International Journal of Innovation and Research in Educational Sciences
Volume 2, Issue 4, ISSN (Online): 2349–5219

Bilingualism and Phonology: Production, Perception, and Awareness in Early Bilinguals

Isadora Reynolds C.
Adjunct Professor, Language and Linguistics Department
University of Santiago, Chile
Email: iareynol@uc.cl

Abstract **– This paper discusses the relationship between bilingualism and phonology. It concentrates on three aspects of phono-phonological development in children: perception, production, and phonological awareness. The discussion of these aspects then leads to a literature review on the impact of bilingualism in literacy. With regards to this, several studies show that the perception of both prosodic and segmental characteristics of a language begins at an early age and that there is a threshold period for the distinction of phonemic contrasts that occur in the second half of the child's first year. Pre-linguistic production does not seem to be influenced by bilingualism, neither at the prosodic nor the segmental level. Early production does involve some level of interaction between the two language systems at a cognitive level. This interaction can either aid the development of some skills or lead to a slower, but age-appropriate, development of others. Phonological awareness, however, seems to be positively influenced by bilingualism, although there is no agreement on whether the transference of this skill between two languages is fundamentally beneficial for the child. Also, there are several views on how an advanced phonological awareness would impact literacy and if the transfer of this skill can hinder or improve a child's performance.**

Keywords **– Early Bilingualism, Phonology, Phonological Awareness.**

I. Introduction

Research carried out in the area of the phono-phonological production and perception competences in monolingual and bilingual children have focused on three areas: 1) the child's abilities for phonemic discrimination at early stages of development and early segmental acquisition and production, 2) how bilingualism can have an impact on phonological awareness, and 3) the relationship between this high-order skill and literacy. In this occasion, the researchwill review these three different aspects focusing on how they occur in early bilingual language acquisition. The first issue to be addressedis how preverbal infants begin to develop their perceptual skills, bothata prosodic and segmental level [1-4]. We will then review if there is any difference in phonemic discrimination processes in bilinguals vs. monolinguals. Second, we will attempt to discuss differences in bilinguals and monolinguals at early stages of speech production. After this, we will review what different authors have said about the impact of bilingualism on phonological awareness as a metalinguistic skill [2, 10]. Finally, we will discuss the correlation between phonological awareness, literacy, and bilingualism [3, 9]. For the purpose of this paper, the term "early bilinguals" will be used to refer to balanced bilinguals, i.e. those bilingual children who exhibit a similar level of proficiency in both languages. Though the existence of balanced bilinguals has been questioned [4], we will work under the assumption that early bilinguals show levels of proficiency that are not as dissimilar as they would be in the case of a second language speaker.

II. Bilingualism and Phonological Competences

The impact of bilingualism on phonological competences is yet unclear. Studies carried out in the field have not been able to state whether early bilingualism has a positive or a negative effect on an infant's ability for phonological production and perception. A close look into the literature on the topic reveals that there is not a clear-cut relationship between perception/production skills and bilingualism. Nor does there seem to be an agreement on whether or not being bilingual does actually boost phonological awareness, and, if it does, whether or not this has any impact on other areas of a child's language development. We will now review this literature in more depth.

III. Preverbal development and perception

Several studies have aimed at explaining the processes of phonetic representations in preverbal infants. Reference [1] argues that infants have some acoustic recognition abilities with which they can discriminate relevant language features of the mother tongue at an early age. The first representations of the language in the infants' minds are prosodic in nature, where a two month old child is capable of discriminating those intonation patterns that characterize their first language as distinct from any another languagethey come in contact with [1]. At a segmental level, one month old children are able to detect contrasts in voicing such as the difference between voiced /p/ and voiceless /b/. Reference [2] explains that infants are born with the ability to "hear all the different phonetic sound contrasts they may come across in any of the languages to which they may be exposed to"(p. 179). This ability, nevertheless, declines before they reach one year of age, when children become language-specific listeners [2]. This means that they are able to discriminate only those contrasts that are phonemic in their mother tongue, but not those whose realizations are in complementary distribution.

