Evaluation of a training programme to facilitate conversation between people with aphasia and their partners

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Background: The investigation into conversational interaction in aphasia and its therapeutic implications has received much interest. It is increasingly accepted that people with aphasia cannot be treated in isolation but as part of a social unit. Training conversation partners has been shown to impact on the disabling effect of aphasia.

Aims: The principal aim of this study was to evaluate a programme designed to train a relative/friend to communicate more effectively with an aphasic partner. The intervention was assessed in terms of effects on communication and on wellbeing.

Methods & Procedures: Four single-case studies were completed. The aphasic participants had severe impairment affecting both comprehension and expression. The baseline was a series of three assessments. The dyads were videotaped having a conversation, and completed a Visual Assessment for Self-Esteem Scale (VASES). The non-aphasic partner also completed a Hospital Anxiety and Depression Scale (HADS). The training programme ran for 5 weeks (1.5 hours/week) at the couples’ homes. It included education, video feedback, and role-play. The initial assessments were repeated post-intervention.

Outcomes & Results: Conversation data were subject to a conversation analysis as well as frequency counts of nonverbal behaviours. We found positive individual changes and positive trends: three of the four dyads increased their use of gesture and the proportion of successful repair sequences increased post-intervention, although these changes were not statistically significant. There were no significant differences for the HADS but there were differences between the aphasics and the non-aphasics on the VASES.

Conclusions: The positive trends suggest that working with couples can produce beneficial effects. Future research may help establish who will benefit from this approach and the optimal number of sessions.

As perceptions of disability change, the long-term effects of aphasia on psychological wellbeing are receiving more attention and the social model of disability is contributing to interventions (Jordan & Kaiser, 1996; Kagan & Gailey, 1993; Pound, Parr, Lindsay, & Woolf, 2000). Finklestein (1993) has suggested that experts working with...
disabled people tend to provide solutions to problems rather than enabling people to take control for themselves. Speech and language therapy (SLT) has responded to this critique (Parr, Pound, & Marshall, 1995; Penman, 1998) and therapists are aiming to be enablers rather than merely “fixers” (Kagan & Gailey, 1993). There is a shift away from looking at language as a transaction of messages (Holland, 1982) towards communication as an interactive process (Simmons-Mackie & Damico, 1997). This approach is a response to the contribution of the social model of disability to intervention (Jordan & Kaiser, 1996).

The person with aphasia cannot be seen in isolation but must be treated as a social unit involving those people with whom s/he communicates (Kagan, 1998). As Holland (1998) has noted, independence in communication entails sharing in a conversation with all the support necessary from a conversational partner to achieve a satisfactory interchange. Because communicative competence of people with aphasia is masked (Kagan, 1995) their psychosocial adaptation, which is an evolving, dynamic process (Livneh & Antonak, 1997), is liable to be blocked. Improving communication by reducing the masking effect would be expected to benefit the person with aphasia and also to improve his/her partner’s sense of wellbeing.

The first requirement for effective communication is that a communicative act is accepted as such. When competence fails at this level, aphasia can prevent a person from revealing his/her active mind and therefore from being regarded as a social being (Kagan, 1999). Consequently there has been a shift towards training conversational partners, in conjunction with individual intervention, to enable them to reveal competence, thus improving the aphasic person’s access to everyday life (Bindman, Cohen-Schneider, Kagan, & Podolsky, 1995). An example is a system developed by Lyon et al. (1997) where people with aphasia are paired with a trained partner who tries to enhance overall confidence and encourage a return to social activities.

Several studies in the literature have investigated training caregivers to improve their communication skills with their communicatively disabled partners or clients (Booth & Swabey, 1999; Borenstein, Linell, & Wahrborg, 1997; Bryan, McIntosh, & Brown, 1998; McLeod, Houston, & Seyfort, 1996; Pound, Parr, & Duchan, 2001; Purcell, McConkey, & Morris, 2000). Supported Conversation for Adults with Aphasia (SCA), developed by Kagan (1998) is a theoretically driven approach emphasising the interaction strategies of a conversational dyad. Evaluation has focused on qualitative measures to capture the subtleties of dyadic interactions. Conversation analysis is becoming increasingly used because it records real interaction, thus avoiding the artificiality of role-play (Perkins, 1995). Video-recordings help to capture the conversational context (SPPARC, Lock, Wilkinson, & Bryan, 2001), and allow both nonverbal and verbal features to be analysed within the interaction. However, few studies have combined a qualitative and a quantitative approach in their methodology.

The main aims of this study were to investigate whether training relatives and their aphasic partners, using an approach based on SCA, improved their conversations. Both quantitative and qualitative methods of evaluation were used to highlight changes in the interactions. A further aim was to assess the impact of training on the wellbeing of both conversation partners.

METHOD

The study was approved by the Southern Derbyshire Local Research Ethics Committee.
Participants

Four case studies were completed, each involving one person with aphasia and one conversation partner (see Table 1 for biographical details). Aphasic participants were assessed by the researcher, a specialist speech and language therapist with 15 years experience of working with people with aphasia. Inclusion criteria were: aphasia due to brain injury at least 4 months before the study; severe expressive difficulty; moderate or severe comprehension difficulty, but able to follow simple conversation when supported by nonverbal communication and written and pictorial resources; no major cognitive problems, as judged by professionals who were treating them; and availability of a relative or friend willing to actively participate in the study.

