THE EFFECTS OF TEACHING BRITISH SIGN LANGUAGE TO MENTALLY HANDICAPPED, NON-COMMUNICATING CHILDREN

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INTRODUCTION

The current climate regarding the use of British Sign Language (BSL) for the non-communicating, mentally handicapped population is very favourable, despite the absence of clear evidence for its effectiveness (Kiernan, 1977). Its proponents claim that BSL (most frequently used in its modified form with the Makaton vocabulary) is not only effective as a mode of communication, but further, that it can reduce anti-social behaviours and increase normal speech for its users (Walker, 1973).

In conjunction with the staff of a residential school for mentally handicapped children, the following research aims were isolated:

1. To monitor closely the use and acquisition of BSL.
2. To measure any concurrent development of vocal language.
3. To measure any concurrent reduction in anti-social behaviour.
4. To measure any concurrent increase in socialisation.

The Deputy Head Teacher was particularly interested in the use of BSL with four pupils in his class, all of whom were non-communicating. Although other pupils would be taught the sign vocabulary, it was felt that the project would most usefully follow the development of signing in these four children alone. As they all attended the same class, and all were resident, they shared a similar environment both inside and outside of BSL teaching sesions.

Sign language teaching has generally used a 1:1 teacher: pupil relationship, on a novel highly structured task. It was felt that this condition alone may be causal in any subsequent behaviour change.

It was therefore decided that prior to any BSL training each pupil would undergo training on a novel, structured non-linguistically orientated task (a perceptual-motor exercise), on a 1:1 basis with the teacher who would subsequently be teaching the BSL. In this way, it was hoped that the attentional aspects of sign language training would be controlled.

METHOD

Design. A multiple baseline across children (where n = 4) was employed. In this way, the sequential administration of two treatment variables, perceptual-motor task training and sign language training, could be examined in terms of their effects on certain monitored behaviours.

Figure 1 illustrates the design. After a baseline period each child undergoes training on a perceptual motor task for six weeks and this is followed by sign language training. This design allows for comparison of results both within and between individuals. It is thereby possible to assess whether sign language training has any effect on the behaviour of the children, and further by comparing scores under the sign language training phase with scores under the perceptual motor task training phase, whether any change is attributable to BSL training or to the attentional aspects which BSL training entails.

Table 1.

Tom Baseline	Perceptual Motor Tasks	Sign language training					
	6	12					weeks
Mary Baseline		Perceptual Motor tasks	Sign language training				
		12	18				weeks
Jim Baseline			Perceptual Motor tasks	Sign language training			
			18	24			weeks
Dick Baseline				Perceptual Motor tasks	Sign lang. training		
				24	30		weeks

This design permits analysis of results in the following ways:

1. Visual representation and inspection of raw data.
2. Linear trend analysis on raw data.
3. Revusky's (1967) Rn statistical analysis, to assess the significance of training across pupils.

ASSESSMENTS

The following assessments were employed to assess the effects of teaching BSL:

Signing Ability

No published methods of assessing either the number of, or quality of, signs that an individual can comprehend or express existed, so it was necessary to devise a method.

From Walker's (1976) basic Makaton Vocabulary of 285 signs, those that could be represented pictorially were selected, and reproduced on a series of flash cards. These 190 flash cards were then presented to nine, deaf, young men, all of whom attended a local Training Centre for the Deaf, and were proficient in BSL. Their task was to give one sign as a label for each flash card, in order to provide a measure of their face validity. One hundred per cent agreement was required to confirm the card's validity. On this criterion 120 flashcards constituted the final assessment method, of these 91 were nouns, 17 were verbs, 2 were prepositions and 10 were numbers. Flash card presentation was standardised by viedeotaping each card in black and white and presenting them in random order on videotape for an exposure period of ten seconds each, followed by a three second gap before the next was presented. In this way each picture was exposed to the child in the same format and for the same time period. From this, a method of assessing expressive and receptive signing was established.

Expressive Signing Assessment

Individually, each child was exposed to a black and video recording of 120 flash cards presented sequentially and in random order for a period of 10 seconds each.

At each flash card presentation the child was ased vocally "What is it?" and and simultaneously by signing "What that?". His/her reply was noted as being either expressive vocal label and/or signed non-vocal label for that flash card.

