OUTCOMES AND DESIGN PRINCIPLES
OF AN INTENSIVE UNIVERSITY
APHASIA PROGRAM

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University of Central Florida
Disclosure:

- Janet Whiteside has no relevant financial or nonfinancial relationships to disclose
- Anthony Kong has no relevant financial or nonfinancial relationships to disclose
Aims

1. to discuss theoretical constructs developed to infuse evidence based practice into the core of the program to benefit both the participant and graduate level student

2. to outline logistical constructs undertaken for intensive therapy to be conducted within a university clinical setting, and

3. to document empirical outcomes in language impairment of IWA who underwent an Intensive Comprehensive Aphasia Program (ICAP),
THEORETICAL CONSTRUCTS
Intensive Comprehensive Aphasia Program (ICAP)

- **Delivery of services** are intensive: consistent with principles of neuroplasticity

- **Simultaneous treatment of multiple domains:**
  - Impairment level
  - Activity level
  - Participation level
The Aphasia House is an intensive delivery program that focuses on quality of life changes. The participant self-identifies his challenges and these are jointly addressed in-with-around a social model of intervention.
International survey of ICAPs conducted to determine extent of use and practices

- 32 item survey distributed in May-August 2012
- Respondents included: 8 from US, 2 from Canada, 1 from Australia
- Findings: average of 6 PWA per session, 4 days per week, for 4 weeks for 100 hours of individual, group and computer-based treatment.
- SLPs, students and volunteers staff the programs
Aphasia House

- 4 participants
- 4 hours a day, 4 days a week for 6 weeks yielding 100 hours of treatment
- Setting is within the University of Central Florida’s Communication Disorders Clinic and is ONE option for persons with aphasia
  - Participation-focused group tx program; one day/week for 3 hours
  - Individual and group therapy options 1-4 hours/weekly
Context makes the difference to promote relaxed, social conversation for all participants; family, clients and students. Supportive environment improves psychosocial function (Elman and Bernstein-Ellis, 1999)
Dual theoretical constructs

- Impairment
  - Participants and clinical educators decide areas for improvement based on scores from the WAB and CLQT

- Activity – Participation
  - Life Participation Approach to Aphasia (LPAA; LPAA Project Group, 2000)
  - Identify six topics of personal interest
  - Identify participation goals in activities of choice
1. Theoretical constructs

- EBP
  - Client-Based Article Critique (C-BAC)
  - A departmental protocol to rate ten features of quality evidence from research articles.
  - Students obtain a total article score and then relate this article to client applicability.
  - Students discuss with clinical educator.
  - Four protocols, based on published evidence, are selected that best meet the client’s four areas of impairment.
## Client-Based Article Critique (C-BAC)

### Title:

### Authors:

### Journal/Publication date:

### Client Name:

#### Section I: Research Design

<table>
<thead>
<tr>
<th>Feature</th>
<th>Research Design Point Value</th>
</tr>
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<tbody>
<tr>
<td>Problem and hypothesis are clearly stated</td>
<td>2</td>
</tr>
<tr>
<td>Population and sample are clearly described</td>
<td>4</td>
</tr>
<tr>
<td>Research design is thoroughly described</td>
<td>4</td>
</tr>
<tr>
<td>Data-Gathering methods/procedures are described</td>
<td>4</td>
</tr>
<tr>
<td>Appropriate methods are used to gather &amp; analyze data</td>
<td>4</td>
</tr>
<tr>
<td>Validity and reliability of the evidence gathered are established</td>
<td>4</td>
</tr>
<tr>
<td>Limitations of study are stated</td>
<td>4</td>
</tr>
<tr>
<td>Generalizations are confined to the population from which the sample is drawn</td>
<td>4</td>
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#### Other Research design not listed - Please select the research design point value in the Gray box below

<table>
<thead>
<tr>
<th>Research Design Point Value</th>
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<td>Other</td>
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#### Section II: Rate the Research Article