Potential participants received information about the study at a home visit, when they were screened for suitability. Consent was sought from the person with aphasia using simple explanations reinforced with pictures and gestures. Where possible the person with aphasia signed a specially designed pictorial consent form. If this was not feasible the conversation partner signed as a witness. Verbal and written consent was obtained from the conversation partner. Those who consented to participate agreed to suspend any current SLT treatment during the course of the study.

Study design and procedures

We used a single-case A1-B-A2 design, each case study involving one person with aphasia and one partner. Within 2 weeks of consent, each couple received a home visit in order to get to know the researcher and to agree topics for conversation for use in the assessments. Phase A1, the baseline assessment phase, began 2 weeks later. This comprised three sessions, 1 week apart, during which all the assessments were repeated to establish a stable baseline. The sessions were carried out in a health centre or hospital in order to provide some consistency between each subject.

Baseline and outcome assessments

*Video recording.* The main source of data was a video assessment. Each couple was recorded on video having a conversation for 15 minutes. Six personalised conversation topics were agreed with them prior to the study beginning. These were randomly allocated to each assessment and the allocated topic was presented to the couple at the beginning of each assessment session. They were told that they did not have to stick to the topic but were to use it to begin their conversation.

A Panasonic VHS-C camcorder operated by the researcher was used to record the conversation. Participants sat at a table facing the camera. Various “props” were placed on the table and the subjects’ attention was drawn to them. These were plain paper and a pen, an atlas, maps of the local area, and various magazines and catalogues. The same materials were used at each assessment and for each couple.

*Analysis of video recordings.* Written criteria, piloted and developed in collaboration with an independent assessor, were used to ensure reliable and accurate frequency counts of nonverbal communicative behaviours (Appendix 1) and conversational interactions (Appendix 2). Although nonverbal communication is traditionally included in conversation analysis we separated out nonverbal behaviours for two reasons: (i) to highlight them, as they are crucial when communicating with someone who has a severe aphasia and (ii) for ease of scoring. Any idiosyncratic behaviours that were used and any other
TABLE 1
Biographical details for each case study

<table>
<thead>
<tr>
<th>Aphasic</th>
<th>M/F</th>
<th>Age</th>
<th>CT</th>
<th>Time post-stroke</th>
<th>SLT input</th>
</tr>
</thead>
</table>
| P1      | F   | 75  | MCA infarct + haemorrhage | 18 months | 2 months in Stroke Unit  
3 months in Day Hospital  
2 months group therapy, 2 months individual therapy |
| P2      | M   | 65  | Left Intracerebral haemorrhage | 18 months | 6 months in Rehabilitation Unit  
12 months in Day Hospital |
| P3      | F   | 65  | No scan | 12 months | 2 months in Hospital  
8 months individual therapy |
| P4      | F   | 47  | LCA infarct | 4 months | 2.5 months in Stroke Unit  
2 outpatient sessions |

Aphasic Severity of aphasia

P1 Moderate-severe comprehension. Able to follow conversation relating to herself and her husband. Comprehension could be enhanced if supported nonverbally, including the use of single written words and drawings, but had great difficulty in understanding novel information. Moderate-severe expression. Some real words and phrases but the majority of her output was neologistic or made up of phonemic paraphasias. Unable to write words or draw.

P2 Moderate comprehension. Able to follow conversation about familiar topics. Could understand novel information if introduced by using nonverbal communication, single written words, and drawings for support. Severe expression. Occasional word produced, particularly if given phonemic cue. Output limited to unintelligible strings of sounds. Able to write one or two words but drawings were nonspecific.

P3 Moderate comprehension. Able to follow simple conversation and occasionally more complex ideas. Able to indicate when she had not understood and comprehension could be enhanced by the use of gesture, written words and drawings. Severe expression. Output limited to repetition of “tu tu”. Very occasional real word or phrase, such as “oh dear”. Unable to write words but could occasionally draw a simple picture.

P4 Moderate comprehension. Able to follow simple conversation and some more complex ideas. Able to indicate when she had not understood and comprehension could be enhanced by the use of gesture, written words, and drawings. Moderate-severe expression. Able to produce some words. Could be cued semantically and occasionally phonemically. Most words distorted by dyspraxic errors. Evidence of groping for sounds and often struggled to repeat words. Able to write a few words. Refused to use drawing.

Partner M/F Relationship Profession

<table>
<thead>
<tr>
<th>Partner</th>
<th>M/F</th>
<th>Relationship</th>
<th>Profession</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>M</td>
<td>Husband</td>
<td>Retired railway worker</td>
</tr>
<tr>
<td>C2</td>
<td>F</td>
<td>Wife</td>
<td>Retired administrator (stopped work to care for husband)</td>
</tr>
<tr>
<td>C3</td>
<td>M</td>
<td>Husband</td>
<td>Retired engineer</td>
</tr>
<tr>
<td>C4</td>
<td>M</td>
<td>Partner</td>
<td>Labourer (stopped work to care for partner)</td>
</tr>
</tbody>
</table>

P = person with aphasia, C = conversation partner, M/F = Male/Female, CT = Computerised Tomography, MCA = Middle cerebral infarct, LCA = Left cerebral infarct.

relevant information was recorded in a comments section. Each individual was scored twice on two different scoring sheets.