Receptive Signing Assessment

Four, randomly selected, flash cards were presented simultaneously on the screen for a period of 10 seconds. At each presentation the child was signed "Where . . .?" and the label for one of the pictures was signed. The response was scored as correct if he/she pointed to the appropriate flash card and incorrect if any other card was selected. Any vocal response was also noted, and if correct, was scored as 'receptive vocal labelling.'

The limitations of these assessment procedures should be noted. They represent only a sample of the possible signs known to each child, and therefore the results may constitute an underestimate of their true signing ability. Further they measure only single signs, taking no account of the syntactical properties of signs produced by each child.

Assessments of General Behaviour and Social Interaction

A time sampling technique was used with an ear worn auditory prompter (Leifer and Leifer, 1971) to signal at a fixed interval of fifteen seconds. Children were observed in their usual classroom for a period of one hour during a five hour play session.

After Whatmore *et al*, (1975), behaviour was classified in a general way with a special emphasis on its relationship to the environment. They defined four categories:

'*Appropriate Behaviour*' is any active, adaptive behaviour in which it is likely that new skills will be acquired.

'*Neutral Behaviour*' is any totally passive behaviour (sitting on a chair) or behaviour which has little impact on the physical environment (bizarre hand movements), or behaviours which are already highly developed and embedded in the person's repertoire (walking, for a highly mobile child).

'*Inappropriate Behaviour*' is any behaviour which is socially unacceptable but is not very destructive of the physical environment (screaming, chewing toys).

'*Disruptive Behaviour*' is any behaviour which is likely to, or does, cause physical damage to the client or others (biting, hitting).

The above categories are assumed to be both mutually exclusive and collectively inclusive of the total behavioural repertoire of the children.

Assessments of Social Interaction

Interaction between individuals were initially categorised into three areas;

i) Signing (BSL)
ii) Physical (Non-vocal)
iii) Vocal

These three areas were further categorised, after Beveridge *et al*, (1978), in order to distinguish social interactions with the teacher from social interactions with peers, to develop the following classifications;

a) Vocal: teacher — child; Teacher speaking to child.
b) Vocal: child — teacher; Child speaking to teacher.
c) Vocal: other — child; Peer speaking to child.
d) Vocal: child — other; Child speaking to peer.
e) Physical: teacher — child; Teacher doing something to child.
f) Physical: child — teacher; Any physical contact with the teacher, initiated by the child.
g) Physical: other — child; A peer initiating physical contact with child.
h) Physical: child — other; Child initiating physical contact with peer.

i) Signing: teacher — child; Teacher signing to child.
j) Signing: child — teacher; Child signing to teacher.
k) Signing: other — child; Peer signing to child.
l) Signing: child — other; Child signing to peer.

All adults, who were present during the observation period, were classified as 'teachers' for the purposes of this study. Any behaviour directed to the observers was ignored.

Time Sampling Procedure:

For fifteen out of twenty-one observation sessions, two observers recorded data in the classroom. The inter-observer reliability estimates ranged from 82% to 100% agreement, mean agreement level was 93%.

Sampling occured at the same times each week, and took place within a one week period. The observers sat atthe edge of the classroom and did not interact with staff, children or each other, during these sessions.

Speech Therapist's assessment

A speech therapist was available to measure the children's vocal utterances, in the following ways:

a. *Articulation:* Using flash cards of common objects a phonetic analysis of each child's utterances was compiled pre and post sign language training.

b. *Language:* From the speech therapist's observations of a free play session lasting one hour, a subjective assessment of the child's linguistic ability was compiled. Observations were made monthly.

It was agreed that none of the children had enough speech to warrant more formal linguistic assessments.

Teacher's observations

It was in the nature of the teaching methods employed in this classroom that all sessions were recorded and geared to the individual needs of the children. Sign language training was no exception to this, and so records of sessions, signs taught and learned, and any expressed spontaneously were recorded and available for inspection in the teachers' notes.

The Children

From a mixed class of seven adolescents aged 15 - 17 years, all of whom were resident in a unit for children with mentally handicap, four were selected for this study.

All of the children were classified as ESN(S), had severe and multiple learning difficulties and exhibited behavioural problems. Half of the class had no expressive language, while others displayed extreme language difficulties. There was a qualified full-time teacher (the Deputy Head) and a skilled, experienced helper. Both the teacher and helper were noteable for the enthusiasm and concern they gave to this study.