In the case of bilingual children, we start under the premise that they are exposed, since the time of their

Copyright © 2015 IJIRES, All right reserved

births, to the different languages spoken around them. With respect to the process of segmental discrimination, [3] states that infants go through a developmental reorganization in segment perception at the same time as their monolingual counterparts. In other words, bilingual children will start mapping out their phonemic representations in the same order as monolinguals. There is, however, a possible difference in terms of how two different phonological representations might influence other areas of language acquisition. According to [4] it is likely that differentiation of phonological systems precedes the separation of syntactic systems and it is even possible to assume that "language differentiation is initiated and enhanced by phonological bootstrapping into two distinct systems" (p. 100). Phonological bootstrapping means that, considering that languages may develop at different paces, there is the possibility that "themore advanced system will boost the development of the less advanced"(p. 101) [4]. This could probably imply that, although the mapping of phono-phonological characteristics of the language's inventories is 'chronologically' the same for bilinguals and monolinguals, bootstrapping might lead to advanced differentiation of two language systems for bilinguals. From this we can deduce that bilinguals would have a more developed phonological perception at a segmental level. When it comes to prosodic features, [1] states that it is possible that prelinguistic infants in bilingual homes are capable of discriminating between intonation patterns in both the languages they are exposed to as well as those unfamiliar to them. Reference [3] approaches this prosodic discrimination from a dual language input perspective, stating that prosody cues early discrimination of two different languages due to the fact that several prosodic characteristics are language-specific. The dual systems hypotheses of bilingual language acquisition maintains that bilingual children develop two distinct and separate language systems for each language [5]. This hypothesis, in contrast to the unitary system theory, believes that the two systems developed by the child would not interact.

IV. Early Production

Reference [1] mentions some implications of bilingual input at the segmental and suprasegmental levels in pre-verbal infants. One would expect that intonation contours as well as vowel and consonant production of infants resemble those of the language of their environment. However, some of the studies carried out in the area have failed to show differences in prosodic production at early stages. Reference [1] explains that there seems to be no difference intonation contours in babbling between bilinguals and monolinguals. Also, the age of onset of canonical babbling or the amount of vocalisation is the same for both [1]. This would imply that phonological precursors of speech, babbling and intonation contours, do develop similarly regardless of exposure. There may be some differences in the production of segments, where infants may manifest interference from the second language at the phonetic level in terms of production [1].

Regarding early acquisition of segments, there are different opinions on whether bilingualism results in positive or negative transfer. The possible influence of one language on the other may be explained by the Interdependence hypothesis, as proposed by [3]. This hypothesis stems from a dual system model of acquisition, mentioned in the previous section. Interdependence hypothesis considers that the two languages do interact, and this interaction can be manifested through transfer, deceleration, and acceleration. Transfer means that the production of consonants and vowels which are specific to one language can influence the production of the other language, known as segmental transfer [6]. Deceleration would imply that the interaction between the two languages would result in poorer linguistic skills. Conversely, acceleration would mean that the two languages aid each other in the acquisition process and result in the child developing superior linguistic skills compared to their monolingual peers. Regarding this last possibility, [5] proposes that there is evidence of both acceleration and deceleration occurring simultaneously "allowing for a rate of acquisition in bilinguals that falls within the normal range for monolingual children of the same age" (p. 162). This is referred to as "variation of acceleration", coterminous with bootstrapping.Regarding rates of acquisition, [7] states that "slower rate of development of one phonological skill does not indicate a slower rate of development for all phonological skills in bilingual children" (p. 94). Interaction between the two languages could be causing a slower rate of development on the production of some phonological skills and simultaneously causing a variation of acceleration in others [7]. For example, bilingual children may have problems with accuracy of articulation, but may develop complex phonetic inventories at the same rate as their monolingual peers [7].

When it comes to development of sounds, [8] found in their study that Spanish-English bilinguals and Spanish monolinguals both acquire sounds in a simple-to-complex fashion. Phonetic inventories have a hierarchical organization in terms of acquisition, where children begin by incorporating unmarked sounds (low featural complexity) and later develop marked sounds (higher featural complexity). Sounds which occur more frequently in a language are usually unmarked. In their study, [7] found out that bilingual children organized their two speech systems in the same "hierarchical fashion as monolingual speakers of English and Spanish" (p. 94). For English, as well as Spanish, the types of segments which are the least complex, are: stops, nasals, and glides [7]. This is known as Level A and the sounds comprised at this level are the first to be acquired in the aforementioned languages. Level B comprises the acquisition of voicing distinctions within stops and Level C concerns fricatives and/or affricates [7]. For Level D and E, English and Spanish have different sounds where a Spanish speaking child would incorporate the flap and trill /r/. In the study carried out in [7], bilinguals appeared to be at different levels in terms of complexity in their two languages, evidencing a separation between inventories. To

Copyright © 2015 IJIRES, All right reserved

complement this, the results of [7] suggest that there was no evidence of deceleration in bilinguals and they appear to acquire two inventories at the same rate and with the same level of complexity as monolinguals. Therefore, bilingual acquisition (at least for Spanish-English bilinguals) would not be detrimental for the child's mental mapping of segments.