An independent assessor, a specialist speech and language therapist, scored the nonverbal communication behaviours from two randomly selected videos for each couple, one from the pre- and one from the post-intervention assessments. She also completed a
conversation analysis on four of these eight videotapes (again randomly selected). These were compared with the same assessments scored by the researcher to check for inter-rater reliability. Four hours of training were provided to enable the independent assessor to rate the videos.

Non-verbal communicative behaviours. Non-verbal behaviours were assigned to six categories (Appendix 1) for statistical analysis of frequencies.

1. The use of props. A prop was defined as the communicative use of a book, magazine, picture, or object to convey information, for example pointing to a picture to enhance understanding of the item referred to. If a word was written down and used later in the conversation it was identified as a prop.

2. Use of gesture. Gesture was defined very broadly as a purposeful, symbolic hand signal, purposeful pointing, or purposeful facial expression. If the same gesture was used repeatedly without adding any further information it would be scored only once. If several gestures were used within the same idea but appeared to add more information, then each distinct gesture would be scored separately.

3. Writing and (4) drawing. The use of writing or drawing received a score for each completed attempt, or once the information had been received. Adding something to a drawing that produced new information would warrant a separate score.

4. Use of touch. Touch was defined as a positive movement designed to catch the listener’s attention or to convey reassurance.

5. Other relevant nonverbal behaviours. This category included idiosyncratic communicative behaviours such as nonspecific hand movements which were unrecognisable but implied communicative intent.

Intraclass correlation was used to analyse the inter-rater reliability for scoring of nonverbal behaviours. There was good agreement across the categories between the raters. The results are shown in Table 2.

Conversation analysis. Each video was transcribed in order to analyse the conversational structure. All 15 minutes were analysed in order to capture the whole interaction. The authors acknowledge that it has been suggested that the first 5 minutes of a video assessment is ignored to allow the participants to become used to the camera (Whitworth, Perkins, & Lesser, 1997). However we wanted to analyse a good time span and felt that 20 minutes in front of the camera would be too much. Analysis centred on the

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Intraclass correlation coefficients for inter-rater reliability of nonverbal behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Intra-class correlation coefficient</td>
</tr>
<tr>
<td>Prop</td>
<td>0.95</td>
</tr>
<tr>
<td>Gesture</td>
<td>0.91</td>
</tr>
<tr>
<td>Write</td>
<td>0.96</td>
</tr>
<tr>
<td>Touch</td>
<td>0.87</td>
</tr>
<tr>
<td>Other</td>
<td>0.88</td>
</tr>
</tbody>
</table>

CI = confidence interval
concept of repair organisation as described in Booth and Perkins’ paper (1999) and took account of good and poor exchanges between speakers as described by Simmons-Mackie and Kagan (1999) Frequencies of the following conversational interactions were recorded:

(a) Trouble sources (blockages in interaction) including who initiated the problem.
(b) Aspects of attempted repairs, including who initiated the repair, how long it took to resolve it (trajectory), strategies used to facilitate repair, and whether the repair was successful. A successful repair was defined as one where the trouble source was corrected or the couple mutually agreed to abandon the repair and continue. The second option was still considered to be a positive conclusion because neither partner lost face.
(c) Two types of unsuccessful repair: (i) discordance, when there was evident frustration during the interaction leading to irresolution of a repair, or misinterpretation of the aphasic speaker’s intent and failure to detect cues to the contrary, and (ii) abandonment, when the trouble source was effectively ignored without agreement but no observable frustration.
(d) New ideas and who initiated them (initiation).
(e) Interruptions, defined as inappropriate breaks or unnecessary topic changes.

Intraclass correlation was used to analyse the inter-rater reliability for the conversation analyses. A smaller sample size had to be used owing to time constraints, which affected the results. There were 14 categories, of which 5 were within a band of 0.6–0.9 (moderate–good agreement), 4 were in a band of 0.2–0.4 (poor agreement) and 5 were in a band of 0.0–0.1 (very poor agreement). However within the latter band of correlations three were at 0.0 because no scores were recorded by either the researcher or the independent assessor, i.e., they agreed. Of the remaining poor correlations, agreement was reached following discussion between the researcher and the independent assessor.

Questionnaires

Both the conversation partner and the person with aphasia were asked to complete the Visual Assessment of Self-Esteem Scale (VASES) (Brumfit & Sheeran, 1999). The VASES is pictorial visual analogue scale which aims “to represent thoughts and feelings relevant to self-esteem” (p. 8). It has been shown to have good reliability and validity and can be used to monitor change. Although the assessment is designed specifically to be used with people with aphasia, the conversation partners completed it as well, to provide a direct comparison between them.

