačalska M. (2014). Leon Kaczmarek's theory of speech and its significance for contemporary neuropsychology. *Acta Neuropsychologica*. 12(2), 127-142. doi: 10.5604/17307503.1111841.
- KENPRO. (2010). Theories of language development in children. *KENPRO Online Papers Portal*. Retrieved from <http://www.kenpro.org/papers/theories-of-language-development-in-children.htm>.
- Kohnert, K. (2010). Bilingual children with primary language Impairment: Issues, evidence and implications for clinical actions. *Common Discord*, 43(6): 456–473. doi: 10.1016/j.jcomdis.2010.02.002.
- Kuhl, P. K, Conboy, B. T., Padden, D., Nelson, T., & Pruitt, J. (2011). Early speech perception and later language development: implications for the critical period. *Language Learning and Development*, 1 (3-4) 237-264. doi: 10.1080/15475441.2005.9671948.
- Language and Communicative Development (2002). Theories and patterns of language development [Content]. University of Kansas. Retrieved from http://elearndesign.org/teachspeacial/modules/ocada7081_norm2/23/24_2/35alias2.html.
- Mayeux, R., & Kandel, E. R. (1991). Disorders of language: The aphasias. In: E. R. Kandel, J. H. Schwarz & T. M. Jessell (Eds.), *Principles of Neural Science*, (3rd ed), (pp. 840-851). Elsevier, Amsterdam.
- McLean, Z. Y. (1995). History of bilingual assessment and its impact on best practice used today. *New York State Association for Bilingual Education Journal*, 10: 6 -12.
- Mechelli, A., Crinion, J. T., Noppeney, U., O'Doherty, J., Ashburner, A., Frackowiak, R. S., & Price, C. J. (2004). Neurolinguistics: Structural plasticity in the bilingual brain. *Nature*, 431 (7010), 757.-757. doi:10.1038/431757
- National Institute on Deafness and Other Communication Disorders (NIDCD). (2011). Specific Language Impairment. NIH. Retrieved from <http://www.nidcd.nih.gov/health/voice/pages/specific-language-impairment.aspx> .
- Ovando, C. (2003). Bilingual education in the United States: Historical development and current issues. *Bilingual Research Journal*, 27 (1).
- Paradis, M. (2003). Differential use of cerebral mechanisms in bilinguals. In M.T. Banich & M. Mack (Eds). (2003). *Mind, brain, and language: Multidisciplinary perspectives*. London, UK: Lawrence, Erlbaum.
- Paradis, J. (2010). The interface between bilingual development and specific language impairment. *Applied Psycholinguistics*, 31, 227-252.
- Paradis, J., Nicoladis, E. & Genesee, F. (2000). Early emergence of structural constraints on code-mixing: Evidence from French-English bilingual children. *Bilingualism: Language and Cognition*, 3, 245-261.
- Patterson, J. L. (2000). Observed and reported expressive vocabulary and word combinations in bilingual toddlers. *Journal of Speech, Language and Hearing Research* 43(1), 121-128.
- Sanchez, S. Y. (2005). *Is it wrong to speak to my babies in their home language?* *Head Start English Language Learners Toolkit*. Department of Health & Human Services. Head Start Bureau. Washington, D.C.: U.S.
- Schwartz , R. G.(2009.) Specific language impairment. In: Schwartz R.G, (Ed). *Handbook of child language disorders*. 2009. pp. 3–43. New York: Psychology Press.
- Swenson, R. (2006). The cerebral cortex. Review of clinical and functional neuroscience. Retrieved from http://www.dartmouth.edu/~rswenson/NeuroSci/chapter_11.html
- Tahriri, A. (2012). Revisiting first language acquisition through empirical and rational perspectives. *International Journal of Social Sciences & Education*, 3 (3).

- U.S. Bureau of the Census. (2000). Languages spoken at home. Retrieved from <http://www.census.gov>.
- Verhoeven, L., Steenge, J., & Van Balkom, H. (2012). Linguistic transfer in bilingual children with specific language impairment. *International Journal of Language and Communication Disorders, 47* (2), 176-183. doi 10.1111/j.1460-6984.2011.00092.x.
- Westman, M., Korkman, M., Mickos, A., & Byring, R. (2008). Language profiles of monolingual and bilingual Finnish preschool children at risk for language impairment. *International Journal of Language & Communication Disorders, 43*, 699-711.

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