Although all of the children in this class were to be taught sign language, time constraints allowed only a maximum of four children to be systematically monitored. The experimental literature at this time offered no suggestions as to the most suitable candidates for sign language training and so the four children were selected somewhat arbitrarily.

Details of the children selected are shown in Table 1.

Child	*Sex*	*C.A. (years)*	*M.A. (years) (Hiskey-*	*Nebraska) SA. (years)*
Tom	M.	16	3.3	7.6
Mary	F.	16	4.0	6.0
Jim	M.	15	3.9	6.0
Dick	M.	15	*Untestable	2.3

(*'Untestable' refers to lack of co-operation and attention in the testing session).

TOM: This sixteen year old boy with Down's syndrome had lived in institutions for mentally handicapped people for most of his life. Although he was co-operative in learning new skills, his expressive speech was grossly inhibited. His receptive skills were limited by a hearing loss in one ear which worsened throughout the duraton of this project. The Speech Therapist described him in the following way:—

Physical Assessment: Presents as a mouth breather with weak tongue movements. Palatal movement is weak. Poor ability to retain oral pressure.

Articulatory System(Uses a combination of immature and a typical substitutions with omission of final consonants. Speech is largely hypernasal, with weak consonants Intelligibility is poor, and mostly conveyed through intonation and context.

MARY: This sixteen year old girl had always lived in institutions. Despite a total absence of speech she remains sociable, seeming to enjoy contact with others.
The Speech Therapist noted:-

Physical Assessment Placid oro-musculature, large flacid tongue from which no voluntary movement could be elicited. Little change of facial expression. No known physical or emotional causes for complete lack of meaningful vocalisation or verbalisation. The only vocalisations emitted are a short laugh and a high pitched, double syllable scream.

JIM: This withdrawn fifteen year old boy had also lived in institutions for mentally handicapped people for most of his life. Speech Therapist noted:-

Articulatory System: Some immature and a typical substitution, leading to distortions in articulation and thereby producing varying degrees of intelligibility.

Language: Comprehension limited to simple commands. Expression limited to a small number of one or two word phrases. Some spontaneous but inappropriate verbal utterences. Frequent echolalia and humming accompanied by elaborate hand movements.

DICK: This fifteen year old boy had lived in institutions for the latter half of his life. His attention and co-operation was very poor. He was considered a 'problem child' by both school and hospital staff due to outbursts of destructive behaviour and to a complete lack of social behaviour. This child constituted something of a challenge to the study. The Speech Therapist reported:-

Language: Expressive vocalisations are limited to a few explosive, double syllable, vowel sounds. No verbalisations. No imitation of sounds. Repetitive breathy laughter and obsessive waving of hands.

PROCEDURE

Hospital and School Staff Training

All staff met with an experienced signer for 1½ hours each week over a period of five months, and wherever possible they attended formal workshops in Makaton Vocabulary Training. The aim of this teaching period was to equip all staff with a fluent BSL signing using the Makaton Vocabulary. Throughout this training period multidisciplinary meetings were held to plan the design and aims of the project.

Project Procedure

This multiple baseline design follows an A-B-C procedure.

A. Baseline monitoring period, ranging from six weeks for Tom to 24 weeks for Dick.

B. Perceptual — Motor task training. Each child was trained for a period of six weeks to complete a task which emphasized perceptual-motor skills. Teaching process resembled as closely that which would later occur in BSL teaching, using the same teacher; for same periods of time; involving either 1:1 child-teacher interaction, or small group teaching. The child was supplied with a flat board from which nine pegs protruded, and to which a length of cord was attached. He/she was also provided with schematic representations of this board in which the cord had been woven around the pegs in a certain way. The child's task was to produce, from the diagram to the board, the way in which the cord had been threaded. Diagrams of increasing complexity were presented to the child. Teaching sessions were held for approximately fifteen minutes duration, three times weekly. After six weeks of this activity, teaching was terminated and BSL training commenced.

