Parental Perception of the Efficacy and Effectiveness of a ‘no training needed’ Home Programme for Children with Speech Sound Disorders.

A research project submitted to the Department of Clinical Therapies as part of the MSc in Speech and Language Therapy

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Abstract

Background: A successful alternative to one to one therapy for children with speech sound disorders (SSD) such as a home programme, could reduce the time spent waiting for intervention. Previous studies have established that parents can be as effective as clinicians, as agents of therapy, when training is provided. This study investigates the success from the perspective of the parent, of a ‘no training needed’ home programme.

Aims:
This study aims to develop a home programme for children with phonological delay and consistent phonological disorder, usable for parents and children without any training. The study aims to evaluate the effectiveness and efficacy of this home programme, as measured by parental report.

Methods and Procedures: Thirteen mono-lingual, English speaking children (6 girls, 7 boys) with a mean age of 4;03 (range 3;03-5;09) and their parents participated in this study. All children were diagnosed with a phonological delay or consistent phonological disorder and were not currently in receipt of therapy for their SSD. The parents and their children carried out the programme for 15 minutes a day, 6 days a week, for five weeks. Parents completed questionnaires evaluating the impact of their child’s SSD on their communication before and after the programme and evaluating the usability of the programme at the end of the study.

Results: 12 out of 13 parents reported that their child’s speech intelligibility had improved after the five week home programme. Parents perceived improvement but not enough to make a change to the impact index as measured by the first questionnaire. Parents and children found the programme to be usable in terms of enjoyment and the materials and instructions provided to be adequate. Some parents found the time requirement difficult to adhere to.

Conclusion: This may indicate that a notable change was observed by parents; however, the change was not enough to make a significant impact on their communication with others. The programme activities are enjoyable. Parents were able to carry out the activities within this home programme without any training.
Introduction

Background

Current Service Provision

Currently speech and language provision in Ireland cannot meet the service demand from the paediatric population and long waiting lists prevail. Statistics provided to The Irish Examiner by the Health Service Executive in May 2012, reveal that in many areas of Ireland children are experiencing long waiting times for speech and language therapy services, up to three years in some cases (Hough 2012). Too frequently cases deemed urgent may wait up to 2 years for a service, and cases classed as mild to moderate may wait up to three years for intervention (Hough 2012). Speech and Language therapy in Ireland is currently provided to children on a one-to-one or small group basis primarily within a health care setting. Provision is implemented in blocks; typically one hour a week for 6 weeks. This is often supplemented by the therapist providing homework for parents, carers or schools to implement. The long waiting lists are evidence that the current numbers of speech therapists using the existing model of delivery does not meet the demand for the service. This provides motivation to investigate alternative models of service delivery that would allow children to access effective intervention more quickly.

Classification of Speech Disorders

Children with speech sound disorders are a mixed group (Crosbie et al 2005; Dodd et al 2005; Holm et al 2008). Dodd et al (2005) propose four subgroups: articulation disorder, phonological delay, consistent phonological disorder and inconsistent phonological disorder. Children with phonological delay show phonological error patterns that are typical of normal speech development, but at least some errors are typical at a younger chronological age (Dodd et al 2005). Children with a consistent phonological disorder show errors that are atypical at any developmental age, but these errors follow a predictable pattern (Dodd et al 2005). Children with an inconsistent phonological disorder have 40% variability in their phonological system; producing multiple realisations of the same word.
Underlying deficits of speech disorders

While all children make speech production errors as part of typical speech development (Crosbie et al 2009), children with a phonological delay are slower to establish their phonological system, whereas children with phonological disorders make atypical errors. The latter are cognitive linguistic errors (Crosbie et al 2009) where the child fails to successfully derive and implement the rules of phonology of their language (Dodd and Crosbie 2002).

