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Speech and language intervention in bilinguals

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Abstract

Increasingly, speech and language pathologists (SLPs) around the world are faced with the unique set of issues presented by their bilingual clients. Some professional associations in different countries have presented recommendations when assessing and treating bilingual populations. In children, most of the studies have focused on intervention for language and phonology/ articulation impairments and very few focus on stuttering. In general, studies of language intervention tend to agree that intervention in the first language (L1) either increase performance on L2 or does not hinder it. In bilingual adults, monolingual versus bilingual intervention is especially relevant in cases of aphasia; dysarthria in bilinguals has been barely approached. Most studies of cross-linguistic effects in bilingual aphasics have focused on lexical retrieval training. It has been noted that even though a majority of studies have disclosed a cross-linguistic generalization from one language to the other, some methodological weaknesses are evident. It is concluded that even though speech and language intervention in bilinguals represents a most important clinical area in speech language pathology, much more research using larger samples and controlling for potentially confounding variables is evidently required.

Key words: Aphasia; Bilingualism; Phonological disorders; Speech impairments; Stuttering; Therapy.

Resumen

Un número creciente de logopedas alrededor del mundo deben abordar el conjunto de situaciones relacionadas con sus pacientes bilingües. Algunas asociaciones profesionales en diferentes países han presentado diversas recomendaciones para la evaluación y el tratamiento de poblaciones bilingües. En niños, la mayoría de los estudios se ha centrado en la intervención del lenguaje y los trastornos fonológicos/articulatorios y muy pocos han abordado la tartamudez. En general, estos estudios tienen a concordar en que la intervención en la primera lengua (L1) o bien incrementa la ejecución en la segunda (L2), o bien no la interfiere. En adultos, la intervención monolingües versus bilingües es especialmente relevante en casos de afasia; la investigación sobre disartria en bilingües es muy limitada. La mayoría de los estudios se ha centrado en la recuperación léxica (denominación). Se ha observado que a pesar de que la mayoría de los estudios han hallado una generalización translingüística entre las dos lenguas, existen limitaciones metodológicas evidentes en estos estudios. Se concluye que a pesar que la intervención en el habla y el lenguaje en pacientes bilingües representa un área clínica particularmente importante, evidentemente se requiere mucha mas investigación utilizando muestras mas grandes y controlando diversas variables que potencialmente pueden afectar los resultados.

Palabras clave: Afasia; Bilingüismo; Tartamudez; Terapia; Trastornos del habla; Trastornos fonológicos.

Introduction

Increasingly, speech and language pathologists (SLPs) around the world are faced with the unique set of issues presented by their bilingual clients. At least half of the world population is bilingual (Grosjean, 1982; Siguan, 2001), although the exact percentage depends upon the definition of bilingualism that is used. Many areas have much higher percentages of bilingual individuals than others, but we would be very hard pressed to find one speech-language pathologist around the world that has never assessed or treated a bilingual client.

A few professional associations have grappled with recommendations for best practices in assessing and treating bilingual populations and published their guidelines for associated members. The American Speech-Language-Hearing Association (ASHA, 1985), the Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA, 1997), the International Association of Logopedics and Phoniatry (IALP, 2006), and the Royal College of Speech and Language Therapists (RSCLT, 2007) all have similar guidelines for the provision of services to bilingual children. They include recommendations for the preparation of SLPs, such as the ability to speak both of the client's language, the ability to identify and work with cultural variations, and the ability to assess and intervene in both languages. For intervention, the recommendations converge on provision of therapy in both languages or, at least, the strongest language.

These associations also recognize the fact that most SLPs working with bilingual clients are not bilingual themselves and recommendations for working with interpreters are made for these cases. Though some of the recommendations are evidence-based, many questions related to these issues are left unanswered. Research with bilingual populations is inherently difficult to do and evidence tends to emerge slowly, though much progress has been made in the past few years, especially in reference to the assessment of bilingual children. Evidence on best practices for the treatment of these children is scarcer.