C. *Sign Language Training*
Formal sign language training was provided by the teachers in the classroom while hospital staff were encouraged to reinforce signs by using them in their practical settings. While the hospital staff asserted their co-operation to this task no measures were taken of the extent to which they complied. New staff members were always given some basic sign language training but high staff turnover undoubtedly hindered the extent to which signing was used in the hospital setting. Teaching essentially followed Walker's (1976) guidelines as put forward in her book "Language Programmes for use with the Revised Makaton Vocabulary". This method involves the systematic teaching of signs as laid out in the nine stages of the Makaton Vocabulary. However, where Walker suggests that the child learns initially from pictorial representations and subsequently goes on to use real objects or actions, the teacher preferred to employ the aid of real objects, or actions, initially whenever possible, using cards as a 'back-up', or for those signs for which the real objects were unavailable. This is in accordance with acceptable teaching methods, (Piaget, 1952). Regular teaching sessions were held for approximately fifteen minutes duration, three times weekly, they offered individual instruction for the first child, until another completed the perceptual-motor phase and small group learning developed: thus the group learning involved a maximum of four children.

As learning became established and less physical assistance was required in the formation of signs, proficiency was developed by generalising the acquired signs to everyday classroom activities.

Behavioural Monitoring

Monitoring occured throughout all three phases. The following were assessed at two-weekly intervals for the first six months; after which they occured monthly.

i) Expressive signing ability.
ii) Receptive signing ability.
iii) Quality of general behaviour and frequency of social interaction.

The Speech Therapist made her assessments throughout at monthly intervals. The project continued for a total period of 59 weeks.

RESULTS

The results from each child will be presented in turn. Only the relevant completed statistical analyses will be reported here. A full report, including all of the raw data, can be obtained by writing to the authors.

TOM: Linear regression analysis revealed that no change emerged in the following behaviours during B.S.L. teaching:-

Appropriate Behaviour
Neutral Behaviour
Inappropriate Behaviour
Verbal Interactions from Child
Expressive Verbal Labelling
Receptive Verbal Labelling

Changes in the following behaviours did occur when comparing the scores from baseline and the B.S.L. teaching phase:

i) Physical interactions from child ($t = 8.13$, $p > 0.002$).
This change is not attributable to B.S.L. training, as there are no differences in scores from the perceptual-motor and B.S.L. training phase. ($t = 0.27$, n.s.).

ii) Expressive B.S.L. scores ($t = 6.88$, $p > 0.001$).
Again, this change is not attributable solely to sign language training as during the perceptual-motor training period, these scores increased from baseline level ($t = 4.96$, $p > 0.01$), while there is no significant difference between scores during the perceptual-motor and the B.S.L. teaching phases, (level $t = 0.64$, n.s.).

iii) Receptive B.S.L. scores, ($t = 2.58$, $p > 0.05$).
Once more this change from baseline to the B.S.L. teaching phase cannot be attributed to B.S.L. teaching alone, as no significant differences emerge between the perceptual-motor phase and the B.S.L. teaching phase, (level $t = 0.64$, n.s.).

Scores representing the frequency of B.S.L. interactions from the child are largely at zero level and as such did not lend themselves to statistical analysis. However, visual inspection of these scores suggested that B.S.L. training did increase the number of times this child used signs in the classroom. Regretfully, no assessments are available to indicate whether these signs were used in a meaningful way.

The speech therapist noted no change in the linguistic behaviour of this child throughout the duration of the study.

MARY: Linear regression analysis revealed that no change emerged in the following behaviours during B.S.L. teaching:

Inappropriate Behaviour
Verbal Interactions from Child
Physical Interactions from Child
Expressive Verbal Labelling
Receptive B.S.L. Ability
Receptive Verbal Labelling

However, changes in the following behaviours did occur when comparing scores from the baseline with the B.S.L. teaching phase:-

i) Appropriate behaviour, ($t = 3.09$, $p > 0.02$) where appropriate behaviour was *less* under the B.S.L. teaching phase than the baseline phase, yet more than during the perceptual-motor. The conclusion is that perceptual-motor training increased the occurence of appropriate behaviour whereas was reduced under B.S.L. training.
ii) Neutral behaviour, ($t = 3.21$, $p > 0.01$). This increase in neutral behaviour can be attributed to B.S.L. teaching, as significant differences are also found between the perceptual-motor phase and the B.S.L. teaching phase ($t = 3.52$, $p > 0.01$).
iii) Expressive B.S.L. scores, ($t = 2.05$, $p > 0.05$). However, this change is not attributable solely to B.S.L. teaching as no significant differences emerged between the perceptual-motor training phase and the B.S.L. teaching phase, ($t = 1.35$, n.s.). As for Tom the scores representing the frequency of B.S.L. interactions from this child are largely at zero level and so are not applicable to statistical analysis. However, visual inspection suggested that during the B.S.L. teaching phase, the number of B.S.L. interactions from child increased slightly.