Prevalence of Speech Disorders

Figures are not available for the Irish population but research in the UK estimates that 6.4% of children without additional learning needs have delayed or disordered speech (Broomfield and Dodd 2004). In the USA Shriberg and Kwiatkowski (1994) report developmental phonological disorders have a prevalence of 7.5% of amongst 3-11 year olds. Within one speech and language caseload studied in the UK, 29.1% of the children were found to have speech difficulties and of this number 57.5% presented with phonological delay (Broomfield and Dodd 2004).

Population targeted in this study

Children with phonological delay or consistent phonological disorder will be included in this study. Results from a survey of clinicians in the UK revealed that almost half of a total of 98 clinicians who responded, said that children with phonological disorders made up over 40% of their caseload (Joffe and Pring 2008). It can be deduced from this that the population targeted in this study should represent a significant proportion of children on waiting lists for speech and language therapy in Ireland.

The age range of children included in this study is from 3;0 to 5;11. Research has found that the majority of children being referred with speech difficulties are within the age range of 2 and 6 years old (Broomfield and Dodd 2004). This age range includes children of pre-school and early school age; ages when a child’s phonological system that is typically developing is becoming fully established (Dodd et al 2003 cited in Dodd 2005). At the latter end of this age range, literacy skills are being acquired and poor phonological awareness has been identified as an indicator of delayed literacy skill acquisition.
(Webster et al 1997; Lewis and Freebairn 1992; Lewis et al 2000; Mody 2003; Gillon 2004; Rvachew and Brosseau-Lapre 2012).

The Importance of Early Intervention

Educational reasons
Early intervention is crucial for children with phonological disorders in order to reduce the risk of future literacy difficulties (Leitao and Fletcher 2004; Nathan et al 2004). Phonological awareness and expressive phonology have been found to be the most important pre-school indicators of early school reading ability (Gillon 2004; Larrivee and Catts 1999). Children with consistent phonological disorders, in particular, have been found to be at greater risk of having difficulty with literacy skills (Holm et al 2008; Leitao and Fletcher 2004). It is also known that poor phonological awareness skills in young children can predict reading difficulties in adulthood (Young et al 2002). Therefore intervention at a pre-school or early school age is important in order for a child to be prepared for acquiring literacy skills (Leitao and Fletcher 2004) and this may potentially influence literacy related achievement in adulthood.

Psychosocial reasons
Speech disorders may also have a direct psychosocial impact on an individual. Children can become frustrated if not easily understood, which may for some children lead to negative behavioural outcomes. In these cases research indicates that as a child becomes more intelligible their behaviour and social skills also improve (Almost and Rosenbaum 1998).

Research carried out in the Language Acquisition Preschool at the University of Kansas, found that children with speech and/or language impairments preferred talking to adults than their peers (Rice et al 1991), they often ignored the conversation initiations of others (Hadley and Rice 1991) and these children were also amongst the least popular children within the class in terms of peer referencing (Gertner et al 1994). Therefore early remediation is important for a child for their socio-emotional welfare.
Parents as agents of intervention

Parents are involved by the majority of clinicians in a child’s therapy (Joffe and Pring 2008). Predecessor studies to this, have found parents to be effective agents of intervention in carrying out home programmes for children with speech sound disorders, (Brady, Carey and Schofield 2011). This corresponds to results of previous research using parents as agents of intervention for speech disorders (Lancaster et al 2010) and language difficulties (Gibbard 1994). In fact parent based intervention for language delay has been found to be significantly better than standard practice in some cases (Gibbard et al 2004). PACT: Parents and children together in phonological therapy, a programme designed by Bowen and Cupples (2006) emphasises parental involvement and also shows positive gains for children with phonological disorders. However, in the studies mentioned, parents were provided with training. In a Cochrane review by Law et al 2003, no significant difference in outcomes was found for intervention delivered by clinicians and intervention delivered by trained parents.