In terms of accuracy, [5] found evidence of transfer and variation of acceleration in their study. Bilingual children did show evidence of slower rate of acquisition compared to monolinguals, but this rate fell within the typical range for their chronological age. This could be seen in the production of flap and trill /r/ which is age appropriate and therefore, does not indicate delayed or disordered acquisition [5]. This deceleration could be caused by the relative load of the two inputs, but the fact that their performance was within their normal range for both languages could "counteract that load" (p. 174)[5], revealing some bootstrapping. Transfer was seen in the fact that bilingual children would sometimes abandon fine distinctions and use phonetically similar sounds, as was the case of stops, which were produced without aspiration in English. This however, does not necessarily sacrifice meaning [5]. Considering the above, in spite of the fact that there may be some interference, it might be irrelevant to both of the bilingual's speech communities if the child is able to sound 'native-like'. As [2] explains: "the fact that their phonetic realization is not perfectly matched to that of monolingual speakers does not matter, to the untrained ear the bilingual sounds native-like" (p. 187).

V. Phonological Awareness

Besides acquiring the capacity to discriminate segments and prosodic systems, the child also acquires the skills of phonemic and phonological awareness. Phonological awareness is the ability to recognize that speech is composed of distinct units of sound [2] and the knowledge that individual sounds can be manipulated independently; that is, added together, deleted, or inverted. Phonemic awareness has to do with the knowledge of how individual phonemes make up words [3]. In the case of bilingual children, [1] suggest that there is evidence that a "richer linguistic input from the environment fosters a better development of relevant skills" (p. 53), making the child more competent in phonemic and phonological awareness. Reference [2] also mentions that bilingual children perform better when distinguishing phonological differences; namely, syllable counting. However, monolinguals are better at phoneme counting. Also, this advantage of the skill for phonological awareness in bilinguals only lasts until children are five years old. By age six, both monolinguals and bilinguals perform equally in phonological awareness tasks. Nevertheless, according to [9], bilingual children have more 'genuine' phonological awareness skills. She comments on a study on Spanish-English early bilinguals where these were able to phonologically translate pseudowords while monolinguals had to rely on memory for tasks that should require phonological processing. This result was also seen in her own study of Korean-English bilinguals and Korean monolinguals

VI. Phonological Awareness and Literacy

Phonological awareness is directly linked to the development of literacy skills. According to [10], phonological awareness is the most significant of all metalinguistic awareness skills due to the fact that there is a reliable predictive relation with literacy. Some studies confirm that phonological awareness predicts levels of reading proficiency, which extend to both languages in the case of bilingual children [10]. Reference [2] also corroborates this hypothesis by stating that the awareness of phonological of processes is a transferrable underlying skill and that this is particularly true when there is high grapheme-phoneme correspondence between language systems. Reference [3] also refers to the advantages of phonological awareness for bilingual children by stating that the ability to understand grapheme-phoneme correspondences seems to be difficult for learners, and this ability shows the most consistent transfer between languages. As they explain, this skill depends on the underlying abilities for phonological awareness and therefore, a change in the language of instruction should not have a great impact on the child's capacities for literacy. Reference [10] seems to have a less optimistic view on the transferability of phonological awareness, claiming that even if high-order abilities are transferred, the child still needs some language-specific abilities. This is especially true when the child's two languages have different writing systems. This view is contradicted by [9], who states that bilinguals performed better than their monolingual peers in phonetic awareness tasks in both their L1 and their L2 in spite of the fact that the writing systems of both languages are orthographically different (though both are alphabetical). Moreover, phonological awareness had a cross-language contribution which occurred in both directions. These findings would collide with [10] which concludes that bilingual children might, in one hand, benefit from the transfer of phonological awareness, but may, on the other hand, be delayed in their process due to interference. In this sense, bilingualism seems to have less impact on explaining metalinguistic awareness than literacy instruction [10]. Again, the study of [9] study revealed something different. Bilinguals showed advantage in metalinguistic awareness in tasks that required conscious attention to the sound systems of a language.

