Treating Bilingual Adults with Aphasia:
Evidence and Options

Kathryn Kohnert, PhD., CCC-SLP
Professor Emeritus
University of Minnesota

K.Kohnert
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kohne005@umn.edu

Purpose:

To present information relevant to developing effective, evidence-based action plans that support optimal outcomes in bilingual individuals with aphasia.

Plan

I. Aphasia in Bilinguals
II. From Which language? to Why Bi?
III. Evidence & Implications

I. Aphasia in Bilinguals

"An acquired impairment in language and the cognitive processes which underlie language caused by organic damage to the brain.”

“Chapay, 1981

Individuals with consistent experience and communicative need for two or more languages.

Both languages represented in overlapping or adjacent brain regions; controlled by a network of integrated neural systems.

Abutalebi & Green, 2007, Fig 1

Cognitive control emerges from the integration of separable neural systems including the anterior cingulated cortex, the basal ganglia, the inferior parietal lobule and most prominently the prefrontal cortex (for illustrative’s sake these areas are represented on the same axial brain slice). Each of these systems is responsible for distinct aspects of cognitive control. In the domain of language, cognitive control refers to processes not directly concerned with the representation of language (i.e., lexical items), but rather with the selection and temporal sequencing of such representations. During bilingual word production, cognitive control may be at work in order to achieve the correct selection of the lexical item in the target language and to keep it free from non-target-language interferences.
2 ‘unique’ features of bilingual aphasia

- ‘Pathological’ or unintentional language mixing
- Potential for differential patterns of recovery (or persisting impairment)

Recovery Patterns: 5 to 2

<table>
<thead>
<tr>
<th>Parallel</th>
<th>Selective</th>
<th>Non-parallel</th>
<th>Antagonistic</th>
<th>Synergistic</th>
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<tr>
<td>Impact of brain injury is proportional for each language, even though current performance in each language is not.</td>
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<td>PARALLEL:</td>
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<td>NON-PARALLEL: Disproportionate impact on one of the language’s, considering previously attained skill.</td>
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However, patterns of recovery (or persisting impairment) must be determined with respect to pre-injury skills in each language.
Assessment: A few references & online resources


In particular see chapters:

• Kiran, S. & Roberts, P.M. (2012). What do we know about assessing language impairment in bilingual aphasia? (pp. 35-50).


• National Aphasia Association Multicultural Task Force: http://www.aphasia.org/naa_materials/multicultural_aphasia.html

• Bilingual Aphasia Test (BAT): http://www.mcgill.ca/linguistics/research/bat/ (versions in many langs)

• Directory of Speech-Language Pathology Assessment Instruments: http://www.asha.org/assessments.aspx (Go to link “Evaluation tools for culturally and linguistically diverse populations”)

• Language Experience and Proficiency Questionnaire (LEAP-Q): http://comm.soc.northwestern.edu/bilingualism-psycholinguistics/leapq/

• Language History Questionnaire-2: http://cogsci.psu.edu/leapq/

• World Health Organization-Quality of Life Scale: http://www.who.int/substance_abuse/research_tools/whoqolbref/en/ (QOL-BREF in 8 different languages)


II. From Which language? To Why Bi?

Premises for Aphasia Treatment

• Enhancement of QOL is essential purpose of health care and rehabilitation.

• For persons with aphasia, language and communicative functioning and social/environmental support are key factors in perceptions of QOL.

• Need for language or communication enhancement and environmental support are robust needs for individuals with aphasia.

4 Problems with “which language?”

1. Systematic disregard for individual's life circumstances violates fundamental principles of EBP, WHO-ICF, LPAA, QOL.

2. Turns resources into deficits & potential environmental facilitators into barriers.

3. Fails to take advantage of individual’s previous experiences and of neural representations and associations.

4. Isolates bilinguals from meaningful life activities and partners which can have lasting effects on recovery and social-emotional well-being.

For bilinguals with aphasia, a persistent question has been WHICH LANGUAGE?

(i.e., which one to fix first or at all)

Harmful to promote more than one language (e.g., Chelnov, 1948; Wald, 1958).

“... a dire need for empirically validated management techniques, particularly in terms of determining which language to target . . . .”

Clinical challenge:
To develop and implement action plans that facilitate both/all of an individual’s languages in the most effective and efficient manner possible... Even in cases of mismatch between client and SLP languages.