A benefit of using parents as agents of therapy is that it allows for daily intervention. It has been shown that intensive interventions, such as those within research settings may be very successful, but that this success is greatly reduced when provided with less intensive service delivery methods which are typical of clinical settings (Glogowska et al 2000; Denne et al 2005). It is hoped the frequent dose of intervention intended by this home-programme will be effective.

Another benefit of using parents to deliver intervention in the current climate where therapists experience long waiting lists is that it is less demanding of clinician’s time. The current study requires the clinician to take on a more consultative role, which is increasingly common (Law et al 2002); carrying out assessment and providing the home programme which is carried out at home for five weeks before being reviewed.

Parents as assessors of efficacy

Parental perceptions of their child’s progress will be measured to see whether they believe that the intervention was successful. In a study by Hadley and Rice (1993) a high degree of correlation was found between parent report, the Goldman-Friscoc Test of
Articulation and clinician’s informal observations. Clinician and teacher perception have also been found to have high levels of agreement with the Goldman-Friscoe Test of Articulation in the identification of articulation and phonology difficulties in children (Botting et al 1997). Parental perception as a measure has been shown to have a strong positive correlation with other formal measures when used in assessing their child’s hearing abilities after a cochlear implant (Lin et al 2008), indicating parents can provide reliable report about their child’s abilities.

**Home Programme Content**

This novel home programme aims to improve the child’s speech production through a combination of approaches:

**Phonological contrast therapy** - This has been found to be the most effective intervention for children with consistent phonological disorders when focusing on production (Crosbie et al 2005). The ‘mixed-up’ stories draw the child’s attention to numerous examples of how homophony can cause semantic confusion and then provide feedback to the child on the correct phonological productions.

**Phonemic perception training** - Research carried out by Rvachew (1994) and Rvachew et al (2004) has demonstrated improvements in speech sound accuracy in production can also be achieved using a perceptual intervention. This home programme uses the principle of phonemic perception training through the phonological contrasts presented in the stories. This removes the time costly need for training parents on how to administer minimal-pairs activities correctly.

**Phonological awareness activities** – Studies using phonological awareness activities showed improvements in phoneme awareness, speech production, reading accuracy and reading comprehension skills of children who had speech and language difficulties (Gillon 2000). A follow up study by Gillon (2002) found continued improvements in literacy skills for these children. The home programme uses a range of phonological awareness activities.
Whole language approach - The stories used within this home programme constitute a whole-language approach to treating phonological disorders; this is appropriate for parental implementation without formal training. The programme uses naturalistic language in the stories and also through parental delivery of phonological awareness activities. In a case study of two brothers with a similar degree of speech and language difficulties, Hoffman et al 1990 (cited in Tyler 2002) found that a whole-language approach led to improvements in one boy’s phonology which were comparable to those produced by a direct phonological approach used with the other boy. Since there is a high co-morbidity between speech sound disorders and additional language difficulties (Tyler 2002), a whole-language approach for these children could be most beneficial as it may lead to improvements in both speech and language.

Aims of this study
- To develop a ‘no training needed’ home programme that was usable for parents and children.
- To evaluate the effectiveness of a no-training-needed home programme, as measured by parental report.

This study will be investigating the following hypothesis:

Children’s speech intelligibility will improve after the home programme as measured by parental report.
Methods

Ethical Approval and Consent

Ethical approval for this study was sought by the chief researcher and granted from the University of Limerick’s Research Ethics Committee. Each parent also provided written permission for their child to participate in this study having read the parent information sheet (see Appendix A).

Participants

Thirteen children were recruited through a combination of methods. Firstly a recruitment email (see Appendix B) was sent to staff and students at the University of Limerick. Secondly recruitment posters (see Appendix C) were placed around the university campus and on noticeboards in shops, post offices, medical centres and crèches around Limerick city and the surrounding areas. Inclusion criteria were being aged between 3 and 5 years of age and being diagnosed with either a phonological delay or consistent phonological disorder. Exclusion criteria were being bilingual, having an intellectual disability or an uncorrected visual or hearing difficulty.