The focus of these recommendations is definitely on children, though it is assumed that the same principles apply to adults. Whether working with bilingual children or adults, SLPs must decide whether therapy will be provided in one or both languages. If only one, how is one selected? If two, how will therapy sessions be structured in terms of: How much time is devoted to each language; whether the same or different goals are addressed in each language; whether

the therapy context will be monolingual or bilingual (e.g., one session-one language, or both languages in each session, and in the latter case, is code-switching allowed?).

In spite of the similarities present in deciding language of intervention for adults or children, the ultimate goal of intervention in terms of bilingualism may differ for children and adults. In children, issues of language maintenance, language of education, and family wishes play a major role in answering the above questions. In adults, functional communication takes precedence over everything else. Deciding on monolingual or bilingual intervention has more to do with which language will be most useful to daily communication and which method will provide the best and quickest results.

This paper will summarize the evidence available to date on best practices for speech and language intervention with bilingual children and adults and attempt to draw some general conclusions.

Intervention in bilingual children

In children, most of the studies focus on intervention for language and phonology/ articulation impairments and very few focus on stuttering. In general, studies of language intervention tend to agree that intervention in the first language (L1) either increased performance or did not hinder it. Perozzi & Sanchez (1992) examined learning of English prepositions and pronouns when treatment was provided in Spanish and English, versus English only. This is one of the few studies with a relatively large number of subjects. There were 38 Spanish/English bilingual first graders with language impairments who were randomly assigned to two treatment conditions that targeted learning of English prepositions and pronouns: one group received treatment in Spanish first, followed by treatment in English and the other group received treatment in English only. The group who received treatment in Spanish and English took fewer trials to learn the targets in English.

Thordardottir, Weismer & Smith (1997) examined vocabulary acquisition in monolingual versus bilingual intervention in a bilingual Icelandic/English child. In this single subject study of a 4 year-11 month child with a language impairment, treatment was alternated from an English monolingual condition to an Icelandic/English bilingual condition. The child showed improvement in both conditions, with slightly better improvement in the bilingual condition.

Because this was a single study design, it is impossible to eliminate the order effect, but it is clear that the bilingual condition did not have any negative consequence.

Tsybina & Eriks-Brophy (2010) also studied vocabulary acquisition in English/Spanish bilinguals. In this study of 12 subjects with expressive vocabulary delays aged 22-42 months, half of the subjects were assigned to a bilingual treatment group and the other half to a no treatment (delayed treatment) group. The subjects in the treatment group received intervention for a period of six weeks in English by the primary investigator and concurrently in Spanish from their mothers, who received specialized training to do so. There was no monolingual control group, therefore this study did not examine whether a bilingual or monolingual approach works best, but the children in the treatment group learned significantly more words than the children in the no treatment group. This result shows that bilingual intervention does not hinder development and that parents can be successfully trained to provide intervention in L1 when the speech therapist is not bilingual.

Seung, Siddiqi & Elder (2006) examined language acquisition in a 3-year-old bilingual Korean/English child with autism. Intervention progressively moved from Korean only to English only in a two year period. In this study, the goal was to transition into English only and use the native Korean as a foundation language, so again there was no comparison between monolingual and bilingual conditions. The slow transition from the bilingual mode to the monolingual mode seemed to help this child improve English language skills, even though no attempt was made to monitor acquisition and maintenance of Korean.

Schoenbrodt, Kerins & Gesell (2003) compared results of narrative intervention in English versus Spanish in a group of bilingual 6- to 11-year olds. Twelve children were assigned to either a group receiving monolingual intervention in English or a group receiving monolingual intervention in Spanish. No differences were found between the two groups, but because there was no control group with no treatment provided, it is difficult to say whether the improvement seen in both groups was due to the intervention.

Currently, there is only sparse evidence for the superiority of bilingual over monolingual intervention for language disorders. However, there is no evidence that bilingual intervention is inferior and given that most bilingual children need to communicate with their families and in their communities in their native language, it only makes sense that bilingual intervention be

provided whenever possible. Kohnert, Yim, Nett, Kan & Duran (2005) and Gutiérrez-Clellen (1999) make strong cases for the use of both languages in language intervention. As seen in the study by Tsybina & Eriks-Brophy (2010), when the speech therapist is not able to provide bilingual intervention, parents can be successfully trained to fill that gap.