(Kohnert, 2013)

III. Evidence & Implications

Main question addressed in bilingual aphasia Tx literature (and the one most relevant for addressing client-clinician language mismatch):

Do gains generalize from a treated to an untreated language?

QUALIFYING THE EVIDENCE: 3 CAVEATS

22 Peer-reviewed Tx studies published in English investigating cross-language generalization in bilingual aphasia reviewed:

- Systematic review of 12 different tx studies (Kohnert, 2009) (2 group (n=70), 10 case study or SSED (N=13)
- Kohnert, 2004 study 1 cognitive training): N=1 Sp-Eng
- Miertsh et al. 2009: N =1 German L1 + Eng & Fre
- Abutalebi et al., 2009: N=1 Sp-Italian
- Croft et al., 2010: N = 5 Bengali-Eng
- Goral et al., 2010: N=1 trilingual Heb, Eng, Fre
- Kiran & Roberts, 2010: N= 4 (2 Sp-Eng; 2 Fre-Eng)
- Kurland & Falcon, 2011: N=1 Sp-Eng
- Goral et al., 2012: N= 1, multilingual Sp, Ger, French, Eng
- Kiran & Lakupova, 2011: N=1 Russian-Eng
- Amberber, 2012, N=1 French-Eng

- Does this mean SLPs must directly treat in both languages at the same time, in the same way?
  NO.

- Or that clinicians who do not speak both/all of their client’s languages cannot be effective?
  NO.

See also Fartoqui-Shah, Frymark, Mullen, & Wang, 2010 for EBRR commissioned by ASHA National Center on IEP in CDis (N=13 studies), Kohnert, 2009 systematic review in Seminars in Speech and Language (N=12 studies) [5 overlapping studies] and Kohnert & Peterson, 2012 (N=14 studies).

• Does this mean SLPs must directly treat in both languages at the same time, in the same way?
  NO.

• Or that clinicians who do not speak both/all of their client’s languages cannot be effective?
  NO.
#1. Evidence is suggestive only.

- Exploratory stage of research quality (ASHA, 2007)
- Most case studies or single case design; 2 group studies
- 2/3 pts with chronic aphasia (1/3 acute/subacute)
- Outcome measures ranged from trained items, to related untrained items to more generalized outcomes on unrelated language tasks (e.g., BAT subtests in each language).
- Results are mixed; clinical implications summarized here are c/w weight & direction of available evidence.

#2. It’s Complicated!

- Requires the integration of expertise from multiple areas.
- Divergent study findings may be a fair reflection of clinical complexities.
- For Monolinguals, many factors affect aphasia outcomes:
  - Age, mental & physical health, quality of health care, environmental support, interrelated factors of education, literacy, occupation and SES, lesion factors including size, location; nature & severity of impairment, individual factors including motivation and then there’s Tx factors...
- For bilinguals— all of these apply and then some!
  - E.g., Relative and absolute proficiency in each language prior to and following brain injury; language use in current environments.

#3. Beyond the Abstract:

Methodological details sometimes explain main findings.

Example from Kiran & Iakupova, 2011

Abstract: . . . “We attempt to replicate and extend Kiran and Roberts’ study in examining results of a primarily semantic treatment for anomia in one Russian-English bilingual patient. 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 . . .”

Limitations of this Study: “ . . . we were informed by P1 and his wife at the end of treatment that he practiced the target words by either asking his wife to (repetitively) name the target items or looking up the target items on the Internet. . . . A more systematic investigation of the homework effect is warranted in the future.” (p.580)

Example from Kurland & Falcon, 2011

Abstract:

“The present study examined the effect of intensive semantic naming therapy in three phases (Spanish, English and mixed) on within- and across-language generalization for cognates and non-cognates, in a bilingual individual with chronic, severe expressive aphasia. We hypothesized that cognates would positively influence cross-linguistic generalization, which would more likely occur from L2 to L1. Results indicate relative increases in confrontation naming ability in the following conditions: trained vs. untrained, L1 vs. L2 or mixed, and non-cognates vs. cognates. This participant demonstrated a pattern of results consistent with a differential pattern of recovery in which presentation of treatment in both languages and training of cognates may have promoted interference, thus increasing the activation threshold, and lowering performance under these conditions.”

Kurland & Falcon, 2011

Result 1: Spanish > English>Mixed

Kurland & Falcon, 2011

Treatment Procedures

3 phases of intensive naming tx, each 2 weeks, 5x week for 2.5 hr sessions (cf Constraint induced language therapy- CILT).