Experimental Design

This study used two experimental designs. The first was a multiple baseline, within subjects design, and included participants 1-7. These children and parents attended an initial assessment (T1, abbreviations used are summarised in table 1) and were then assigned to one of two control groups.

No treatment group (NTgp) controlled for the effects of maturity on speech intelligibility. They spent the first 5 weeks with no changes to their typical daily lives. The second group controlled for the effects of structured one to one time, with parent and child carrying out an activity of the child’s choice, on speech intelligibility; this group was labelled 1:1 group (1:1gp). Parents in this group carried out an activity with their child on a one to one basis, on the same schedule as the home program, i.e. 15 minutes a day. Both groups were reassessed after five weeks at T2. At this assessment session the home programme was distributed and they followed this for the following five weeks before being assessed at T3.
The research plan intended to recruit 40 participants but there was a low level of response to the advertisement and the research started with 7 participants in a multiple baseline design. More volunteers subsequently came forward and a further 6 suitable participants were recruited. Due to time constraints the latter group, participants 8-13 were enrolled into a pretest-posttest design, this group was labelled PPgp. The controls within the multiple baseline design were taken to be representative of this group also, due to similar mean age and diagnoses. These participants attended assessment at T2, carried out the home programme for 5 weeks before attending a final assessment at T3.

Table 1. Abbreviations used in this study.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>first assessment time for participants 1-7</td>
</tr>
<tr>
<td>T2</td>
<td>second assessment time for participants 1-7</td>
</tr>
<tr>
<td></td>
<td>first assessment date for participants 8-13</td>
</tr>
<tr>
<td></td>
<td>all participants receive home programme at this point</td>
</tr>
<tr>
<td>T3</td>
<td>final assessment time for all participants</td>
</tr>
<tr>
<td>NTgp</td>
<td>No Treatment group</td>
</tr>
<tr>
<td>1:1gp</td>
<td>One to one group</td>
</tr>
<tr>
<td>PPgp</td>
<td>Pretest-posttest group</td>
</tr>
</tbody>
</table>

**T1 Assessments**

- Each parent completed the case history form (see Appendix D), which included permission to record the assessments using a voice recorder.
- Each parent completed Likert questionnaire 1 (see Appendix E).
- Each child was assessed using the DEAP (Dodd et al 2002) diagnostic screener and phonological assessment.

**T2 Assessment Sessions**

- Parents 1-13 completed Likert questionnaire 1.
- Parents 8-13 completed the case history form.
- Children 1-13 were assessed using the DEAP phonological assessment.
• Children 8-13 were also assessed using the diagnostic screener.
• All participants received the home programme.

T3 Assessment Sessions

• Parents 1-13 completed Likert questionnaires 1 and 2 (see Appendix F)
• Each child was assessed using the DEAP phonological assessment.

Procedure

Assessment sessions for participants took place in a quiet clinic room. Two researchers (final year student SLTs) carried out each assessment. The sessions were recorded using a voice recorder.

T1: Each parent completed the case history form and Likert questionnaire 1 with one of the researchers, while the main researcher, carried out the DEAP diagnostic screener with the child. Once the screener suggested a possible diagnosis of phonological disorder or delay the DEAP phonological assessment was administered to identify phonological processes and to measure percentage of consonants correct (PCC). Immediate feedback was provided to the parents about whether their child was suitable to take part in the programme. The child was then assigned to one of two groups: NTgp or 1:1gp.

T2: Participants 1-7 returned for a second assessment. Parents completed Likert questionnaire 1, to provide a second baseline measure, while the DEAP phonological assessment was administered as before. Changes in phonological processes were identified and a second baseline measure of PCC was obtained.

Participants 8-13, who were recruited later, underwent an initial assessment at time 2 of the project, parents completed the case history form and Likert questionnaire 1 and the children were assessed using the DEAP diagnostic screener and phonological assessment to ensure that they qualified for the research study.