Intervention for phonological/articulation disorders, which are currently lumped together under the umbrella term "speech sound disorders", has also received some scrutiny in bilingual children. Speech sound disorders show unique characteristics because exposure to more than one language usually causes cross-linguistic influences from one language to the other (Fabiano-Smith & Goldstein, 2010; Goldstein & Kohnert, 2005; Goldstein, 2001). In general, bilingual children who are either normally developing or have speech sound disorders produce sounds that are shared by both of their languages more accurately than those that are unique to each language (Goldstein, 2004). It is unclear how intervention in one language affects the other language. For unshared sounds, it is likely that intervention needs to take place in the language in which the sound appears. Some sparse evidence suggests that for some shared sounds, intervention provided in one language will transfer to the other.

Holm & Dodd (2001) examined two case studies. One was a 5-year 2-month Cantonese/English bilingual. This child received therapy for a distorted /s/ (lisp) in English only and improved production generalized to the untreated Cantonese as well. However, when phonological treatment was provided in English only for Consonant Cluster Reduction and Gliding, improvement was only seen in English, with no transference to Cantonese. The authors argued that an articulation only deficit such as a lisp (a motor deficit) is not language specific and therefore, it is not surprising that transference occurred. The lack of transference in phonological processes was attributed to its linguistic nature, which is language specific. However, since the same processes occurred in both languages, it is not clear how this specificity applies. Their second case study was a 4-year 8-month Punjabi/English bilingual child. This child's main difficulty was that his speech production was highly inconsistent. Intervention in one language (English) improved production in both languages. However, this study focused on improving consistency of production only and not necessarily correct production. The authors attributed this "intervention transfer" to the fact that "the ability to assemble a phonological plan for word production is not language-specific." (p.171)

Another study that focused on one language only was done by Pihko et al. (2007) on a group of bilingual Swedish/Finnish children with language impairments aged 6 to 7 years old. However, this study only measured improvement in phonological discrimination in Finnish as it related to changes in brain activity. It is unknown, whether there was any effect on L1 (Swedish) or whether intervention in L1 would have hindered or increased improvement.

Ramos & Mead (submitted for publication) examined a bilingual Portuguese/English child with a severe speech sound disorder. The child received therapy in 3 blocks of 2 months each: (1) English and Portuguese, with different sounds being target in each language; (2) English and Portuguese with the same sounds targeted in both languages, and (3) English therapy only. The child was tested in both languages at the end of each block. The authors found that even though some transference occurred between languages in both directions (L1 to L2 and L2 to L1), bilingual intervention was the most effective (same sounds targeted in both languages), with the most improvement seen under this condition. Providing intervention in English only was effective in promoting English improvement, so monolingual English intervention might seem adequate for a bilingual child whose dominant language is English. However, as is often the case with bilingual children, this child needed to be intelligible in her native Portuguese to communicate with her family and very little improvement was seen in Portuguese when only English was treated.

Even fewer studies are available that examine the use of bilingual approaches in children with fluency disorders (stuttering). Because there is some evidence that stuttering is more prevalent in bilingual populations (e.g., Howell, Davis & Williams, 2009), it is still the case that many parents are advised to remove one of the languages to decrease stuttering (e.g., Biesalski, 1978; Eisenson, 1986; Karniol, 1992). The most compelling evidence comes from Karniol (1992) where the parents of a Hebrew/English bilingual child who stuttered decided to drop English completely and the child stopped stuttering. English was re-introduced 6 months later, and there was mild stuttering in both languages. Because spontaneous recovery is common in children who stutter, it is easy to see how the recovery could have coincided with the removal of English, thus leading the parents to believe that the second language was the culprit.

Shenker, Conte, Gingras, Courcey & Polomeno (1998) showed that elimination of one language is not necessary. In their study of a three year-old French/English bilingual dysfluent

child, therapy was provided in English only at first and the parents were encouraged to use slow speech in French at home and to maintain the home language. After dysfluencies decreased in English, therapy was initiated in French as well. Significant improvement was obtained in both languages and the child was able to maintain the home language. It is important to note that improvement in French was not seen until that language was specifically targeted.