<table>
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<th>Feature</th>
<th>Rating</th>
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<tr>
<td>Large effect size</td>
<td>Yes</td>
</tr>
<tr>
<td>Blinding x1</td>
<td>Yes</td>
</tr>
<tr>
<td>Blinding x2</td>
<td>No</td>
</tr>
<tr>
<td>Study replicates/validates previous research</td>
<td>Yes</td>
</tr>
<tr>
<td>Hawthorne or Rosenthal Effect Present</td>
<td>Yes</td>
</tr>
<tr>
<td>Significant attrition</td>
<td>No</td>
</tr>
<tr>
<td>Large subject morbidity</td>
<td>Yes</td>
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</table>

#### Section III: Intangible Factors

<table>
<thead>
<tr>
<th>Feature</th>
<th>Rating</th>
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<td>Problem and hypothesis are clearly stated</td>
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<td>4</td>
</tr>
<tr>
<td>Generalizations are confined to the population from which the sample is drawn</td>
<td>4</td>
</tr>
<tr>
<td>Report is clearly and logically written, using unbiased tone</td>
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</tr>
<tr>
<td>Choose Yes if the factor is present, No if absent</td>
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</tr>
<tr>
<td>1. Large effect size</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Blinding x1</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Blinding x2</td>
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<tr>
<td>4. Study replicates/validates previous research</td>
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<td>5. Hawthorne or Rosenthal Effect Present</td>
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<td>6. Significant attrition</td>
<td>No</td>
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<tr>
<td>7. Large subject morbidity</td>
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#### Section IV: Treatment Findings

Please choose the clinical effect of this treatment, i.e. did it work, and how well?

<table>
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<tr>
<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>Strong positive clinical effect (p &lt; .05)</td>
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#### Section V: Client Applicability

Rate the following characteristics from 0-4 points to determine how well this research applies to your client.

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<thead>
<tr>
<th>Rating</th>
<th>Description</th>
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<tbody>
<tr>
<td>0</td>
<td>doesn't fit</td>
</tr>
<tr>
<td>3</td>
<td>good fit</td>
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<table>
<thead>
<tr>
<th>Gender</th>
<th>Total Applicability Score</th>
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<tr>
<td></td>
<td>3.25</td>
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### Overall Research Value:

<table>
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<tr>
<th>A+</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C</th>
<th>D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4-4.05</td>
<td>3.7-3.99</td>
<td>2.7-3.6</td>
<td>1.7-2.6</td>
<td>1-1.6</td>
<td>0-0.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Total Article Score:

<table>
<thead>
<tr>
<th>(+) total</th>
<th>(-) total</th>
<th>Total Article Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>-0.50</td>
<td>3.41</td>
</tr>
</tbody>
</table>
Verbal Apraxia


- Video Assisted Speech Technology (VAST)


Reading


Word Recall


Word Recall


Conversation/Narrative

Cognition


LOGISTICAL CONSTRUCTS/CONSTRAINTS
Clinical Educator

- Accounts for full case load for one Clinical Educator:
  - 16 students, 4 clients per session
  - 4 students per client, 2 clients/ per student for Spring and Fall Semesters and one session in the Summer

- 2 intensive sessions for Spring and Fall Semesters

- Observing 64 hours of therapy/weekly

- Face-to-face supervision 25% of each session yielding one hour billable/per day

- 100% supervision for all diagnostics
Delivery of Tx in The Aphasia House

- 4 hrs./day
- 4 days/week
- 6 weeks
- 4 clients per session
- 4 students per client
- Optional Friday Club
Student selection/requirement

- **Student selection:**
  - Submit narrative as to why they would like this placement
  - Clinical Educator recommendation

- **Student requirement**
  - 4 hours of face-to-face weekly
  - Requiring C-BAC, weekly lesson plans, weekly SOAP notes, progress reports for insurance purposes and client-friendly progress reports, third party documentation, and billing
  - Weekly group meetings to review progress of client
Participant Inclusion

6 mos. post onset with favorable prognosis

Able to endure 4 hours of tx.