All 13 participants were given the home programme at this point. One researcher provided the parent with brief (5-10min) verbal instructions, explaining modelling and recasting skills and the activities contained within the programme. Parents were instructed to spend 15 minutes, 6 days a week for 5 weeks carrying out the programme.
Each parent was advised that they were free to contact a researcher via the research
group mobile phone if they had any difficulty understanding any part of the programme.
The parents were asked to use the diary included in order to record the amount of time
spent on the programme each day and to note which stories and activities were used.

Reliability

Transcriptions

One researcher was assigned as the lead researcher for each case. Each transcription was
transcribed by the lead researcher and the phonological sections of the DEAP were also
transcribed by a second researcher. The voice recording was used to investigate any
discrepancies and the lead researcher made the final decision on the correct
transcription. Children were assessed by the same pair of researchers each time, to
promote consistency.

Fidelity to and compliance with delivery of home programme

Each parent was given similar brief verbal instructions about how to carry out the home
programme. Each copy of the home programme also contained written instructions
about how to carry out the home programme with their child (see Appendix G) and a
parent diary to record time spent and activities used (see Appendix H).

Home Programme

The home programme was provided in a loose leaf A4 folder, with dividers separating
each section.

Mixed up Marty Stories

The programme consisted of 24 Mixed up Marty stories (see Appendix I for an example)
where the main character used an incorrect pronunciation of a word or words which
resulted in semantic confusion. In each story the confusion is resolved by another
character realising the mistake and producing the correct word which subsequently
resolved the confusion. Minimal pair activities follow the stories, as can be seen in the
example.
Phonological Awareness Activities

- 13 traditional nursery rhymes with instructions were included (instructions in Appendix G).
- 15 sound stories, along with the corresponding picture sound scene from the Letterland series were included, for the following sounds: sh, ch, z, v, t, s, p, l, k, j, g, f, d, c and b.
- Scrapbook activity (see Appendix J)
- Other phonological awareness activities (see Appendix K)

Analysis

The results from Likert questionnaires 1 and 2, including information written by parents in the comments box in the latter, along with parent comments in the home programme diaries and information gathered from the case history forms were used to investigate the following hypothesis:

*Children’s speech intelligibility will improve after the home programme as measured by parental report.*

Likert Questionnaire 1:

Table 2. Items in Likert Questionnaire 1.

<table>
<thead>
<tr>
<th>Likert Questionnaire 1 questions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think my child is aware of their speech delay/disorder</td>
</tr>
<tr>
<td>2. My child’s speech delay/disorder affects conversation between us as parent and child.</td>
</tr>
<tr>
<td>3. My child’s speech delay/disorder affects their conversation with extended family.</td>
</tr>
<tr>
<td>4. My child’s speech delay/disorder affects their interaction with their friends/peers.</td>
</tr>
<tr>
<td>5. My child’s speech delay/disorder affects conversation with people they do not know.</td>
</tr>
<tr>
<td>6. I am concerned about my child’s speech delay/disorder.</td>
</tr>
</tbody>
</table>
Question 1 was used to monitor parents’ perception of their child’s awareness of their SSD.

The results from questions 2-5 were suitable to amalgamate into a score, labelled an impact index that could show any change in the parents perception of the impact their child’s SSD had on their conversations at T1, T2 and T3.

Question 6 provided information about the parents’ level of concern regarding their child’s SSD at T1, T2 and T3.