Druce, Debney & Byrt (1997) also showed that bilingualism does not hinder stuttering intervention. They studied 15 subjects aged 6-to-8 years. Six of those subjects were bilinguals who spoke different first languages and English as a second language. Testing and treatment was provided in English only. The bilingual children showed as much improvement as the monolingual ones. There was no measure of stuttering or improvement in the native languages, but it was clear that maintaining the first language did not preclude improvement in L2.

In a more recent study, Bakhtiar & Packman (2008) examined a bilingual child in Iran who spoke Baluchi (parents' language) and Persian (school language). The researchers used a commercially available treatment program for stuttering, which the parents could use at home in Baluchi, and the speech-language therapist at school in Persian. Results showed that stuttering significantly decreased in both languages after 13 weeks of treatment.

As can be seen from the studies reviewed so far, most of the information we have is concentrated on whether to treat one or two languages, but little is known about how to go about treating two languages once the bilingual mode is selected. Kohnert (2010) described two distinct approaches to intervention: (1) the "bilingual approach" uses both languages simultaneously within the same session. This can be accomplished by focusing on cognitive skills that mediate the impairment in both languages, by targeting language skills that are weak in both languages and share common features, or by directly comparing and contrasting the two languages in metalinguistic tasks; (2) The "cross-linguistic approach" targets features that are unique to each language, therefore each language must be targeted separately. No specific recommendations are made as to whether these targets should be addressed in separate sessions or not. The two approaches really are complementary and there is no research on whether each is superior to the other. Clinicians are left with their own clinical judgments as to what works best for each individual child.

Unfortunately, most clinicians are not aware of these options or, if they are aware, do not feel competent to implement them. In a survey of clinical intervention for bilingual children (Jordaan, 2008), 99 speech language therapist from 13 countries were asked about their practices with bilingual children. Eighty-seven percent of the respondents reported that they provide therapy in the majority language only. In the US, a survey of 811 speech-language pathologists (Kritikos, 2003) asked them about their own beliefs in their efficacy in assessing bilingual children. Ninety-five percent of the respondents reported having worked with bilingual children, and even though 55% of the respondents reported speaking a language other than English (the survey went to states where there is a large concentration of bilinguals), 72% of these bilingual respondents did not feel competent in providing services to bilingual children. For the monolingual group, that percentage was 85%.

In brief, although the research is still limited, current evidence suggests that a bilingual approach in the treatment of children's speech and language difficulties, can be more effective than a single language approach.

Intervention in bilingual adults

In bilingual adults, monolingual versus bilingual intervention is especially relevant in cases of aphasia. It is well documented that even though both languages of a bilingual have a somewhat common neuronal system, each language of a bilingual aphasia patient may be differently affected and recovery patterns also vary according to many factors, such as site of lesion, age of acquisition of each language, amount of input in each language, and language use before and after the stroke to name a few (e.g., Aglioti, Beltramello,Girardi & Fabbro, 1996; Fabbro & Paradis, 1995; Goral, Levy, Obler, & Cohen, 2006; Green, 2005).

The case for bilingual intervention in aphasics is especially intriguing given the possibility of using forms that seem spared in one language to achieve improvement in the other or, at least use metalinguistic abilities spared in one language to mediate the recovery of the other. Some evidence exists that a language learned later in life uses more explicit memory systems and if the implicit memory systems associated with the first language were damaged, the weaker language will be less affected and available to mediate processing on the other (Paradis, 2004). However, this facilitative effect of working with two languages should not be the only

reason for bilingual intervention. Bilinguals usually live in a bilingual community and need to communicate in both languages. Research on the need to intervene in each specific language or cross-linguistic effects when working in only one language is very sparse, and the overwhelming majority of studies are case studies with questionable generalization.

Most studies of cross-linguistic effects focus on lexical retrieval training. Lexical retrieval lends itself well for this type of study because the treatment procedures can be straightforward and current models of lexical retrieval in bilinguals include provisions for both separate and interactive lexical store of each language. Most models assume a single conceptual store, which the lexicon of both L1 and L2 can access either directly (e.g., Dufour & Kroll, 1995; de Groot & Nas, 1991) or with L2 going first through L1 (e.g., Potter et al., 1984). The most parsimonious models include both direct and indirect links to the conceptual store (e.g., Kroll & Stewart, 1994), which is needed to explain how the retrieval of cognate words differs from other words. Cognate words share meaning and have similar forms in the two languages and studies have found that both languages are activated when a cognate word is used in one language, thus causing a facilitative effect in the other language, which is also seen in aphasic patients (Goral et al., 2006; Kohnert, 2008).