The conversation partners also completed the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983). The HADS has been shown to have high internal consistency (Johnston, Pollard, & Hennessey, 2000) and is sensitive to change (Herrmann, 1997).

Intervention

Phase B, the intervention phase, included the following programme in five weekly 1.5 hour sessions carried out in the couples’ homes:

Sessions 1 and 2. These were mainly informative and included a discussion in Week 1 of expectations, problems, and knowledge of aphasia, and an explanation in Week 2 of conversation structure, together with a discussion of current abilities introducing the
concept of competence and communication ramps. The sessions were supported with simple written material and pictures to enable the person with aphasia to understand the information and to participate fully. Some of the material was pre-prepared (see Appendix 3 for an example), but writing and drawing were also actively used during the discussions to enhance comprehension. In addition any discussions included written words and drawings so that the person with aphasia was always included.

Session 3. This session was based on extracts from the video recordings taken during the assessments. Sections of video that showed successful and unsuccessful patterns of conversation were chosen to provide feedback. The less successful extracts were used to prompt ideas of different ways of communicating the same information and potentially improving the interaction.

Sessions 4 and 5. These were role-playing sessions involving two people (one always the person with aphasia) conveying a message to a third party. Each message was an everyday scenario and was written and represented pictorially. The third party was expected to use facilitative strategies to help the sender of the message convey the information. Each person had to actively participate, thus encouraging a partnership approach. In addition the couple practised supporting conversations with nonverbal information. The final session in week 5 provided continued practice of conversation skills and a review of the programme.

Phase A2, a repeat of phase A1, consisted of three weekly outcome assessment sessions, carried out 2–3 weeks after completion of Phase B.

RESULTS

Analysis of video recordings

Conversation analysis

The proportion of successful repairs increased post-intervention for three of the dyads and remained unchanged for one dyad (see Figure 1). The number of trouble sources initiated by the people with aphasia decreased post-intervention (see Figure 2) and the number of initiated repairs increased for three of them (see Figure 3). Generally the

![Figure 1](image.jpg)  
**Figure 1.** Proportions of successful repair sequences for each dyad pre- and post-intervention.
conversation partners initiated topics pre and post-intervention and few interruptions were recorded across the dyads.

**Dyad 1.** Dyad 1 showed an increase in the proportion of successful repairs post-intervention (see Figure 1), owing to a reduction in abandoned repair sequences. Interestingly P1 produced more recognisable words post-intervention so that she was producing fewer trouble sources (see Figure 2) and fewer opportunities for misunderstandings. She also attempted more repairs post-intervention (as shown in Figure 3). There was no real change in the trajectories (number of turns to resolve a trouble source) pre- and post-intervention. No repair strategies occurred pre-intervention but in assessment four, post-intervention, C1 produced one repair strategy. He wrote down someone’s name which enabled P1 to understand who he was talking about. She then used it later in the conversation to initiate a repair. In both the pre- and post-intervention assessments C1 initiated the majority of changes in topic and the few interruptions that occurred (two pre- and five post-intervention) were attributable to him.

The first assessment post-intervention, (assessment four), generally indicated a promising change in the conversational partnership. C1 offered P1 more opportunities to
contribute to the conversation rather than just seeking yes or no replies, for example in lines 70–87:

70 C 1: that was at was it Queens Street where you went swimming when you was at
71 P 1: yes er
73 C 1: when you was at school
74 P 1: yes I did
(1)
75 C 1: every (1) quite a few mornings when you was at school
76 P 1: yes I did (2) yes (?) 
(2)
77 C 1: that was at Queens Street

Unfortunately this was not evident in the last two assessments.

Dyad 2. Dyad 2 also showed an increase in the proportion of successful repairs post-intervention (see Figure 1). There were more abandoned than discordant repair sequences pre-intervention and whereas the discordant sequences did not change post-intervention, the proportion of abandoned ones reduced to 23%. P2 initiated the majority of the trouble sources (71%) owing to his very limited expression and this did not change across the assessments (see Figure 2). The length of the trajectories did not change either. C2 used a variety of repair strategies to help P2 repair a trouble source pre-intervention but her approach was didactic as shown in an excerpt from the first assessment:

47 C 2: what was that (.) what was that bird we saw on telly yesterday (1) can you remember that bird when they were playing golf
(4)
48 P 2: no
49 C 2: got a long leg
50 P 2: oh er (?) 
(2)
51 C 2: and a long neck {gestures}
52 P 2: (?) 
(2)
53 C 2: mm (1) what was it (2) it was a her
54 P 2: ‘edgehog
55 C 2: wasn’t a hedgehog at all it was a heron

The use of repair strategies increased post-intervention, particularly by P2 (see Figure 3), but he did not initiate any topics whereas he had attempted to do so pre-intervention. There were very few interruptions scored except on two occasions by C2 pre-intervention.