VII. Conclusion

With regards to phono-phonological skills of perceptions, infants (monolingual and bilingual) appear to develop the ability to discriminate prosodic and segmental characteristic of different languages at a very early age. Segmentally speaking, there seems to be a general consensus that there is a threshold for phonemic discrimination between 6 and 12 months, where the child

Copyright © 2015 IJIRES, All right reserved

would become a language-specific listener. The implications of this for a bilingual child rests in the fact that the infant should be exposed to the segments of the two languages before this period. In terms of segmental production, there is not much evidence that bilinguals do possess more advanced capacities than monolinguals. At the level of production, both monolinguals and bilinguals go through the same stages in terms of acquiring intonation contours. Segmental production for bilinguals may actually interfered by their acquisition of two phonological systems. Nevertheless, this interference may result from an interaction between the two systems which may help bilingual children develop both their phonetic inventories at the same rate as their monolingual peers. Also, though they may have problems with accuracy in production, this deceleration can be considered a variation of acceleration which would mean that they still develop at an age-appropriate range. If this interference renders the child's speech as inadequate or non-native-like remains to be seen. Another important aspect of bilingualism has to do with the capacity for phonological awareness. There are different and contrasting views on whether this skill does actually transfer from one language to another, especially in terms of how it would influence literacy. All of the above discussion does, however, hint at a lack of consensus and this might suggest that more research into phono-phonological development in bilingual children is needed.

ACKNOWLEDGMENT

The author would like to thank Dr Cristina Arancibia, Dr Miriam Cid U., and Professor Robert Speiser for their help and support in the production of this piece of research.

REFERENCES

[1] Hamers, J., & Blanc, M. (2000). *Bilinguality and Bilingualism* (2nd Ed.). Cambridge: Cambridge University Press.
[2] Chin, N., & Wigglesworth, G. (2007). *Bilingualism: An advanced resource book.* Abingdon, Oxon: Routledge.
[3] Genesee, F., Paradis, J., & Crago, M. (2011*). Dual language development and disorders: A handbook on bilingualism and second language learning* (2nd Ed.). Baltimore: Paul H. Brookes Pub.
[4] Meisel, J. (2006). The Bilingual Child. In T. Bhatia & W. Ritchie (Eds.), *The handbook of bilingualism*. Malden, MA: Blackwell Pub.
[5] Fabiano-Smith, L., & Goldstein, B. (2010). Phonological Acquisition in Bilingual Spanish–English Speaking Children. *Journal of Speech, Language, and Hearing Research.* 53, 160-178
[6] Paradis, J., & Genesee, F. (1996). Syntactic acquisition in bilingual children: Autonomous or interdependent? *Studies in Second Language Acquisition*, 18, 1–25.
[7] Fabiano-Smith, L., & Barlow, J. (2010). Interaction in bilingual phonological acquisition: evidence from phonetic inventories. *International Journal of Bilingual Education and Bilingualism*, 13(1), 81-97.
[8] Fabiano-Smith, L., & Goldstein, B. (2010). Early-, Middle-, and Late-Developing Sounds in Monolingual and Bilingual Children: An Exploratory Investigation. *American Journal of Speech-Language Pathology*, 19, 66–77.
[9] Yusun Kang, J., (2012) Do bilingual children possess better phonological awareness? Investigation of Korean monolingual and Korean-English bilingual children. *Reading and Writing.* 25(2), 411-431.
[10] Bialystok, E. (2006). The Impact of Bilingualism on Language and Literacy Development. In T. Bhatia & W. Ritchie (Eds.), *The handbook of bilingualism*. Malden, MA: Blackwell Pub.

AUTHOR'S PROFILE

Isadora Reynolds C.
was born in Santiago, Chile. She graduated from the BA in English Literature and Linguistics at Pontificia Universidad Católica de Chile in 2012, and is currently a thesis student of the MA in Applied Linguistics to the Teaching of English as a Foreign Language at the same institution. She has worked as an adjunct professor in this institution for the in undergraduate program. She is currently an adjunct professor at the University of Santiago in the Language and Linguistics department. Her areas of research are phonetics and phonology applied to the acquisition of English as a second language, and teaching English as a foreign language.

Copyright © 2015 IJIRES, All right reserved