1. Spanish
2. English
3. Mixed language -- Tx of perseveration using program by Helm-Estabrooks et al., 1987. (ISI shortened for probes from unlimited to 10 sec which made it impossible to compare Phase 3 with phases 1 & 2)

Critical change in Tx protocol for Phase 3 negates comparison with other conditions.

Kurland & Falcon, 2011

Can I say too much forever?
22 Peer-reviewed tx studies published in English investigating cross-language generalization in bilingual aphasia:

- Systematic review of 12 different tx studies (Kohnert, 2009) (2 group (n=70), 10 case study or SSED (N=13) subacute studies YES / 4/6 chronic studies YES; 26 chronic studies NO
- Kohnert, 2004 study 1 cognitive training: chronic N=1 Sp-Eng YES
- Mertens et al. 2009: N=1 chronic German L1 + Eng & Fre YES
- Abutalebi et al., 2009: N=1 subacute Sp-Italian NO
- Croft et al., 2010: N=5 chronic Bengali-Eng 3/5 participants YES, 2/5 NO
- Goral et al., 2010: N=1 chronic trilingual Heb, Eng, Fre NO
- Kiran & Roberts, 2010: N=4 chronic (2 Sp-Eng; 2 Fre-Eng) 1/4 YES, 3/4 NO
- Kurland & Falcon, 2011: N=1 Sp-Eng chronic YES (a little)
- Goral et al., 2012: N=1 multilingual Sp, Ger, French, Eng chronic YES
- Kiran & Lakupova, 2011: N=1 Russian-Eng chronic YES
- Amberber, 2012, N=1, French-English chronic NO

**Clinical Implications from Combined Studies**

### 1. Both languages benefit from single language Tx within spontaneous recovery period.

**Clinical Implication:**
- Not doing harm—so must do good.
- Provide best direct treatment possible as soon as possible in the language(s) possible.

**Notes:**
- Kohnert (2009) 6/12 studies reviewed had patients in acute recovery stage; both languages improved in all cases.
- Faroqi-Shah et al. (2010) 11/13 studies reviewed (41/45 patients) were in acute recovery stage. Results showed that Tx in L2 improved L2 and sometimes L1.
- One recent exception: Abutalebi, 2009 improved only in treated language (Italian) which was also the language of home.

### 2. But greater benefit to the treated language.

**Clinical Implication:**
- Even in the acute/sub-acute stage of recovery.
- Underscores the benefit of early Tx for those with aphasia well-documented in the monolingual literature.
- In chronic aphasia improvement in the untreated language not ubiquitous (e.g., Amberber, 2012; Menzer et al., 2007).

### 3. Some circumstances may promote some cross-language generalization for some individuals.

**Clinical Implication:**
- Procedures or stimuli that tap interdependent aspects of language:
  - Conceptual and/or structural levels (e.g., semantics, cognates, reading)
  - Cognitive-linguistic interface (e.g., translations)
  - Cognitive processing (e.g., attention)
- Proficiency may be a factor in cross-language generalization----but which way? (e.g., compare Croft et al. 2010, L1 to L2 & Goral, 2012 to Kiran & colleagues 2006, 2010 L2 to L1).

### 4. Tx approaches validated for monolingual speakers also effective with bilinguals.

**Clinical Implication:**
- BOGO: Exploit procedures that may promote cross-language or cross-domain generalization.
- But then check to make sure it does! Monitor progress in both languages.
A FEW examples of other approaches used successfully in the monolingual aphasia literature:

- Script therapy with F2F or videoconference
- Computer Interface with language training
- Communicative Partnerships
- Training directed at cognitive processing
- Environmentally-directed Tx
- Group Tx

Summary:
Ways to support languages the SLP does not speak:

a. Understand and convey support for bi/multilingualism to family and allied professionals.
b. Intervene early. Direct Tx in the language(s) you can; establish indirect Tx program in other language(s).
c. Involve bilingual assistants, family members or other partners in Tx sessions for dual- or other language material (cf. Croft et al., 2011). Provide training.
d. Develop a home practice program for other languages (e.g., scripts in other langs for home).
e. Use Apps, software and online resources to support other languages (e.g., Rosetta Stone).
f. Identify and exploit opportunities for generalization within and across languages.
g. Enlist partners to identify sources for materials and opportunities in "other language".

(Kohnert, 2013)

Thank you!