Evaluating the Effects of a Post-fitting Aural Rehabilitation Program for Adults

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Due to changes in the healthcare system, there is an immense need to document the effectiveness of our services.

However, previous research provides little sound evidence supporting the efficacy of adult aural rehabilitation programs.
Cherry & Rubinstein (1995): found no significant differences in satisfaction, HA use, and # of complaints between subjects contacted by telephone periodically during the first three months following hearing aid dispensing & those who were not contacted.
More Literature

- Norman et al. (1993): designed a communication course for new users designed for persons with four to six weeks of hearing aid experience
- No significant differences in HA usage, but significantly greater HA satisfaction for the treatment group
- Lack of anonymity on the subjective ratings could have influenced the subjects’ responses in the positive direction
More Literature

Andersson et al. (1995):
Experimental between-groups design
Significant difference between groups on the Communication Strategies Sub-scale of the Communication Profile for the Hearing Impaired (CPHI)
Small sample size N=20
Marked pre-treatment differences between the treatment and control groups
MSHC’s Adult A.R. Program

- Designed to aid clients in their adjustment to hearing loss & hearing aids
- 2-4 weekly sessions which lasts about 1.5 hrs.
- Group sessions usually have at least 3 clients
- Significant others encouraged to attend
- Informal format to maximize participation
- Topics: hearing loss; hearing aids; ALDs; communication strategies; environmental barriers; speechreading; hearing conservation
- Clients asked to suggest future topics
More MSHC’s AR Program

Prior to each group, numerous clients are mailed invitations.

Attendance has dwindled substantially over the past few years — prompting the current researchers to investigate the effectiveness of the MSHC adult aural rehab. program.
PURPOSE

To assess whether differences exist between participants in an adult AR program and non-participants in terms of:

- Self perception
- Hearing aid use
- Hearing aid satisfaction
- Use of communication strategies
In This Study….

Assessments made on subjects who participated in the group over the past 5 years and a matched control group.

Issues influencing previous findings, such as lack of anonymity, small sample size, and a poorly-matched control group were taken into consideration.
METHODS: Subjects

- 54 adults between the ages of 43 and 90 years
- Previously documented hearing loss and fitted with amplification devices
- 27 subjects had participated in the MSHC adult AR program - experimental group
- 27 subjects – control group
- Proportions of males and females equal across groups (63% male and 37% female in each)
- Subjects not paid for their participation
METHODS: Evaluative Measures

- **Hearing aid satisfaction & use**
  - Satisfaction with Amplification in Daily Life (SADL):
    - 15 item pencil & paper survey
    - four subscales: positive effect, service and cost, negative features, personal image
  - Subjective data on hearing aid use & perceived difficulty level without amplification
METHODS: Evaluative Measures

- **Self-perceptions**

- **Self-style Analysis (SSA):**
  - 18 item pencil & paper survey
  - Aids in the identification of pre-existing differences between individual subjects
  - Two scales of perception:
    - ‘extroversion’ versus ‘introversion’
    - ‘feeling’ versus ‘sensing’
METHODS: Evaluative Measures

- **Use of communication strategies**
- Communication Strategies Scale of the Communication Scale for Older Adults (CSOA):
  - 41 item scale; pencil & paper format
  - Modified to encompass all 24 domains included on the CPHI to allow for comparison to previous studies, such as Andersson et al.
  - High internal consistency of the CSOA allowed for the omission of some items
  - 21 items from the CSOA fit into one of the CPHI domains
  - Items pertaining to the remaining three areas of the CPHI were constructed by the researchers using the CSOA format
METHODS: Procedures

- Case-control study in the form of a survey
- Pool of potential subjects selected from the MSHC records of adult AR program participants
- List of possible controls compiled
METHODS: Procedures

All questionnaire packets included a form letter reminding the subject of the recent telephone conversation with the researcher, the modified CSOA, the SSA, the SADL, and a pre-paid return envelope.
METHODS: Procedures

- Former AR participants contacted by telephone
- A subject ID number ending in the letter A (i.e. 1A, 2A, etc.) was assigned to each subject in the experimental group and printed on the top right corner of each questionnaire sent to that individual
- As soon as a packet was returned by a subject in the experimental group, the demographic information for this subject was compared to the list of potential controls
Initially, subjects were matched to controls who met the criteria of within 10 years of age and within 10 decibels of the pure-tone average for each ear.

However, the criteria for hearing loss was too stringent to successfully match controls to those subjects who had unusual hearing loss configurations.