In the study by Kohnert & Derr (2004), the patient was a Spanish-English bilingual who received therapy for cognate and non-cognate word retrieval first in Spanish (L1) and then in English (L2). Cross-linguistic effects were seen in both cognate and non-cognate words when treatment was provided in L2, but only cognate transference occurred when treatment was provided in L1. It is not clear why the transference for non-cognates was only in the direction from L2 to L1, but this result shows the strong link between cognate words and its potential usefulness in bilingual treatment.

In a recent study by Kurland & Falcon (2011), the authors examined the effects of intensive (2.5 hours/day, 5 days a week for 2 weeks in each phase) naming therapy provided in 3 phases for one patient with severe aphasia: Spanish only, English only, and both languages, with a two-month interval with no therapy between each phase. The authors hypothesized that cognates would increase accuracy in naming. In general, only trained items improved, with no cross-linguistic effects to non-trained items. Contrary to the initial hypothesis, non-cognates showed better results than cognates. The authors argued that for this patient, cognates seemed to

provide interference that led to decreases in performance. This finding is important because it shows us that even in the face of mounting evidence that cognates facilitate cross-linguistic effects, much individual variability still exists. The same authors found that there were more cross-linguistic effects in auditory comprehension of the two languages. They speculated that when training auditory comprehension in one language, the patient increased attentional skills that translated into better auditory comprehension of the other language as well.

Edmonds & Kiran (2006) excluded cognates from their study of three Spanish/English Aphasia patients. They looked at both within and across language generalizations for naming intervention. Because there was much variability in the subjects, the authors used a single-subject design in their study. Subjects were trained in one language and tested on untrained items within the same language as well as translation equivalents of trained and untrained items in the other language. One of the patients, who was fluent in both languages, showed both within and across language generalization. The other two, who were not as fluent in English, showed within, but not across, language generalization when treatment was provided in Spanish. When treatment was provided in English, their weaker language, there was both within and across language generalization, thus suggesting that in unbalanced bilinguals, treatment in the weaker language may be more effective.

Kiran & Roberts (2010) used a similar design to study 4 patients (2 Spanish-English bilinguals and 2 French-English bilinguals) again not using cognates. They found within language generalization in 3 out of the 4 patients, but cross-language generalization in only one. Thus, again it seems that individual variability plays a major role in bilingual intervention outcomes.

Kiran & Iakupova (2011) studied the relationship between language proficiency, language impairment and rehabilitation in bilingual Russian/English individuals with aphasia. Initially, they examined two Russian/English patients' pre-stroke language proficiency using a detailed and comprehensive language use and history questionnaire and evaluated their impairment using the Bilingual Aphasia Test. Further, they attempted to replicate and extend Kiran & Roberts (2010) examining results of a primarily semantic treatment for anomia in one Russian/English bilingual patient. It was found that the patient's ability to name the trained and

untrained items in both the trained (English) and untrained (Russian) languages significantly improved by achieving 100% accuracy, clearly supporting the cross-linguistic generalization.

Croft, Marshall, Pring & Hardwick (2011) addressed the questions of effectiveness and generalization of naming therapy in bilinguals. Five bilingual English/Bengali aphasic participants were selected. Each person received two phases of naming therapy, one in Bengali and one in English. Each phase treated two groups of words with semantic and phonological tasks, respectively. The effects of therapy were measured with a picture-naming task involving both treated and untreated (control) items. This was administered in both languages on four occasions: two pre-therapy, one immediately post-therapy and one four weeks after therapy had ceased. It was found that four of the five participants made significant gains from at least one episode of therapy. Benefits arose in both languages and from both semantic and phonological tasks. There were three instances of cross-linguistic generalization, which occurred when items had been treated in the person's dominant language using semantic tasks. The authors concluded that usual naming treatments can be effective for some bilingual people with aphasia, with both L1 and L2 benefiting, and support the cross-linguistic generalization,

