Measuring outcomes of a communication program for older people with hearing impairment using the International Outcome Inventory

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Measuring outcomes of a communication program for older people with hearing impairment using the International Outcome Inventory

Abstract
The main objective of this study was to describe the outcomes of a communication education program for older people with hearing impairment using the International Outcome Inventory – Alternative Interventions (IOI-AI) and the version for significant others (IOI-AI-SO). Ninety-six people aged 58 to 94 years participated in an interactive group education program for two hours per week for five weeks. The IOI-AI was administered at one to two weeks after the last educational session and 29 significant others also completed the IOI-AI-SO at this time. Overall, positive results were obtained using both questionnaires, and satisfaction with the program was particularly high. Findings also compared favourably to reports of outcomes for other audiological interventions (i.e., another communication training program and hearing aid fitting). Principal components analysis of the IOI-AI revealed a somewhat different factor structure than the original IOI-HA. The two versions of the IOI applied in this study are recommended as simple and effective measures of outcomes of alternative interventions.

In 2000, an international research group introduced a new measure of outcomes for hearing aid fitting called the International Outcome Inventory-Hearing Aids (IOI-HA). The measure was not intended as a substitute for other outcome measures but rather a useful supplement that would allow for comparison of data across clinics and between different countries (Cox et al., 2000). Subsequently, in 2002, the psychometric properties of the English version were presented (Cox & Alexander, 2002) along with translations into a number of different languages (Cox et al., 2002). At the same time, it was suggested by Noble (2002) that the IOI could be usefully modified to evaluate the outcomes of other forms of interventions besides hearing aids, and for significant others. In this paper, we describe the results obtained using the International Outcome Inventory – Alternative Interventions (IOI-AI) and a Significant Other version (IOI-AI-SO) to measure the outcomes of a communication education program for older people with hearing impairment.
programs (e.g., audiologists, speech pathologists, hearing therapists), and those who pay for them (e.g., the client, health funds, government). It is therefore essential that researchers demonstrate outcomes so that all involved can make informed choices. Kramer et al (2005) recently reported results for a rehabilitation program that included hearing aid fitting and a home education program, and employed Dutch translations of the IOI-AI and IOI-AI-SO. This study of 24 older people with hearing impairment and their significant others using the modified version of the IOI indicated the potential of these measures for measuring outcomes of alternative forms of rehabilitation intervention.

The intervention program that is the focus of the study described here is called Active Communication Education (ACE) and is designed for older people with hearing impairment (Hickson & Worrall, 2003). Many older people do not access traditional audiological services and those who do often receive only partial satisfaction with a service that focuses on hearing aid fitting alone. ACE is an interactive group program for older people with hearing impairment and their significant others living in the community. Participants may or may not have previously undertaken any rehabilitation for their hearing impairment. The program is facilitated by an audiologist or speech pathologist and runs for two hours per week over five weeks. The aims of the ACE are to improve the communicative function of older people with hearing impairment and their significant others, reduce the participation restrictions that they experience, and improve their quality of life. Each five-week program begins with a communication needs analysis in the first session, in which all participants (including significant others) are asked to describe the communication and hearing difficulties they experience in everyday life. Following this, the group facilitator assists participants to prioritise communication needs they wish to work on in subsequent weeks. Common needs reported by participants include communicating around the house, understanding difficult speakers, communicating in background noise, and listening to television. The primary learning objective of the program is for participants to develop their own individual problem-solving skills that they can apply in a range of situations. Problem solving involves analysing the sources of difficulty in a situation, identifying potential solutions, practising solutions in real life, and modifying these until success is achieved.

The aims of this paper were to:
1. describe IOI-AI and IOI-AI-SO results for participants who attended the ACE;
2. investigate some of the psychometric properties of the measures;
3. compare outcomes on the IOI-AI for the ACE program with other reports in the literature using the IOI-AI (Kramer et al, 2005) and the IOI-HA (Kramer et al, 2002; Cox & Alexander, 2002).

### Method

#### Participants

Ninety-six adults aged 58 to 94 years (Mean = 77; SD = 8) participated in the ACE program. Over half (59%) were female.