However, the tone of the post-intervention conversations was more natural and the exchanges flowed more easily, for example in assessment five:

19 C 2: and for Christmas what did you get for Christmas you got some videos didn’t you
20 P 2: (?)
21 C 2: who was it
22 P 2: oh ai

23 C 2: 
{writes "007"} (3)

24 P 2: (?)

25 C 2: 
{laughs} who's that

26 P 2: (?)

27 C 2: yeah

28 P 2: er

29 C 2: James

30 P 2: Bond {points to paper}

The extract appears superficially to be didactic but C2’s laughter (line 25) removed any sense that she was interrogating P2 and gave the interaction a more natural feel.

Dyad 3. The proportion of successful repair sequences increased for Dyad 3 (see Figure 1). Two thirds of the unsuccessful repair sequences pre-intervention were discordant. For example in assessment three:

48 C 3: still plays the church organ still

1

49 P 3: oh two um

50 C 3: mm

2

51 P 3: /tu tu tu tu tu tu/ {gestures}

1

52 C 3: what the other organisit oh he left didn’t he

53 P 3: oh {frowns and tuts}

At the post-intervention assessments only one unsuccessful repair sequence (discordant) was scored.

C3 produced more trouble sources than P3 (across the assessments) because she did not always understand him, but her limited expression and nonspecific gestures also contributed to the trouble sources. The proportion of these reduced dramatically post-intervention (as shown in Figure 2), but mainly due to her decreased attempts to communicate. Consequently the proportion of repairs she initiated also reduced post-intervention (see Figure 3). The trajectories for the repair sequences and the use of repair strategies did not change pre- and post-intervention.

C3 provided most of the initiations in the pre-intervention assessments, but P3 tried several times to do so as well. Unfortunately C3 was slow to cultivate this. For example in assessment one, P3 picked up one of the magazines and started to look through it. Instead of taking her lead and using this to provoke a conversation, C3 tried to draw her back to the topic suggested to them. P3 did not attempt to initiate any topics in the post-intervention assessments and in fact her contribution was noticeably reduced. Assessment six reflected a slight change, with P3 participating more actively and initiating comments within a topic rather than just acknowledging C3’s comments. C3 also encouraged her participation by asking her questions that required more than a yes or no response.

Only one interruption was recorded pre- and post-intervention in assessment six.

Dyad 4. There was no change in the number of successful repairs pre- and post-intervention for Dyad 4, as shown in Figure 1. The proportion of successful to unsuc-
cessful repairs was very high but this does not reflect the changes that did occur post-intervention. In the pre-intervention assessments C4 took a very didactic approach and used the magazines and books to make P4 name items or read words aloud. He tended to pursue her errors unnecessarily despite P4 producing a close approximation to the target word. For example in assessment one:

266 C 4: and what about d'you like anything on your (.) sponge
267 P 4: ah /w/
268 C 4: that yellow stuff
269 P 4: (?) (2) yellow stuff
270 C 4: mm
271 P 4: um
(1)
272 C 4: begins with C
273 P 4: C C
274 C 4: cus
275 P 4: (cuskard cuskard)
276 C 4: no custard
277 P 4: couscous
278 C 4: custard
279 P 4: couscous
280 C 4: cust /t/ /t/ /t/
288 P 4: cus-tard

This pattern of the prolongation of repair has also been noted by Lindsay and Wilkinson (1999). However P4 was remarkably tolerant of her partner’s approach and there was rarely discordance between them. Consequently the repair sequences were scored as successful according to the guidelines. In the post-intervention assessments C4 still adopted a rather didactic approach, such as asking P4 to name items from a catalogue, but he did not focus on this and he was less concerned if the responses were not completely accurate. For example:

254 C 4: what’s them ones you like with all seeds in the green ones
255 P 4: yes is um (kiwi kwitiwi)
256 C 4: yeah kiwi fruit

We had expected the trajectories to reduce post-intervention as a result of these changes but they remained very similar to the pre-intervention trajectories and were in fact a little longer. The proportion of trouble sources initiated by P4 did reduce post-intervention and she initiated more repairs (see Figures 2–3). She also produced three repair strategies (assessments four and five) compared with none in the pre-intervention assessments. C4 used a variety of repair strategies (semantic, phonetic, gestural, and letter cueing) to facilitate P4 to say a word both pre- and post-intervention. He also initiated all the topics across the assessments and produced two interruptions, one pre-intervention and one post-intervention.

Interestingly P4’s verbal expression improved post-intervention, which contributed to the reduction in trouble sources.

Verbal output was not one of the assessment measures, but it was noted on the videos and transcriptions that three of the aphasic participants (P1, P2, and P4) increased their efforts to communicate verbally and spoken output increased in two of them (P1 and P4).
Nonverbal data from the video assessment

A multivariate test (ANOVA) was used to analyse data across all four dyads for the nonverbal data from the video analysis. The analysis included comparisons of pre-intervention and post-intervention data and interactions between data for individuals with aphasia and their conversation partners, pre- and post-intervention.

When within-individual means of pre- and post-intervention assessments were compared, no statistically significant treatment effects were found. However, some non-significant trends were apparent. Figure 4 shows an increase in mean frequencies of the use of gesture for all three post-intervention assessments in the sample as a whole, although the standard deviations were quite high indicating large variability. Three of the four dyads showed these trends.

There was a lot of individual variation in the study.

Dyad 1. C1 changed very little pre- and post-intervention. His nonverbal behaviour was minimal (he relied on speech to communicate), but there was a slight change in assessment four. He used writing once to support what he was saying, which he had never done before. The written word was then used as a prop by himself and his aphasic wife. However he did not repeat this in the other two post-intervention assessments. P1 only used gestures and nonspecific hand movements (other category) across all the assessments. Her use of gesture actually decreased post-intervention.

Dyad 2. Dyad 2 showed the greatest changes in terms of nonverbal communication. The post-intervention means for props, gestures, and writing all increased for C2, particularly writing (see Table 3). P2 simultaneously increased his use of props and gesture (see Table 4). Conversely C2 used more drawing and nonspecific hand movements pre-intervention and P2 made more use of touch and nonspecific hand movements in the pre-intervention assessments. He appeared to use writing more pre-intervention than post-intervention, but when the raw scores were analysed he only used this once in the first assessment.

Dyad 3. C3 showed a big increase in his use of gesture and nonspecific hand movements post-intervention. He used props pre-intervention but not post-intervention. P3 scored a greater range of nonverbal behaviours pre-intervention than she did post-

![Mean scores for the category 'gesture'](image)

**Figure 4.** Mean scores for gesture for all participants. White bars = pre-intervention means; black bars = post-intervention means.
intervention, but her use of recognisable gesture increased and nonspecific hand movements decreased post-intervention.

**Dyad 4.** There was little change in the nonverbal behaviours of C4 and P4 pre- and post-intervention. C4 used props more frequently in the pre-intervention assessment as a naming exercise and both increased their use of gesture post-intervention.

**Analysis of the questionnaires**

A multivariate test (ANOVA) was also used to analyse data from the VASES and the HADS.

*Visual Assessment of Self-Esteem Scales (VASES).* There were no significant differences overall between the pre- and post-intervention phases or between the aphasics and carers. A significant difference was found, however, when the time within each assessment phase was compared across the pre- and post-intervention phases for the aphasics and the carers ($p < .01$). Whereas the VASES scores for the conversation partners stayed relatively stable pre- and post-intervention, the aphasics improved over the first three assessments, deteriorated immediately post-intervention, then improved again (see Figure 5).

*Hospital Anxiety and Depression Scale (HADS).* No significant effects were found using the multivariate test.

The conversation partners showed a lot of variability in their scores across all six assessments. Most scores hovered near the borderline for both anxiety and depression and several scores slipped into the borderline area. Generally the anxiety scores were
higher than the depression scores, although one partner was consistently borderline depressed.

DISCUSSION

The aims of this study were to investigate whether training non-aphasic people and their aphasic partners could (a) improve the effectiveness of communication between them and (b) improve wellbeing. The training sessions focused on encouraging the person with aphasia to participate more fully in conversation. Qualitative and quantitative data were combined to give a more detailed picture.

Positive trends were found as a result of the training, but there was great individual and dyadic variation. This, together with the small numbers in the study, contributed to the results failing to reach statistical significance. However, there was an interesting significant difference between people with aphasia and their partners on one test of wellbeing.

Evaluation of the training period showed that the conversational dynamic of the dyads could change, even though it was not uniform. Changes are likely to be crucially dependent on the intensity and length of treatment (Rosenbeck et al., 1977, cited in Nickels & Best, 1996) and more training sessions may have shown a greater effect. For example C1 may have learnt to use writing to enhance conversation with his wife given more time to practise. The successful attempt glimpsed in assessment four could then have been maintained.

Dyadic repair work

In this study a successful repair sequence was defined as one that had a positive conclusion, whether this was due to the trouble source being repaired or the parties agreeing to ignore it. Both examples were seen as face-saving. The use of strategies to help facilitate a repair was also positive because it enabled the couple to work together to complete the repair.

All dyads, except dyad 4, showed an increase in the proportion of successful repair sequences post-intervention. There was no change for dyad 4, but the proportion of successful repair sequences was very high pre- and post-intervention.

The increase in successful repair sequences for dyad 2 was because the use of writing and drawing gave them a greater choice of strategies to repair the trouble source. This
was evident in the increased number of repair strategies recorded post-intervention by both partners compared with the number recorded pre-intervention. The findings suggest improved collaboration between the couple and a more equal partnership.

The aphasic persons in dyads 1 and 3 produced fewer trouble sources post-intervention which contributed to less misunderstanding and therefore more successful repair sequences. In P1’s case this may have been due to a slight improvement in her verbal output, whereas P3 reduced her output thus limiting the opportunities for the production of a trouble source. This decrease also meant that she did not initiate many repairs post-intervention.

Although the proportion of successful repair sequences for dyad 4 did not change, there was a change in content. In the pre-intervention phase, C4 had a tendency to pursue all errors, even when he knew what his partner had said. P4 was effectively being treated as incompetent, but her tolerance of the situation led to a positive outcome. In the post-intervention phase, C4 dramatically reduced this tactic and instead accepted P4’s approximations once he had understood them. He was therefore conforming to the principle of least collaborative effort and the exchanges became less didactic. Although the length of time to repair a trouble source increased post-intervention this was not predominantly due to unnecessary elongation as before, but legitimate resolution of the trouble source.