Independence or SBA for toileting or assistance by caregiver

High motivation with self-determined goals

Severe to mild impairment
Evaluation

- Western Aphasia Battery-Revised. (Kertesz, 2007)
- Cognitive Linguistic Quick Test. (Helm-Estabrooks, 2001)
- Modified English Main Concept Analysis. (Kong, 2009, 2011)
L!V Cards

Does not require spoken or written language

4 categories: home & community, relaxing & creative, physical, social
Modified English main concept analysis from Kong (2009, 2011)

- Four sets of sequential pictorial stimuli for speech elicitation
- Measures in MCA:
  1. Number of accurate and complete concepts (AC),
  2. Number of accurate but incomplete concepts (AI)
  3. Number of inaccurate concepts (IN)
  4. Number of absent concepts (AB)
  5. MC score: \(3 \times AC + 2 \times AI + 1 \times IN\)
  6. AC/min --- efficiency of production
- Strong relationship was found between aphasia severity and production of MCs
- Strong inter-rater, intra-rater, and test-retest reliabilities
<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Chinese</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The father and the son are <strong>walking</strong></td>
<td>弟弟拖住爸爸 行街</td>
</tr>
<tr>
<td>2</td>
<td>The old man is <strong>carrying</strong> a grocery bag</td>
<td>(老)伯伯 拎住 好多嘢 / 伯伯 擺著 袋物件/嘢</td>
</tr>
<tr>
<td>3</td>
<td>The oranges/balls <strong>fall</strong> on the floor</td>
<td>啲橙/波 碌晒出嚟 / 啲橙 跌晒 落地下</td>
</tr>
<tr>
<td>4</td>
<td>The boy <strong>sees</strong> the oranges/balls falling on the floor</td>
<td>弟弟 見/睇/望到 (經過)</td>
</tr>
<tr>
<td>5</td>
<td>The boy is <strong>helping</strong> the old man</td>
<td>弟弟 幫忙/幫手 / 弟弟 幫 伯伯 (執番 啲橙)</td>
</tr>
<tr>
<td>6</td>
<td>The old man is <strong>praising</strong> the boy</td>
<td>伯伯 稱讚 弟弟 係好孩子</td>
</tr>
</tbody>
</table>
Set 1 (Cooking in a kitchen)

Time = [ ] min 16 sec = [ ] .27 minute

1. The old lady is cutting carrots

2. The old lady cuts her finger

3. The old lady’s finger is bleeding

4. The old lady is looking for something in a first-aid box

5. The old lady is sticking a band-aid

Index 1, 2, 3, 4 –

Index 5 – Main concept score (MC) = (3×AC + 2×AI + 1×IN)

Index 6 – AC per minute =
Main Concept Analysis --- Scoring Form

Name: ____________________ Speech therapist: ____________________
Date of birth/Age: ______________ Date of testing (CAB): ______________
Gender: ____________________ CAB AQ: ____________________
Date of onset: ______________ Aphasia type: ____________________
Etiology: ____________________ Date of testing (MC): ______________

Remarks:

Summary of MC Analysis

<table>
<thead>
<tr>
<th>Set 1</th>
<th>Cooking in a kitchen</th>
<th>AC</th>
<th>AI</th>
<th>IN</th>
<th>AB</th>
<th>MC</th>
<th>Time in minute</th>
<th>AC/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set 2</td>
<td>Waking up late for work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 3</td>
<td>Buying ice-cream</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 4</td>
<td>Helping an old man</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Total: ____________________
JJ’s MC analysis over 1 yr., 10 mos.
References for MC Analysis


3. Outcome Data

A. Pre and post standardized test data of both language skills and communication skills

B. Family and participant satisfaction & anecdotal reports

C. Goal attainment

D. Aphasia-friendly progress report
EMPIRICAL DATA
Participants in Study

- 22 individuals (14 males + 8 females) with a diagnosis of aphasia.
- All participants were status-post left hemisphere stroke, between ages of 30-80 and had an educational status between a high school diploma to a doctorate degree.
- 4 anomic, 3 conduction, 2 global, 11 Broca’s, and 2 Wernicke as determined by their Aphasia Quotient (AQ) scores on the WAB.
- 17 of the 22 participants were administered all subtests from the CLQT. Of those, their scores were as follows: 5 mild, 8 moderate, 2 severe, and 2 within normal limits.
Results