The majority of participants were recruited by the research team who gave presentations about ACE at seniors’ organizations (46%) and retirement villages (30%). The remaining participants were recruited from The University of Queensland Fifty Plus research register (10%), from support groups for people with hearing impairment (6%), and via advertising in community newspapers (6%). Participants’ better ear pure-tone average at 0.5, 1, 2, and 4 kHz ranged from 260.5 to 870.5 dB HTL (Mean = 42.63; SD = 11.67). Inclusion criteria for the study were: evidence of hearing impairment (i.e., better ear pure-tone average >25 dB HTL); ability to communicate in the group environment as assessed by the researchers; no significant self-reported memory problems; no significant self-reported history of neurological impairment; and attendance of at least three ACE sessions. The majority of participants (53%) attended all five sessions, 29% attended four sessions, and 17% attended three. In all, 34 significant others attended at least one session and many (n = 22) attended all five sessions, participating fully in the sessions. All significant others were spouses with the exception of one who was the live-in daughter of a participant.

Fifty-eight per cent of the participants were receiving a full government pension, 17% received a part pension, and 25% were self-funded retirees. The majority (63%) lived in their own home, with the next most common dwelling type being a retirement village either with independent living (26%) or a serviced unit (6%). Fifty-one per cent lived with a spouse or partner, 44% lived alone, and the remainder (5%) lived with other family or friends.

Approximately half of the participants (n = 49; 51%) had had hearing aids fitted and 36 (39%) reported actually wearing their hearing aids more than an hour each day. Twenty-two per cent of those who were aided had a unilateral fit, and 78% had been fitted bilaterally. Of the 49 people fitted with hearing aids, 42 (86%) were clients of the Office of Hearing Services, which funds hearing assessments and rehabilitation such as hearing aid fitting for eligible Australians (e.g., those receiving a government pension). More than half of those with hearing aids (29/49; 59%) had been fitted more than five years. Seventy of the 87 hearing aids (80%) were in-the-ear or in-the-canal aids and 17 were behind-the-ear aids. Seventeen participants (18%) reported that they used an assistive listening device: six for the telephone, nine for television, and two for other reasons.

#### Materials

The IOI consists of seven items focusing on the outcome domains of daily use, benefit, residual activity limitations, satisfaction, residual participation restrictions, impact on others, and quality of life. Each item has five response choices, with the least favourable outcome on the left and the most favourable on the right.

The IOI-AI proposed by Noble (2002) was essentially the same as the IOI-HA in terms of the focus of each item and response choices, but contained some suggestions for alternative wording of the questions. In the present study, items were altered to refer specifically to the ACE program (see Appendix 1). The IOI-AI-SO was reworded to reflect the views of the significant other about the ACE. It has the same structure as the original IOI-HA-SO (Noble, 2002), with the first three items asking the significant other to assess the use and benefit obtained by his or her partner from the intervention and the remaining questions...
asking about the value and effect of the intervention for the significant other (see Appendix 2).

**Procedure**

Following an initial expression of interest by a potential participant, the research team contacted the participant to discuss the ACE in more detail and make an appointment for an initial assessment. Participation was voluntary and the research project had received ethical clearance from a Human Experimentation Ethics Review Committee of The University of Queensland. The assessment, which was conducted in the participant’s home or a community centre, focused on establishing the person’s eligibility for inclusion in the study and involved the collection of relevant demographic details as well as pure-tone hearing screening in both ears at 0.5, 1, 2 and 4 kHz. A Madsen Micromate 304 with circumaural headphones was used for hearing screening. If participants met the inclusion criteria they and their significant other (if relevant) were subsequently invited to attend an ACE program in a community location as near to them as possible.

The ACE programs were run in meeting rooms in a range of community locations – public libraries, retirement villages, church groups. Locations were selected based on their proximity to participants, their accessibility for older people, and the appropriateness of the acoustic environment (i.e., the room had to be sufficiently quiet for group discussion to occur). Each group session was facilitated by one of the research team members (Hickson is an audiologist and Worrall and Donaldson are speech pathologists). An independent assessor who had not previously met the participants and who was unaware of the nature of ACE administered the IOI-AI and IOI-AI-SO in interview format after the program. This was undertaken to avoid potential bias that may have occurred if the person who administered the IOI-AI and IOI-AI-SO in interview format after the program. This was undertaken to avoid potential bias that may have occurred if the person who facilitated the program also measured the outcome. The post-

The ACE on a daily basis (one hour per day). An even higher proportion of the significant others (75%) reported that the person with hearing impairment used the strategies on a daily basis. Item 2 shows that the majority of people with hearing impairment (64.6%) reported using strategies from all items on both questionnaires.