The most common unsuccessful repair was an abandoned one, i.e., the trouble source was ignored without mutual agreement. There were fewer instances of discordant repair sequences both pre- and post-intervention.

Dyad 1 had a large number of abandoned repairs in their conversations, particularly pre-intervention, because C1 used them to prevent P1 from producing lengthy unrecognisable jargon. His strategy was to ignore the output, initiate a new topic, or interrupt her. However because P1’s speech improved post-intervention, the number of abandoned repair sequences reduced.

There were more discordant sequences post-intervention for dyad 2 despite the overall improvement in their interactions. This may have been due to the fact that P2 was trying to say more and his verbal output was very difficult to interpret. However there were still fewer unsuccessful repair sequences post-intervention than pre-intervention, which is an encouraging sign that the conversational partnership was working better.

The reduction in unsuccessful repairs across the individuals is further evidence that the training had had an effect on the dyads’ conversations.

**Verbal communication**

An improvement in verbal communication was not expected in this study, but it was interesting to note that two of the aphasic participants increased their spoken output (P1 and P4).

P4 was only 4 months post-stroke and improvements could have been partly due to spontaneous recovery, but perhaps the fact that her partner had stopped putting pressure on her to produce words accurately meant that she was able to speak more confidently. It is more difficult to explain P1’s improvement in speech. There was not an obvious change in C1’s conversational style post-intervention and she was 18 months post-stroke, making spontaneous recovery an unlikely explanation. Perhaps subtle changes had occurred in the conversational partnership which were not picked up by the assessments.

Having the opportunity to engage in a long conversation could have increased the confidence of P1. The same effect could have occurred in P2. Although his spoken output
continued to be problematic, he may have felt empowered to take a more active role in
the conversation.

P3’s successful verbal output did not change, but C3’s attitude towards this improving
altered. Following the training phase he was more aware of the importance of nonverbal
communication and was becoming less concerned about his wife using speech to com-
municate. This awareness may have contributed to him using more gestures himself
during their conversations.

Nonverbal communication

Use of props, writing, and drawing. All the dyads used the materials at some point
during all six assessments, but with varying effects.

C2 was the only person who appreciably increased her use of writing, drawing, and
props after the training sessions. By supporting her verbal expression in this way she was
providing P2 with a reference point to enhance his understanding and to use as a means of
expression. This had several positive effects; there were fewer abandoned repair
sequences, P2 was able to contribute to the repair work and he had something tangible to
point to rather than using nonspecific hand movements. It also provided a greater choice
of resources to repair a trouble source. The overall effect was of greater conversational
equality between the pair.

The appropriate use of props and writing can have a positive effect on conversation by
making it more explicit. However props are perhaps too unnatural a method for some
people to use. More practice may have overcome this.

Use of gesture. The mean post-intervention scores increased most for this category,
although not significantly. Dyads 2, 3, and 4 showed the most change. The post-
intervention increase in gestures by people with aphasia suggests more active partici-
pation. P3 and P4 used a greater proportion of recognisable hand movements post-
intervention, perhaps as a direct consequence of their partners using gesture themselves
and providing models.

Possible reasons for lack of change

Failure to show significance in this study raises the question of whether the trainee must
have certain inherent characteristics to be a good conversational partner. Investigations
by Simmons-Mackie and Kagan (1999) of “good” versus “poor” communication
partners suggests that there is a type of person who is able to communicate well with
people with aphasia. A good communicator must be instinctively aware of nonverbal cues
and able to think flexibly. Poor communicators are presumably oblivious to subtle clues
and unable to sift through the possibilities of what is being communicated.

Lack of statistical change may also have been due to the method of assessment.
Looking for changes in a few nonverbal behaviours, such as writing and gesture, may be
too crude a measure. The possible nonverbal variables are so vast, however, that to try
and capture all of these quantitatively is very difficult. Also some nonverbal strategies
may suit some couples and not others, thus a failure to use them does not necessarily
equate with unsuccessful communication.

Further possible obstacles to major changes following the intervention could be
attributed to pre-morbid communication styles of each couple. These will have influ-
enced how they communicated together, plus the expectations of the non-aphasic com-
munication partner probably affected her/his responses to the aphasic partner. Providing
specific training may be part of the answer, but it cannot overcome pre-morbid characteristics or intuitive ability.

**Use of video recording as an evaluation tool**

In this study the assessments and training programme were carried out by the researcher, which could have affected how the couples responded during the video recordings. Three of the four couples already knew the researcher prior to the study taking place and time was made at the beginning of it to enable them get to know her. Subjectively none of the couples appeared to relax during any of the recordings. Also there may have been an element of performing for the camera, which is difficult to eliminate. It would have been better if the researcher had left the room (as is recommended in the SPPARC) but unfortunately in some situations the camera had to be held and therefore she had to be present at every assessment to provide consistency.