The speech therapist recorded no changes in the linguistic behaviour of this child throughout the course of the study.

JIM: Linear regression analysis revealed that no change emerged in these behaviours during B.S.L. teaching:

Verbal Interactions from Child
Receptive Verbal Labelling

The following scores did not lend themselves to statistical analysis as they are largely at zero level, but visual inspection suggested that no changes occurred.

Inappropriate Behaviour
Physical Interactions from Child
B.S.L. Interactions from Child
Changes did occur in some areas between the baseline and B.S.L. teaching phases;

i) Appropriate behaviour, ($t = 5.31$, $p > 0.001$), however, B.S.L. teaching does not account for this change as there is no significant difference between the perceptual-motor phase and the B.S.L. teaching phase. ($t = 1.05$, n.s.).
ii) Neutral behaviour, ($t = 4.00$, $p > 0.002$), again B.S.L. teaching does not account for this change as no difference is found between the B.S.L. teaching phase and the perceptual-motor phase, ($t = 0.25$, n.s.).
iii) Receptive B.S.L., ($t = 2.14$, $p > 0.05$). As above, B.S.L. teaching does not account for this change as no difference was found between the perceptual-motor phase and the B.S.L. teaching phase, (= 1.49, n.s.).
iv) Expressive B.S.L., ($t = 2.85$, $p > 0.02$). Scores during the perceptual motor phase were largely at zero level rendering statistical analysis inappropriate. However, visual inspection suggested that there was an increase in scores during the B.S.L. teaching phase, over and above those found during the perceptual-motor phase.
v) Receptive B.S.L. ($t = 2.14$, $p > 0.05$). No differences emerged between the perceptual-motor and the B.S.L. teaching phase ($t = 1.49$, n.s.), so this change is not attributable to B.S.L. teaching.

The speech therapist noted no changes in the linguistic behaviours of this child throughout the course of the study.

DICK: Linear regression analysis revealed no significant changes in any of the following behaviours during B.S.L. training:

Appropriate Behaviour

Inappropriate Behaviour
Expressive Verbal Labelling
Receptive B.S.L.
Receptive Verbal Labelling

The following other behaviours were not suitable for statistical analysis, but visual inspection revealed no changes.

Inappropriate Behaviour
Verbal Interactions from Child
Physical Interactions from Child
B.S.L. Interactions from Child
Expressive B.S.L. Ability

However, neutral behaviour was changed from baseline as a result of teaching B.S.L., increasing in amount, ($t = 2.47$, $p > 0.01$). This change is attributable to B.S.L. teaching as there is a significant difference between the perpetual-motor phase and the B.S.L. teaching phase, ($t = 5.06$, $p > 0.002$).

The speech therapist noted no change in the linguistic behaviour of this child throughout the duration of the study.

SUMMARY OF RESULTS

Overall, these results show that clear effects of B.S.L. teaching are found in only four areas:

a) Increased B.S.L. interactions from the child for both Tom and Mary.
b) Appropriate behaviour: B.S.L. teaching led to a decrease in percentage of observed appropriate behaviour (Mary).
c) Neutral behaviour: B.S.L. teaching led to an increase in percentage observed neutral behaviour for both Mary and Dick.
d) Expressive B.S.L. scores increased for Jim.

All other changes in scores which emerged during the B.S.L. teaching phase were attributable to either baseline trends or the common factors between perpetual-motor task teaching and B.S.L. teaching (1:1 child: teacher relationship, novelty effect).

Revusky's Rn statistic was applied to the data. No significant results were found. This confirms the null hypothesis that the interactions between perceptual-motor task teaching and B.S.L. teaching, led to no significant changes in behaviour across subjects.

DISCUSSION OF RESULTS

The results of this study do not support Walker's (1973) suggestions that B.S.L. teaching generalises to improved social behaviour and an improvement in vocal behaviour. Further, the results do not suggest that this particular form of B.S.L. teaching leads to an increase in receptive and expressive B.S.L. scores (with the exception of one child). Instead, the results suggest that either:-

a) The regular teaching of a novel, highly structured task which requires physical contact from teacher to child and a 1:1 child: teacher relationship will lead to the generalisation claims which Walker asserts.

OR

b) Instability of baseline scores makes any subsequent changes difficult to detect.

OR

c) A trend in baseline scores will account for any subsequent increase in level of scores.

Walker (op.cit.) suggested that the use of signs relieves frustration for the person and so decreases antisocial behaviour and increases social behaviour.

This hypothesis rests on certain assumptions:-

1) That there are opportunities for the person to communicate.
2) That the person is motivated to communicate.
3) That neither emotional disturbance nor the extent of the mental handicap retard the learning process.

Lyle (1960) and other researchers have shown that mentally handicapped children in institutions are seriously retarded in verbal development as compared to similar children who live with their parents. They point to a restriction of opportunities for communication in institutions and effects similar to those termed by Barton (1976) as 'institutional neurosis' as factors which contribute to this difference. There is no reason to suggest that communication by manual signs is any more powerful than vocal communication in combating the deleterious effects of the institution. This consideration implies that B.S.L. teaching must do more than teach signs, both to be effective as a mode of communication, and to generalise to the kind of behaviour which have been suggested by Walker. Lyle has argued that a different type of environment is called for, one which is 'child-centred' and encourages (a) changes towards the formation of affective relationships with members of staff, and (b) changes towards a more positive social participation with other children in the group. In addition the child should be given some control over events in his environment. Undoubtedly communication will not occur in the absence of opportunities to do so. How then to explain Walker's assertions that B.S.L. teaching led to positive changes in the social behaviour and vocalisations of her subjects? It would seem that B.S.L. teaching either encouraged the changes in the institution which Lyle has outlined, or that her results are a methodological artifact. It has been noted earlier that there are methodological problems in her research and this would support the latter. Another possibility is that B.S.L. teaching encouraged the staff to listen and observe closely these subjects, perhaps for the first time. In doing so, they noticed more behaviours from a positive perspective rather than from the usual pathological perspective which tends to focus on deficits and problem areas. In order to assess this possibility, all the nursing staff in the hospital where the present project was based were given a questionnaire asking them whether they had noted changes in the quality of general behaviour or vocalisations as a result of B.S.L. teaching for these four children. Of the total thirteen nursing staff, one reported that Tom's behaviour had improved and two reported that his speech had improved; one reported that Mary's general behaviour had improved; seven reported that Dick's general behaviour had improved. So, it is possible that staff perceive change when the objective evidence is to the contrary. In addition, Walker's staff ratings, like the above ratings may be confounding change attributable to baseline trends with change attributable to B.S.L. teaching.

It is encouraging that two of the four children in this study used signs in the classroom, albeit in a limited fashion. From the teaching perspective signs are more easily taught than vocal language, and this may account for some of the popularity which has been expended in this area. The advantages of signs are that:-

a) The teacher can mould and physically shape the arms and hands of the person into the appropriate position.
b) When modelling signs, the teacher can reduce the speed of his/her movements and can hold a position for several seconds if need be.
c) Body movement language precedes the acquisition of spoken speech in the normal child. Signs are therefore considered to be a more 'primitive' system and as such more

within the mentally handicapped child's reach.

d) Many signs are iconic. The close association between the object and its label may make signs more easy to learn and remember.

While B.S.L. may not be appropriate for those with poor motor control, and many argue that it should be discouraged because of the isolationist tendencies for its users, it undoubtedly has many points in its favour from the teaching perspective. Few would question that communication with signs is better than no communication at all.

LIMITATIONS OF THIS STUDY

With regard to possible sources of bias in this study, the following points should be noted:

a) The limitations of a single case design; it would be premature to generalise from four children to a wider population.

b) Assessment techniques: while a measure of face validity was evaluated for the tests of expressive and receptive signing ability, this was gained from a small population (n = 9). No attempt was made to estimate the reliability of these measures.

In addition, no attempt was made to measure the quality of signs produced by the subjects: ideally, a blind rater could have provided some estimate of this.

Further, the behaviour of these children was monitored only in the classroom. No measures were taken of signs produced either by the children or staff in the hospital, so it remains unclear to what extent staff reinforced those signs taught in their practical settings.

RECOMMENDATIONS FOR FURTHER RESEARCH

This study reports some degree of success in teaching sign language to three out of the four mentally handicapped children. This finding is in keeping with the published evidence and informal reports and observations. This study does not, however, support claims that teaching sign language generalises to social behaviour and vocal behaviour.

It is clear that the use of signing with mentally handicapped people exceeds the number of objective evaluations of its use, and further research in this area is undoubtedly called for.

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