**Results**

Each item is scored from 1 to 5 with the higher score indicating a better outcome. All 96 participants completed the IOI-AI and 29 significant others completed the IOI-AI-SO. Figure 1 shows the mean IOI-AI scores for each of the seven items for all 96 participants and separately for the 29 participants who had significant others attending the program, along with IOI-AI-SO means for the 29 significant others. The mean scores for the IOI-AI fall between 2.85 for item 1 (use) and 4.44 for item 6 (impact on others). The mean scores for the IOI-AI-SO range from 3.00 for item 1 (use) to 4.38 for item 4 (satisfaction). A subset of 29 participants with hearing impairment had a significant other who also attended the ACE. The first three items on the IOI-AI ask the person with hearing impairment about use of strategies, benefit obtained, and residual activity limitations. Likewise, these items on the IOI-AI-SO ask the significant other about the person with hearing impairment. Wilcoxon signed-rank tests indicated no significant difference between mean scores for these three items on the two questionnaires (p > .05). Thus significant others were reporting similar use, benefit, and residual activity limitations for the participants with hearing impairment as the participants themselves.

Figures 2 and 3 show the percentage of response choices for each item on the IOI-AI and IOI-AI-SO respectively. For the IOI-AI items 4 (satisfaction) and 6 (impact on others), the highest response choice of 5 was the most frequently selected. For items 1 (use) and 7 (quality of life), 3 was the most common response. For the remaining items, 4 was the most common response. The most frequent responses for the IOI-AI-SO items were 3 or 4, with the exception of item 4 (satisfaction) where 58.6% of significant others selected response 5 indicating that they felt that doing ACE was very much worth it. The lowest response choice of 1 was used by less than 5% of participants for all items on both questionnaires.

Results from Item 1 indicate that the majority of participants with hearing impairment (64.6%) reported using strategies from the ACE on a daily basis (>one hour per day). An even higher proportion of the significant others (75%) reported that the person with hearing impairment used the strategies on a daily basis. Item 2 shows that the majority of people with hearing impairment (78%) and their significant others (80%) reported that the person with hearing impairment received at least moderate help in a particular situation that was problematic for them. On Item 3, approximately half of the people with hearing impairment (52%) and 45% of the significant others said the person with hearing impairment had no remaining difficulties or only slight difficulties in such a situation.

The vast majority of people with hearing impairment (96%) and the significant others (97%) stated that the ACE was at least moderately worth the trouble. In fact, 51% of the hearing-impaired group and 59% of the significant other group said that it was very much worth the trouble in response to Item 4. In terms of residual participation restrictions on item 5, 83% of significant others and 73% of people with hearing impairment indicated that they were slightly or not at all affected by the hearing impairment. For question 6 in the IOI-AI, which asks how much other people have been bothered by the participant’s hearing difficulties over the last two weeks, 86% of people with hearing impairment said that other people were not bothered or only slightly bothered. The IOI-AI-SO asks the significant other specifically how much they are bothered by their partners’ hearing difficulties and 81% said that they were either slightly or not at all bothered. In response to the final question about a change to enjoyment of life from using the ACE strategies, 89%
of the people with hearing impairment and 88% of the significant others said the ACE had a changed their enjoyment of life to some extent. Thus, the overall pattern of results was similar for both versions of the IOI.

The second aim of the study was to investigate the psychometric properties of the IOI-AI and Table 1 shows the interitem correlations. Item 1 (use) was not significantly correlated with any of the other items. Item 2 (benefit) was moderately related to item 4 (satisfaction) and to items 7 (quality of life). Item 4 (satisfaction) was also moderately correlated with item 7 (quality of life). The small number of significant correlations and the fact that many of the correlations are only low suggests that the items do reflect different aspects of outcome, which is the intent of the measure. A principal components analysis was subsequently performed with item 1 eliminated since it did not correlate with any other items, that is, it is essentially a factor on its own. Two other factors were subsequently extracted accounting for 35.3 and 26.4% of the variance scores. Table 2 shows the item loadings on the two factors after varimax rotation; Factor 1 encompassing benefit, satisfaction and quality of life and Factor 2 including residual activity limitations, participation restrictions and impact on others. Cronbach’s alpha values are also presented for the two factors and the high values obtained indicate that the items in each factor reflect the same attribute.

Interitem correlations for the IOI-AI-SO are shown in Table 3 and overall show few significant correlations. Moderate significant correlations were found between item 2 (benefit) and item 4 (satisfaction), and between item 5 (residual participation restriction) and item 6 (impact on others). Principal components analysis could not be performed because of the small data set (n = 29) for the questionnaire.

Figure 4 shows the mean scores for each of the items on the IOI-AI in the present study compared to those obtained using the IOI-AI for older people who undertook a home education program (Kramer et al, 2005), and using the IOI-HA for older people fitted with hearing aids (Cox & Alexander, 2002; Kramer

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Figure 2. Distribution of responses for IOI-AI items (n = 96).

Figure 3. Distribution of responses for IOI-AI-SO items (n = 29).
et al., 2002). The participant group examined by Kramer et al., was made up of 24 adults (sixteen males and eight females) with a mean age of 69 years. The Cox and Alexander (2002) group consisted of 172 adults (Mean age = 72 years; 42% female) fitted with hearing aids over a two-year period. Kramer et al. (2002) reported on a larger sample of 505 adults (Mean age = 64 years; 45% female). The 96 participants in the current study were on average a little older (Mean age = 77 years) and there was a greater percentage of females (59%) than in the other studies. Unequal variance t-tests were performed to determine if the mean values obtained in the present study were significantly different from those obtained with the IOI-HA (indicated with asterisks in Figure 4). Item 1 scores were significantly lower in the present study than in the two hearing aid studies. Mean scores for item 2 (benefit) and item 7 (quality of life) were higher in the Cox and Alexander study than in the present study. For items 4 (satisfaction), and 6 (impact on others) the mean values obtained with the IOI-AI were significantly better than those obtained for hearing aids. The outcomes for item 5 (residual participation restrictions) were significantly better in the present study than those obtained by Kramer et al., but no different from Cox and Alexander. A statistical comparison of the IOI-AI data for the present study and that of Kramer et al. (2005) was not considered appropriate because of the small sample size in the Kramer et al. group. However, visual inspection of the data in Figure 4 suggests a similar pattern of results in the two studies using the IOI-AI.

### Table 2

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Benefit</td>
<td>0.84</td>
<td>0.69</td>
</tr>
<tr>
<td>3</td>
<td>Residual Activity Limitations</td>
<td>0.81</td>
<td>0.71</td>
</tr>
<tr>
<td>4</td>
<td>Satisfaction</td>
<td>0.83</td>
<td>0.76</td>
</tr>
<tr>
<td>5</td>
<td>Residual Participation Restrictions</td>
<td>0.84</td>
<td>0.79</td>
</tr>
<tr>
<td>6</td>
<td>Impact on Others</td>
<td>0.84</td>
<td>0.79</td>
</tr>
<tr>
<td>7</td>
<td>Quality of Life</td>
<td>0.84</td>
<td>0.79</td>
</tr>
</tbody>
</table>

### Discussion

The findings of this study support the use of the IOI-AI for evaluating the outcomes of alternative interventions such as the ACE program. Data for the IOI-AI-SO were more limited and further investigation of this questionnaire is necessary before its application can be fully supported. The authors are currently undertaking a larger study examining the perspectives of significant others, particularly spouses. Favourable results were obtained on all items for both versions of the IOI, but particularly for item 4, satisfaction with the program. More than half of the participants with hearing impairment and the significant other participants responded that attending the program was ‘very much worth the trouble’. The closeness of the results for both the hearing-impaired participants and the significant others suggests that both versions of the IOI are true reflections of the communication performance on the couples. Although numerous self-report measures of outcome exist for hearing aid fitting interventions, there are few that would be appropriate for communication interventions. Many questionnaires have a focus on hearing rather than communication (e.g., Hearing Handicap Inventory for the Elderly) or are hearing aid specific (e.g., Satisfaction with Amplification in Daily Life). The IOI-AI is relevant to the particular intervention the respondent has participated in, is quick to administer, and provides useful information across a number of domains. As such, it would be a valuable addition in clinical practice and research settings where alternative interventions are being applied. Likewise, versions of the IOI for significant others are potentially useful when evaluating interventions that include significant others as part of the rehabilitation process. In addition, the fact that there was no significant difference in scores given by significant others and those by the person with hearing impairment for similar items (i.e., for the first three items on the IOI) suggests that significant others may be able to reliably serve as proxies when measuring outcomes for participants who are unable to respond themselves.