Therefore, 5 of the 27 subjects in the participant group were matched to controls solely on the basis of gender and age.
METHODS: Procedures

- Subjects who were selected for the control group were contacted by telephone.
- A subject ID number ending in the letter B and corresponding in number to the matched experimental group subject (i.e., 1B, 2B, etc.) was assigned to the control subject and printed on the top right corner of each questionnaire form mailed to that individual.
RESULTS

Basic descriptives statistics were performed in order to assess whether the matched groups were similar in nature

Age: no significant differences between the mean age for the two groups
RESULTS:
Hearing Thresholds for the Right Ear

Gender
Participants: 63% male
37% female
Non-participants: 63% male
37% female

Hearing Thresholds for the Right Ear
Subjects – all receiving new hearing aids

Hearing Threshold Level (dB HL)

- PP(f)
- PP(m)
RESULTS:
Hearing Thresholds for the Left Ear

Hearing Thresholds for the Left Ear

Frequency
0 10 20 30 40 50 60 70 80 90 1250 1500 11000 12000 14000 18000
Decibels

Mean Age
Participants: 77 years
Non-participants: 74 years
RESULTS:
Subjective Rating of Hearing Difficulty

<table>
<thead>
<tr>
<th>Level of Difficulty</th>
<th>Participants</th>
<th>Non-Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>2.12</td>
<td>2.29</td>
</tr>
<tr>
<td>Severe</td>
<td>1.00</td>
<td>1.50</td>
</tr>
<tr>
<td>2.00</td>
<td>2.29</td>
<td></td>
</tr>
<tr>
<td>2.50</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>3.00</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>3.50</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>4.00</td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>
RESULTS:
Hearing Aid Experience

<table>
<thead>
<tr>
<th>Time</th>
<th>Participants</th>
<th>Non-Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience w/ Current HA</td>
<td>2.83 *</td>
<td>2.70</td>
</tr>
<tr>
<td>Lifetime HA Experience</td>
<td>3.21</td>
<td>3.14</td>
</tr>
</tbody>
</table>

Graph: Hearing Aid Experience
- More
- Less
- Experience w/ Current HA
- Lifetime HA Experience
- Participants
- Non-Participants
RESULTS:
Daily Hearing Aid Use

![Daily Hearing Aid Use Chart]

- Daily Hearing Aid Use
  - 2.92
  - 3.54 *
- More
- Less
- Significant at the .05 level

[Chart showing comparison between participants and non-participants with a significant difference at the .05 level.]
RESULTS:
Self-Perception: Self-Style Analysis

![Bar chart showing mean scores for SSA E-score and SSA F-score for participants and non-participants. The chart illustrates that participants have higher mean scores for SSA E-score (5.4) compared to non-participants (4.0), and for SSA F-score (4.7) compared to non-participants (4.3).]
### RESULTS:
Hearing Aid Satisfaction: SADL Scale

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Score Participants</th>
<th>Score Non-Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>4.8</td>
<td>5.4 *</td>
</tr>
<tr>
<td>Positive Effect</td>
<td>4.8</td>
<td>5.5 *</td>
</tr>
<tr>
<td>Service &amp; Cost</td>
<td>5.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Negative Features</td>
<td>3.9</td>
<td>4.7 *</td>
</tr>
<tr>
<td>Personal Image</td>
<td>5.6</td>
<td>5.9</td>
</tr>
</tbody>
</table>

* Significant at the .05 level
## RESULTS:

Modified Communication Strategies Scale

<table>
<thead>
<tr>
<th>Scale</th>
<th>Participants</th>
<th>Non-participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive</td>
<td>2.77</td>
<td>2.62</td>
</tr>
<tr>
<td>Maladaptive</td>
<td>3.65</td>
<td>3.78</td>
</tr>
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</table>
DISCUSSION

The present study failed to provide evidence supporting the efficacy of the MSHC’s adult A.R. program.

Surprisingly, the results suggest significantly greater hearing aid use and satisfaction for the control group.
**WHY These Results....**

- **Study design**—retrospective designs are simple & inexpensive but problematic because they make it difficult to conclude what factor(s) is responsible for the outcome.

- **SSA:**
  - quality of scale is questionable since no published info on the reliability and validity could be found in the literature.
  - therefore no conclusive statement re: whether differences in self-perceptions exist can be made.
Why These Results….

Are scales such as the SSA and the modification of Kaplan’s Communication Strategies Scale for Older Adults (CSOA) sensitive enough to show significant differences with a sample size of N=54?
Experimental group subjects contacted 1 to 5 years following their participation in the MSHCs A.R. group

Hallberg & Barrenas (1994)
- Randomized control trial
- Short-term: significantly less perceived handicap for the experimental group over the control group using the Hearing Handicap and Support Scale (HHS) and the Hearing Measurement Scale (HMS)
- Long-term: failed to observe any significant long-term effects
Why These Results…. 

Possibility of Contamination:

- At MSHC, all hearing aid clients receive some amount of individual A.R. during the post-fitting accommodation period.
- Likely that subjects in the control group received sufficient treatment during that time.
- Also, the MSHC A.R. “groups” may be more similar to individualized therapy than desired—especially when attendance is as low as two persons.
What to do….

- Reconstruct the A.R. course
  - Offer the course on a more regular basis
    - for those who are fitted early in the semester
  - Offer the course to experienced users as well as new users
    - especially for those changing processing strategies
  - Ask clients to attend the groups more than once
    - alot of info.: may miss some or may forget
What to do....

- Incorporate outcome measures:
  - Pre- and post- questionnaires to evaluate the effectiveness of the groups
  - Simple evaluation to allow participants to provide anonymous feedback at the end of each A.R. course

RESEARCH!!!
REFERENCES:


