

# Training of the Communication Partner provides positive outcomes in facilitating communication of children with Cerebral Palsy who use Speech Generating Devices

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## CLINICAL SCENARIO:

Speech Pathologists provide training and support to families and clients in the programming and setting up of AAC systems. A lot of training in the past has focused on teaching the team how to program a device, as parents and teachers feel that this is essential.

Previous research suggests that there are a variety of reasons and barriers as to why AAC systems are often abandoned or not used beyond the clinical setting. The aim of this CAT was to critically appraise the evidence base in regards to whether literature supports specific training or support for functional use of an AAC system.

## FOCUSSED CLINICAL QUESTION:

In children with Cerebral Palsy, what form of training/ support is needed for effective use of an AAC system?

## SUMMARY of Search, 'Best' Evidence' appraised, and Key Findings:

The search results yielded 5 appropriate articles that were appraised. The evidence critiqued was not new – most recent studies were done in the 1990s.

The literature supports small positive trends of training outcomes. Generally training is an effective intervention for clients who use AAC. Training in the operation of the device alone is not sufficient in improving the functional use of a device. Incorporating training of conversational strategies is necessary.

Training of the communication partners (specifically parents) can facilitate communication which in turn influences children's use of the AAC system and their quality of interactions.

The amount of training given may influence the types of strategies used by the communication partner when interacting with the device user. With longer training sessions (e.g. 7 hours of training), the communication partner used more consistent strategies.

**CLINICAL BOTTOM LINE:**

From the literature reviewed there is medium to low level of evidence to suggest that training the communication partner with functional communication strategies provides positive outcomes in facilitating the communication of children who use AAC systems.

The effective types of training reported were consistent among studies and included:

- language stimulation techniques (e.g. waiting for response/ responding to all communication attempts/ asking open ended questions)
- AAC modelling by communication partners with how to implement the system into their environment
- Video evaluation
- Role play

**Limitation of this CAT:**

- This critically appraised paper has not been externally peer-reviewed.
- Very few studies of good quality exist which fully address this clinical question
- Methodological flaws within the studies
- No consistent outcome measures used in the studies

**SEARCH STRATEGY:****Terms used to guide Search Strategy:**

- **P**atient/Client: child with cerebral palsy, disability
- **I**ntervention: training, support, therapy, intervention, AAC, Augmentative and Alternative Communication, speech generating device, communication device, voice output
- **C**omparison: none
- **O**utcome(s): effective use, positive, outcome

Databases and sites searched	Search Terms	Limits used
PubMed Google Scholar Hand search	Child*, cerebral palsy, disability AAC, speech generating device, communication device, VOCA  training, support, therapy, intervention,  effective, use	0-18

### INCLUSION and EXCLUSION CRITERIA

- Inclusion: Reported on training programs
- Exclusion: Did not report on training/ population studied were adults

### RESULTS OF SEARCH

Five relevant studies were located and categorised as shown in Table 1 (based on Levels of Evidence, Centre for Evidence Based Medicine, 1998)

**Table 1:** Summary of Study Designs of Articles retrieved

Level of Evidence	Study Design/ Methodology of Articles Retrieved	Number Located	Source(s)
<b>A</b>			
<b>B</b>	<b>Systematic Review of case-controls</b>	<b>2</b>	
<b>C</b>	<b>Case series, before and after case design, literature review</b>	<b>3</b>	

### BEST EVIDENCE

All five articles were identified as the 'best' evidence and selected for critical appraisal as they supported the clinical question.

## SUMMARY OF BEST EVIDENCE

### Table 2:

Description and appraisal of: Pennington. L, Goldbart. J & Marshall. J (2004) Interaction training for conversational partners of children with cerebral palsy: a systematic review. *International Journal of Language & Communication Disorders* 39(2): 151-170.

*Aim of the Study:* To review systematically all experimental research on communication training for conversational partners of children with cerebral palsy and to evaluate the effectiveness of this type of intervention.

*Intervention Investigated:* communication training for conversational partners of children with cerebral palsy.

#### *Data Bases Searched*

MEDLINE (from 1966); CINAHL (from 1982); EMBASE (from 1980); Psych Info (from 1967); Web of Science (from 1990); Language and Linguistic Behaviour Abstracts (from 1973); British Education Index (from 1986); National Research Register; ERIC (from 1966); Aslib Index to UK these (from 1970) and SIGLE (from 1980).

#### *Selection Criteria*

- Subjects were conversational partners of children aged 0-19 years who had a communication disorder associated with medical diagnosis of CP.
- Intervention comprised training that aimed to change conversational partners' interaction style and to help them facilitate children's communication development.
- Studies included some element of experimental control.

#### *Results*

STUDY	OUTCOMES	NOTES
Basil 1992	No differences between percentages of turns taken in conversation or proportions of responses to child utterances. Parent's use of open ended questions increased post-therapy. Children's response rate to parents increased post-training and use of AAC boards increased with parents post-training.	Number of controls was not clear, only 4 experimental subjects, not random allocation. Only partial blinding of assessors
Hanzlik 1989	Parents changed behaviour after 1 hr of therapy relating to "doing" – used more face-to-face communication and less physical contact but their use of verbal interactions was unchanged. Increase in voluntary responsiveness and less physical directed compliance, but no diff in independent play of infants	No follow up included in study. Intervention could be partially replicated. Quasi random – allocation pulled from hat as entering study. Only partial blinding of assessors.
McCullum 1984	Trained a mother to bring her face closer to the child during interactions – this behaviour	2 other children were included in

	increased post intervention which lead to an increase in the child's vocalisation. Imitation of child's vocalisations generalised to other play interactions but this was not maintained after therapy.	the study that did not have CP (were not considered in this review). No reliability with blinding.
McConachie 1997	Teachers/education assistants used more strategies to facilitate the child's communication 4 months post training	High attrition rate not explained. Enough detail on intervention so study could be replicated Not random.

*Original Authors' Conclusions*

These studies suggest that there may be an association between interaction training for conversational partners of infants and older children with CP and change in communication style for both the people trained and the children with whom they interact.

The studies all had methodological weaknesses that prevent readers concluding that the interventions led to communication change. Further studies are required to evaluate the effectiveness of current generic training for conversational partners of children with CP, to test the effects of varying components of that training and to test new interventions.

*Critical Appraisal: Level B*

The studies show positive changes in the interaction styles of trained communication partners. There is currently a low level of evidence regarding communication training, due in part to methodological weaknesses in the studies. A thorough search of literature was performed, however no recent literature was found. Further research is required.

There was some indication that the length / amount of training can affect the outcomes for communication partners.

**Table 3:** Description and appraisal of: Pennington L, Goldbart J, Marshall J (2004) Speech and language therapy to improve the communication skills of children with cerebral palsy, *Cochrane Database Systematic Review*, (2); CD003466

#### *Aim of the Study*

The purpose of this systematic review was to determine the effectiveness of Speech and Language therapy for children with communication difficulties relating to cerebral palsy and to review the effectiveness of therapy to provide direction for future research.

#### *Intervention Investigated*

A systematic review of relevant literature was conducted, searching electronic databases using key words/ combinations of the following key words – cerebral palsy AND child, speech OR speech disorder OR speech intelligibility OR speech therapy OR speech and language therapy, language OR language disorder Or language development disorders OR sign language OR language therapy, communication OR communication aid for the disabled OR communication disorders OR communication methods, total OR manual communication OR nonverbal communication.

Two reviewers reviewed each identified study and graded studies. Opinion of 3<sup>rd</sup> reviewer sought if any discrepancy. Agreement of inclusion was calculated using Kappa statistic.

#### *Data Bases Searched*

MEDLINE, EMBASE, CINAHL, Psych Info, Web of Science, Language and Linguistic Behaviour Abstracts, British Education Index, National Research Register, ERIC, Aslib index to UK theses, SIGLE

Also hand searched journals, published conference proceedings, reference lists of all studies selected, and contacted authors for unpublished studies.

#### *Selection Criteria*

Control studies of intervention aimed at improving communication skills involving children under 20y.o. with communication problems relating to CP and any therapy given directly to child or given to familiar communication partner aimed at improving communication skills (except holistic therapies)

12 studies included in review. 4 were related to training the communication partner

#### *Results*

The following studies looked at training the communication partner:

STUDY	OUTCOMES	NOTES
Basil 1992	No differences between percentages of turns taken in conversation or proportions of response to child utterances. Parent's use of open ended questions increased post-therapy. Children's response rate to parents increased post-training and use of AAC	Number of controls not clear

	boards increased with parents post-training.	
Hanzlik 1989	Parents changed behaviour after 1 hr of therapy relating to “doing” – used more face-to-face communication and less physical contact but their use of verbal interactions was unchanged. Increase in voluntary responsiveness and less physical directed compliance, but no diff in independent play of infants	No follow up included in study. Intervention could be partially replicated
McCollum 1984	Trained a mother to bring her face closer to the child during interactions – this behaviour increased post intervention which lead to an increase in the child’s vocalisation.	2 other children were included in the study that did not have CP (were not considered in this review)
McConachie 1997	Teachers/education assistants used more strategies to facilitate the child’s communication 4 months post training	High attrition rate not explained. Enough detail on intervention so study could be replicated

Group studies- did not randomly assign subjects to treatment/ control groups. Weaknesses identified in allocation strategies and selection bias likely.

*Original Authors’ Conclusions*

There were trends shown in communication changes; however methodology was overall poor in all studies.

There was insufficient evidence to support general effectiveness of SLT for children with CP or their partners.

The use of a consistent outcome measure across the studies would be helpful. More research is needed.

Critical Appraisal:

*Level B*

The studies that involved training the conversational partner looked at teaching the parent/ teacher to facilitate the communication of the child using AAC (most of the studies used the same communication strategies e.g. short talks/ brainstorming/ use of videos/ practice and feedback)

Thorough search of the literature, however no recent studies reported, therefore this paper looked at the same studies presented in the authors’ previous systematic review (appraised above).

Positive trends shown in communication changes to communication partners interactions with children with CP, but no firm evidence was demonstrated. Further research required with consistent outcome measures.

The authors pointed out that quality of life was not measured or considered in any of the studies reviewed (i.e. no reports given on parent/ child satisfaction with training/ therapy received).

**Table 4:** Description and appraisal of: Basil. C (1992) Social interaction and learned helplessness in severely disabled children, *Augmentative and Alternative Communication*, 8 (3):188–199

*Aim of the Study:* To analyse the characteristics of conversation between AAC users and communication partners and to improve their communication interaction through the introduction of a family intervention program.

*Study Design:*

Before and after case design.

*Setting*

Pre and post measures taken at home/ school, training initially in rehab centre, then other sessions in child's home.

*Participants*

4 children with cerebral palsy (7;4 – 8;8 y.o) who have used a communication board for 1-2 years (in Spanish/ Catalan), their parents/ teachers.

*Intervention Investigated*

Parents received training sessions which involved– explaining to parents how to use communication boards/ simplifying language/ using open ended questions/ responding to all communication attempts made by child.

*Outcome Measures (Primary and Secondary)*

Analysed conversational patterns (used percentages).

*Results*

There was an increase in child vs. parent utterances, with no significant differences between child-school

The amount of initiation did not change

Decrease in child's non-responses at home

Increase in adult use of open-ended questions

Increase in child's AAC board related utterances at home

*Original Authors' Conclusions*

Family training helped communication partners modify communication behaviour and be more responsive. It had no effect on initiation rates and did not counteract the effects of learned helplessness and learned dependency (adult dominated interactions remained)

*Critical Appraisal:*

Although this article is low level of evidence and used a very small sample size, it supports that there is value in parent training and provides a list of strategies for parent training.

*Level C*

**Table 5:** Description and appraisal of: Pennington. L & McConachie. H (1996) Evaluating My Turn to Speak an in-service training programme for schools, *European Journal of Special Needs Education* 11 (2):167–180

*Aim of the Study:* To evaluate the effectiveness of in-service training for adults working with students using AAC systems.

*Study Design:*

Before and after group design

*Setting*

Within the school environment

*Participants*

6 target children, selected by the school staff, each had an AAC system but were thought not to be using it to its potential.

24 adults who were teachers and non-teaching assistants, all currently working with the target children.

*Intervention Investigated*

The training package *My Turn to Speak* consists of the following structure:

- 5 x 90 minute sessions
- Run by two clinicians (SP/OT/Teacher)
- Spread across 10-12 weeks
- Targets 1 or 2 children using or about to use an AAC system
- Behavioural approach, building participants skills step by step
- Methods of training used were talks, discussions, brainstorming, exercises, role play and video
- Introduces concept of a 'team' and identifying goals for the child.
- Content included: factors affecting communication such as, positioning, access modes, communication modes, communication functions, empowering AAC users, communication breakdown, facilitating communication strategies and making communication fun.

*Outcome Measures (Primary and Secondary)*

3 outcome measures collected, Pre (one month prior to training), Post (one month and four months after training). These were in the form of video ratings and questionnaires.

*Results*

The participants quality of facilitation of children's communication increased significantly (p value <0.001)

Knowledge of staff increased (gave more specific answers and specific strategies to use), shown on the questionnaire answers.

Increased knowledge of the role of members in an AAC team.

*Original Authors' Conclusions*

Although there are limitations, the study suggests that the *My Turn to Speak* training package was successful in its aims of fostering an interdisciplinary team approach to AAC in schools and developing participant's skills in facilitating communication of the target children.

*Critical Appraisal:**Level C*

Although this article is low level of evidence and used a small sample size, with a high drop out rate, it supports that training can increase knowledge and longer term maintained changes and video evaluation was effective evaluation tool.

**Table 6:** Description and appraisal of: Binger C, Berens J, Kent-Walsh J. & Taylor S. The effects of aided AAC interventions on AAC use, speech and symbolic gestures. *Seminars in Speech and Language 29(2): 101-111*

*Aim of the Study:*

- To review common AAC intervention techniques
- To examine the effects such interventions have on AAC skills
- To examine the effects of AAC interventions on their other communication modes.

*Intervention Investigated*

- AAC interventions (System for Augmenting Language, PECS, least to most hierarchy, Milieu teaching strategies)

*Participants* – Reviewed 2 articles which were single subject, multiple baseline across participant research. Both studies taught communication partners to use a least to most cueing hierarchy while reading a book:

- provide natural cue and aided AAC
- Ask a Wh- questions and AAC modelling
- Answer Wh- questions and use AAC modelling.

*Results*

Compared baseline and post intervention  
Found increased use of AAC for all 6 children. Statistically significant results, however number and details not given

*Original Authors' Conclusions*

Taking time to teach children AAC is more than worth the effort. Children make gains in their aided AAC productions when facilitative intervention techniques are used.

*Critical Appraisal:**Level C*

Not enough details about the 2 studies reviewed. It described AAC techniques (AAC modelling, expectant delay, Wh- questions and responsivity). Some evidence that the use of AAC increase when intervention techniques are used.

## IMPLICATIONS FOR PRACTICE/ APPLICABILITY

Children who use speech generating devices require intensive training to understand and use the device functionally. Speech Pathologists regularly provide training and support to families and clients in the programming and setting up of AAC systems.

A further focus should be on training the communication partner with consideration of the following:

- Incorporating functional communication techniques
- Incorporating adult learning principles and strategies into training e.g. discussions, videos, practice and feedback
- The length of training provided
- Incorporating a team approach to training
- Using consistent outcome measures
- Measuring participation and quality of life as an outcome tool (Life Needs Model)
- Incorporating follow up post-training

### Where to for us?

- Before going down the path of a communication device, therapists need to consider the client's environment and support network – a lengthy trial with functional goals (GAS) can help establish this.
- Consistent use of outcome measures for therapists – The use of GAS across the organisation for equipment trials will provide consistent measures of functional goals.
- TASC Speech Pathologists are developing a new training package that will be run next year which is on the PD calendar, called "Working with AAC" . The training focus will be on implementation of a device, with the training outcomes from the CAT incorporated.
- TASC therapists are looking at developing and implementing a training package for new device users and their families, with a focus on developing individual goals, collecting outcomes and providing ideas for integration into the community. Training will be family centred as family-centred practice is the recommended service delivery model and will involve training the communication partner and adopting the strategies that were shown to be effective in the articles appraised in the CAT.

## REFERENCES

### Articles critically appraised:

Basil. C (1992) Social interaction and learned helplessness in severely disabled children *Augmentative and Alternative Communication* 8 (3):188–199

Binger C, Berens J, Kent-Walsh J. & Taylor S. The effects of aided AAC interventions on AAC use, speech and symbolic gestures. *Seminars in Speech and Language* 29(2): 101-111

Pennington L, Goldbart J, Marshall J (2004) Speech and language therapy to improve the communication skills of children with cerebral palsy. *Cochrane Database Systematic Review* (2); CD003466

Pennington. L, Goldbart. J & Marshall. J (2004) Interaction training for conversational partners of children with cerebral palsy: a systematic review. *International Journal of Language & Communication Disorders* 39(2): 151-170.

Pennington. L & McConachie. H (1996) Evaluating My Turn to Speak an in-service training programme for schools , *European Journal of Special Needs Education* 11 (2):167–180