Investigation of the psychometric properties of the IOI-AI and the IOI-AI-SO indicated that, like the original IOI-AI, the seven items each reflect slightly different aspects of outcome. This is evident from the low to moderate correlations between items in each measure. Nevertheless, some significant correlations were evident and principal components analysis was subsequently performed on the IOI-AI results, revealing a factor structure different from that of the IOI-HA. Cox and Alexander...
(2002) reported that the hearing aid version had two factors: Factor 1 (‘me and my hearing aids’) which included items on use, benefit, satisfaction, and quality of life, and Factor 2 (‘me and the rest of the world’) with items on residual activity limitations, residual participation restrictions and impact on others. In the present study, the same groupings of factors was evident, with the exception of item 1 on use which did not correlate with benefit, satisfaction, and quality of life and was a factor on its own. Thus three factors were evident: Factor 1 (‘use of strategies’), Factor 2 (‘me and my performance’) and Factor 3 (‘me and the rest of the world’). Further research is necessary to confirm this factor structure for the IOI-AI and to conduct a similar analysis for the IOI-AI-SO.

One of the potentially useful aspects of applying an international measure of outcomes is that it allows comparison across different interventions and services. This feature may be particularly appealing to policy makers and third-party payers who fund interventions for people with hearing impairment. In the present study, results for the IOI-AI were compared to data reported for another alternative intervention and for hearing aid fitting interventions (see Figure 4). The outcomes for the ACE program compared favourably with those obtained for these other interventions, with the strongest results evident on item 4 (satisfaction), and item 6 (impact on others). A different pattern of results was obtained for item 1 (use). Participants in both the ACE program and the alternative intervention described by Kramer et al (2005) gave consistently lower responses about the amount of time strategies that were used than participants in the two hearing aid studies gave about use of hearing aids. There are a number of possible explanations for this. Firstly, it may well be that people use communication strategies less than hearing aids, perhaps depending on the kinds of communication situations they find themselves in on a daily basis. Secondly, it may not always be the person with hearing impairment who uses a strategy but rather his or her significant other who facilitates the communication process. Finally, the participants may use the strategies more but may find it difficult to quantify hours of use of strategies in comparison with hours of use of hearing aids or for significant others to necessarily be aware that their partner is using a strategy. The use of hearing aids is more obvious and requires a physical action on the part of the participant, that is, to put on and take off the hearing aid and for the significant other to observe their partner using the hearing aid. It may be appropriate for the wording of item 1 to be altered for alternative interventions to better reflect the use of communication strategies in everyday life (e.g. ‘Think about how much you

Table 3. Interitem correlations for the IOI-AI-SO (n=29)

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<tbody>
<tr>
<td>1. Use</td>
<td>.3</td>
<td></td>
<td>.43</td>
<td>.28</td>
<td>.10</td>
<td>.42</td>
</tr>
<tr>
<td>2. Benefit</td>
<td></td>
<td>−.41</td>
<td>−.15</td>
<td>−.28</td>
<td>.15</td>
<td>.44</td>
</tr>
<tr>
<td>3. Residual Activity Limitations</td>
<td></td>
<td></td>
<td>−.11</td>
<td>.17</td>
<td>−.10</td>
<td>.10</td>
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<tr>
<td>4. Satisfaction</td>
<td></td>
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<td></td>
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<tr>
<td>5. Residual Participation Restrictions</td>
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<td>6. Impact on Others</td>
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<tr>
<td>7. Quality of Life</td>
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* Spearman’s r correlation coefficient significant at the 0.01 level (2-tailed).

Figure 4. Comparison of mean item scores for the IOI-AI in the present study with other reported IOI results. IOI-HA mean values that were significantly different from the IOI-AI mean in the present study are indicated by an asterisk ** p < .01. * p < .05.
used the ACE strategies over the past two weeks. On an average day, how often did you use them? 1) never 2) rarely 3) sometimes 4) often 5) almost always’).