There is also the problem of capturing a natural sample of conversation as well as achieving consistency across assessments. Some researchers advocate that the first few minutes of a recording are ignored to allow for initial awkwardness (CAPPA), however, we wanted to obtain a reasonable sample without extending the time too much. Unfortunately we did not check with the couples if they thought their conversations on video were representative of their normal exchanges. It is almost impossible to achieve consistency, but natural conversation is inherently variable (Hopper, Holland, & Rewega, 2002) so perhaps the variability in the assessments were simulating what occurs every day.

**The effect of the intervention on mood**

The results from both the VASES and the HADS did not support the supposition that conversational training might improve wellbeing. The changing VASES scores across the assessments are difficult to interpret. One possibility is that the severity of the comprehension difficulties experienced by the people with aphasia affected their response. All participants found the concept of relating the VASES pictures to themselves difficult to grasp initially. They may have improved through a practice effect and the deterioration in scores immediately post-intervention may have reflected loss of practice effect during the intervention phase.

Two of the aphasic participants (P3 and P4) appeared low in mood post-intervention and P3’s reduced VASES scores reflected this. Both these women were realising that they were not going to improve from their stroke to the extent to which they had hoped. This may have been a reason for P3 participating less in the post-intervention assessments.

On the HADS, all the non-aphasic partners reached borderline levels of anxiety at least once during the assessment phases. They fulfilled the role of main carer for their aphasic partners, all of whom had physical as well as communication difficulties. It is likely that their change in lifestyle created stress and therefore anxiety. One of the non-aphasic partners (C2) was consistently borderline depressed. Relatives who care for disabled partners are known to suffer more psychological disorders than other couples, particularly if the partner is aphasic (Wharborg, 1991) and it is a concern that there is limited long-term support available.

**CONCLUSIONS**

This small study did not yield conclusive results, but did show changes across the dyads and for individuals. The positive trends suggest that working with couples can produce beneficial effects. The study has highlighted some important issues which need
addressing in future research. Further studies could establish the optimal number of
sessions, to deliver this kind of package. A second important issue for future research is
the question of how conversation styles between people involved in significant
relationships differ from conversation with relative strangers. Third, there is a need for
further investigation of factors predicting who is most likely to benefit from training.

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APPENDIX 1

Definitions of nonverbal categories

Prop:
- Object/book/magazine/pictures etc. used communicatively, i.e., to convey information.
- Score each time the item is used to convey a new idea, or enhance original idea, or occurs within a new turn.
- If used several times and is unsuccessful, record this in the comments section.

Gesture:
- Purposeful hand movement that conveys information.
- Pointing that is purposeful.
- If the same gesture is used repeatedly and does not add any more information, only score once.
- If a gesture adds to the same idea but enhances the information, score for each separate, distinguishable movement.
- If used several times and is unsuccessful, record this in the comments section.

Writing:
- Used to convey information.
- Score once information has been received or couple agree to abandon. If used several times and is unsuccessful, record this in the comments section.

Drawing:
- Used to convey information.
- Score once attempt is complete, as drawing may be expanded.
- If used several times and is unsuccessful, record this in the comments section.

Touch:
- Positive action ensuring the person is listening.
- Used to reassure.
- Causes listener to become alert.
- Produces eye contact.
- Resumes two-way flow between couple.
Other:
- For example, nonsymbolic, unspecific hand movements which imply communicative intent but are difficult to interpret. Score once for each movement related to the same idea.
- For example, idiosyncratic nonverbal communication (give details in the comments section).

APPENDIX 2

Definitions for the Conversation Analysis

Trouble source:
- Point at which error occurs. Record who creates the TS.

Repair:
- Resolution/Clarification of TS. Record who makes the repair (whether successful or not).

Successful repair sequence:
- Mutual agreement that error has been corrected.
- Mutual agreement to ignore error and continue conversation.
- Positive facial expressions/laughter from both parties.

Unsuccessful repair sequence:

Abandonment
- Change in topic, or abandoning the attempt to repair, without resolving the trouble source.

Discordance
- Frustration leading to abandoning efforts to resolve error.
- Misinterpretation by listener and failure to detect contrary cues from “speaker”.
- Mismatch in facial expression between partners indicating loss of mutual agreement.
- Uneasy pretence on listener’s part that they have understood, detectable by tone of voice and negative facial expression.

Trajectory:
- Number of turns taken to complete a repair, i.e., count turns from the TS to resolution or abandonment.

Number of repair strategies:
- Number of distinct attempts to facilitate repair once this has been initiated.
- Can be either person with aphasia (P = x) or carer (C = x) who produces the strategy.
- Could occur in the same turn.

Initiation:
- Major change in topic or introduction of new idea within a topic.
- Positive interruption by person with aphasia after carer has held the floor. May still be within same topic.
- Turn after a significant pause.

Interruptions:
- Breaking flow of conversation inappropriately.
- Changing topic unnecessarily.

Other:
- Note in comments section any behaviours that do not fit into the other categories, but which appear to be relevant to the interaction. Tally these behaviours on the score sheet.

Comments:
- Note any qualitative information in the comments section if it is not reflected in the analysis, e.g., number of questions asked by carer in comparison to aphasic.
Ways of communicating

Gesture

Use of props

Writing

Drawing