- Multiple paired sample t-tests suggested that the participants’ overall performance on the WAB (in terms of the scores of both AQ & LQ) and CLQT was significantly different between the following:
  - the time treatment began (T1) and ended (T2), and
  - T1 and six months after the end of treatment (T3)
Cont. Results

Further T1-T2 comparisons of the WAB subtests of spontaneous speech, repetition, naming, reading and writing as well as the CLQT subtests on the cognitive domains of language and memory revealed significant differences at the p<.01 level or lower, suggesting a strong treatment effect at the end of the six weeks of intensive program.
Significant differences on most of the above-mentioned WAB and CLQT subtests remained for the T1-T3 comparisons, suggesting a relatively strong maintenance effect.
ND’s Treatment (Conduction Aphasia)

- Kim, Vaughn, Wanzek, & Wei (2004). Graphic organizers
ND’s Results

WAB

- Spontaneous Speech Total
- Auditory Verbal Comprehension Total
- Repetition Total
- Naming and Word Finding Total
- Reading Total
- Writing Total

Pre-Tx vs Post-Tx
ND’s Results

- Reading fluency went from 35 wpm to 65 wpm with the oral re-reading program

- Improved written ability to 50-80 words in 5 minutes and was monitoring writing.
LA’s Treatment (Wernicke’s Aphasia)


LA’s Treatment (Wernicke's Aphasia)

- Marshal (1998). Supportive Conversation Therapy
LA’s Results: AQ: 42.6 to 54.6
LQ: 43.7 to 58.4
LA’s Results: AQ: 42.9 to 46.2
LQ: 33.5 to 35.8
JV’s Treatment (Mild Bilingual Aphasia)

JV’s Treatment (Mild Bilingual Aphasia)


JV’s Results: AQ: 88.9 to 98
LQ: 82.9 to 98.6
“The family is outside enjoying the lovely weather and having a picnic. While dad is reading a book, mom is pouring him a drink. They are listening to the radio. Their son is flying a kite while the family dog is chasing him. Their daughter is making sand castles in the sand. Grandpa is fishing.”
TWC’s Treatment (Broca’s with AOS)


TWC’s Treatment (Broca’s with AOS)


TWC’s Results: AQ: 62 to 82.8
LQ: 59.9 to 78.2
TWC’s Results

CLQT

- Attention
- Memory
- Executive Functions
- Language
- Visuospatial
- Composite Severity Rating
- Clock Drawing Severity Rating

Pre-Tx vs Post-Tx

Severity Rating

ClQT
Outcome Summary

- Aphasia-friendly progress report: All reports are now graphed for the client and family and provided both throughout the program and at the end. (Formative and Summative Feedback)
- Dosing: 100 hours of instruction to see significant change whether it be over a 6 week period or a 4 week period
- Biggest change appears between 4-5 week in the Aphasia House
CLOSING REMARKS:
Advantages for student education

- Exposes students to a didactic learning environment with clinical educator and student co-treating client
- Exposes students to the benefits of a contextually rich environment that supports conversational success
- Exposes student to a different delivery model
- Provides an intentional opportunity for the student to complete a literature review, match EBP with client, implement therapy and compare findings with those published
- Provides an opportunity for the student to explore how to adapt research to best meet client’s needs.
Challenges

- Intensity of program on Clinical Educator
- Intensity of program for graduate student
- Capturing Quality of Life Changes
Future Questions

- Collaborate in funded research with other centers
- Translate our findings into best practice patterns
- Continue to investigate cost effectiveness
Recent Articles on ICAP

  - Intensive Comprehensive Aphasia Programs: An International Survey of Practice by Miranda Rose, Leora Cherney, and Linda Worrall
  - Retrospective Analysis of Outcomes from Two Intensive Comprehensive Aphasia Programs by Carol Persad, Linda Wozniak, and Ellina Kostopoulos
Clinician Perspectives of an Intensive Comprehensive Aphasia Program by Edna Babbitt, Linda Worrall, and Leora Cherney

Setting a Research Agenda to Inform Intensive Comprehensive Aphasia Programs by William Hula, Leora Cherney and Linda Worrall
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