In conclusion, outcomes measured using the IOI-AI and the IOI-AI-SO indicate that the ACE program is benefiting older people with hearing impairment and their significant others and that there are high levels of satisfaction with the program. Although individual hearing aid fitting is the traditional focus of audiological rehabilitation, the findings here suggest that alternative group interventions such as ACE would greatly assist many older people. Other dimensions of outcome, such as self-reported participation and quality of life and long-term benefits, are the subject of ongoing investigation by the authors. In the meantime, the emergence of data such as that provided here using an international measure will allow for comparison of the outcomes of different intervention programs across services and countries.

Acknowledgements

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References


Appendix 1: The International Outcomes Inventory – Alternative Interventions (IOI-AI) (Noble, 2002)

1. Think about how much you used the ACE strategies over the past 2 weeks. On an average day, how many hours did you use them? [Use]
   1) None
   2) Less than 1 h/day
   3) 1–4 h/day
   4) 4–8 h/day
   5) More than 8 h/day

2. Think about the situation where you most wanted to hear better, before doing the ACE. Over the past two weeks, how much has the ACE helped in that situation? [Benefit]
   1) Helped not at all
   2) Helped slightly
   3) Helped moderately
   4) Helped quite a lot
   5) Helped very much

3. Think again about the situation where you most wanted to hear better. When you use the strategies talked about in the ACE, how much difficulty do you STILL have in that situation? [Residual Activity Limitations]
   1) Very much difficulty
   2) Quite a lot of difficulty
   3) Moderate difficulty
   4) Slight difficulty
   5) No difficulty

4. Considering everything, do you think doing the ACE was worth the trouble? [Satisfaction]
   1) Not at all worth it
   2) Slightly worth it worth it
   3) Moderately worth it
   4) Quite a lot worth it
   5) Very much worth it

5. Over the past 2 weeks using the ACE strategies how much have your hearing difficulties affected the things you can do? [Residual Participation Restrictions]
   1) Affected very much
   2) Affected quite a lot
   3) Affected moderately
   4) Affected slightly
   5) Affected not at all

6. Over the past 2 weeks using the ACE strategies, how much were other people bothered by your hearing difficulties? [Impact on Others]
   1) Bothered very much
   2) Bothered quite a lot
   3) Bothered moderately
   4) Bothered slightly
   5) Bothered not at all

7. Considering everything, how much has using the ACE strategies changed your enjoyment of life? [Quality of Life]
   1) Worse
   2) No change
   3) Slightly better
   4) Quite a lot better
   5) Very much better


1. Think about how much your partner used the ACE strategies over the past 2 weeks. On an average day, how many hours did your partner use them? [Use]
   1) None
   2) Less than 1 h/day
3) 1–4 h/day
4) 4–8 h/day
5) More than 8 h/day

2. Think about the situation where you most wanted your partner to hear better, before doing the ACE. Over the past 2 weeks, how much has the ACE helped in that situation? [Benefit]
   1) Helped not at all
   2) Helped slightly
   3) Helped moderately
   4) Helped quite a lot
   5) Helped very much

3. Think again about the situation where you most wanted your partner to hear better. When your partner uses the strategies talked about in the ACE, how much difficulty does he or she STILL have in that situation? [Residual Activity Limitations]
   1) Very much difficulty
   2) Quite a lot of difficulty
   3) Moderate difficulty
   4) Slight difficulty
   5) No difficulty

4. Considering everything, do you think doing the ACE was worth the trouble? [Satisfaction]
   1) Not at all worth it
   2) Slightly worth it worth it
   3) Moderately worth it
   4) Quite a lot worth it
   5) Very much worth it

5. Over the past 2 weeks using the ACE strategies how much have your partner’s hearing difficulties affected the things you can do? [Residual Participation Restrictions]
   1) Affected very much
   2) Affected quite a lot
   3) Affected moderately
   4) Affected slightly
   5) Affected not at all

6. Over the past 2 weeks using the ACE strategies, how much were you bothered by your partner’s hearing difficulties? [Impact on Others]
   1) Bothered very much
   2) Bothered quite a lot
   3) Bothered moderately
   4) Bothered slightly
   5) Bothered not at all

7. Considering everything, how much has using the ACE strategies changed your enjoyment of life? [Quality of Life]
   1) Worse
   2) No change
   3) Slightly better
   4) Quite a lot better
   5) Very much better