In one of the few studies of morphosyntactic intervention, Goral, Levy & Kastl (2007) studied cross-linguistic generalization in a trilingual patient. Language treatment was administered in English, the participant's second language (L2). The first treatment block focused on morphosyntactic skills and the second on language production rate. Measurements were collected in the treated language (English, L2) as well as the two non-treated languages: Hebrew (the participant's first language, L1) and French (the participant's third language, L3). The participant showed improvement in his production of selected morphosyntactic elements, such as pronoun gender agreement, in the treated language (L2) as well as in the non-treated French (L3) following the treatment block that focused on morphosyntactic skills. Speech rate also improved in English (L2) and French (L3) following that treatment block. No changes were observed in Hebrew, the participant's L1. The authors concluded that there is cross-language generalization of treatment benefit for morphosyntactic abilities from the participant's second language to his third language.

In a review of the literature on treatment for bilingual aphasia, Kohnert (2009) noted that even though a majority of studies point to cross-linguistic generalization, the lack of

methodological rigor of these studies makes their argument weak. She noted that most studies are single-subject cases and included subjects that most likely were still within the period of spontaneous recovery (within months post onset). Research with large samples and controlling different potentially confounding variables is strongly required.

Cross-linguistic generalization of dysarthria rehabilitation has been barely approached. Lee & McCann (2009) studied the speech intelligibility of Mandarin/English speakers with dysarthria before and after phonation therapy, in order to determine the effectiveness of this approach. A within-group design was used with two case studies which allowed one to measure therapy variables (single word and sentences); language variables (Mandarin and English); and speech production variables (respiration, phonation, articulation, resonance, and prosody). Both participants demonstrated highly significant improvement in Mandarin intelligibility scores after therapy compared with minimal changes in English intelligibility. These results demonstrate for the first time that phonation therapy is effective in increasing intelligibility, for Mandarin more than for English. Phonation therapy is also effective in enhancing accurate tone production for all four tones of Mandarin. The authors propose that phonation therapy is significantly more effective for rehabilitating Mandarin/English bilinguals with dysarthria in Mandarin (a tonal language) than in English (a non-tonal language).

Olivares & Altarriba (2009) have emphasized that understanding communicatively impaired minority individuals may involve going beyond strictly linguistic and communicative domains. They affirm that considering the psychoemotional aspects impacting these patients may be extremely important for treating them and increasing their response to therapy. Further, they underline that collaborative communication between mental health professionals and speech-language pathologists (SLPs) can be particularly beneficial in rehabilitation programs with bilingual individuals. Such communication may extend the SLPs' understanding of the relationship among emotions, culture, and language in immigrants and members of minority groups. Similarly, Westby (2009) considers that the framework of the International Classification of Functioning can be helpful in understanding the importance of cultural behaviors, values, and beliefs when assessing and providing intervention for communication impairments in persons from culturally/linguistically diverse backgrounds.

Conclusions

Speech language intervention in bilinguals has progressively become a critical clinical area for SLPs. The increasing number of bilinguals requiring therapy has resulted in the need to develop guidelines for best practices in assessing and treating bilingual populations, as done by several professional associations in several countries. In children, the research has focused in two clinical conditions: language and speech sound disorders, with some also focusing on stuttering. Currently, there is some sparse evidence for the superiority of bilingual over monolingual intervention for language disorders.

For intervention in speech sound disorders, some evidence suggests that for some shared sounds, intervention provided in one language will transfer to the other. Some few studies with bilingual stutterers have demonstrated that intervention in one language can decrease dysfluencies in the other (untreated) language.

With adults, most of the research has approached the question of cross-linguistic generalization in naming. Regardless of the limited research, results clearly suggest that lexical retrieval in one language, can facilitate the retrieval in the other language, specially for cognate words, although some opposite results have also been found. At least one study has found cross-language generalization of treatment benefit for morphosyntactic abilities. One study approaching the rehabilitation of dysarthria in a Mandarin/English bilingual patient found that therapy may be more efficient if provided in the language including tones (Mandarin) than in English.

No question, this is a promising research area and much more investigation is required, not only because of the increasing number of bilingual clients attending speech and language intervention programs, but also, for obtaining a better understanding of speech and language organization in bilinguals.

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