**Likert Questionnaire 2:**

Table 3. Questions in Likert Questionnaire 2

<table>
<thead>
<tr>
<th>Likert Questionnaire 2 questions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The home programme was beneficial for my child.</td>
</tr>
<tr>
<td>2. I think my child’s speech has improved over the last five weeks.</td>
</tr>
<tr>
<td>3. I think my child is a more confident communicator now.</td>
</tr>
<tr>
<td>4. Other people have commented that my child’s speech has improved over the last five weeks.</td>
</tr>
<tr>
<td>5. My child enjoyed the programme.</td>
</tr>
<tr>
<td>6. I enjoyed doing the programme with my child.</td>
</tr>
<tr>
<td>7. The instructions provided were adequate to carry out the programme.</td>
</tr>
<tr>
<td>8. The materials provided were adequate to carry out the programme.</td>
</tr>
<tr>
<td>9. It was easy to find time to do the programme with my child</td>
</tr>
<tr>
<td>10. I spent more one-to-one time with my child because of the programme.</td>
</tr>
<tr>
<td>11. I will continue doing these activities with my child.</td>
</tr>
<tr>
<td>12. The activities are useful to do with my other children (if applicable).</td>
</tr>
<tr>
<td>13. I felt confident using the programme with my child.</td>
</tr>
</tbody>
</table>

Questions 1-4 were used to ascertain how much improvement the parents perceived the home programme made on the child’s speech intelligibility and communication skills. Questions 5-13 provided information about the usability of this ‘no training needed’ home programme.
Information provided by parents in the comment box on Likert questionnaire 2 was used to provide qualitative information about perceived improvements in the child’s speech and to provide information about the usability of the home programme.

**Parent Diary:**

The parent diary was used to deduce the level of compliance participants had to the programme in terms of the amount of time spent and which activities were used.

**Case History forms:**

Information provided in the case history forms was used to establish eligibility for the programme and any relevant background information.
Results

Quantitative and qualitative methods were used to describe the results. Where appropriate, non-parametric tests were used to statistically analyse the data, due to the small sample size and as the data was not normally distributed.

Participant details, including demographic and relevant case history information are summarised in Table 4. Group details are summarised in Table 5. Appendix L contains a table of comments parents made in the diary or in the comment box in Likert questionnaire 2.

Table 5. Summary of group participants

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th>Mean age</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTgp</td>
<td>4, 5, 7</td>
<td>4;09</td>
<td>Phonological delay x2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Consistent phonological disorder x1</td>
</tr>
<tr>
<td>1:1gp</td>
<td>1, 2, 3, 6</td>
<td>4;02</td>
<td>Phonological delay x3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Consistent phonological disorder x1</td>
</tr>
<tr>
<td>PPgp</td>
<td>8-13</td>
<td>4;02</td>
<td>Phonological delay x5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Consistent phonological disorder x1</td>
</tr>
</tbody>
</table>
Table 4. Summary of Participant Case History Data

<table>
<thead>
<tr>
<th>Child</th>
<th>Age*</th>
<th>Group</th>
<th>Gender</th>
<th>Diagnosis</th>
<th>Hearing or medical concerns</th>
<th>Family history</th>
<th>Parent Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4;05</td>
<td>1:1gp</td>
<td>Female</td>
<td>Consistent phonological disorder</td>
<td>None</td>
<td>-</td>
<td>PLC**</td>
</tr>
<tr>
<td>2</td>
<td>4;07</td>
<td>1:1gp</td>
<td>Female</td>
<td>Phonological delay</td>
<td>&gt;6 hearing infections</td>
<td>-</td>
<td>Third Level</td>
</tr>
<tr>
<td>3</td>
<td>4;05</td>
<td>1:1gp</td>
<td>Male</td>
<td>Phonological delay</td>
<td>None</td>
<td>-</td>
<td>Third Level</td>
</tr>
<tr>
<td>4</td>
<td>5;09</td>
<td>NTgp</td>
<td>Male</td>
<td>Phonological delay</td>
<td>Double grommets inserted and adenoids removed March 2011. Normal hearing at age 5.</td>
<td>-</td>
<td>Third Level</td>
</tr>
<tr>
<td>5</td>
<td>3;07</td>
<td>NTgp</td>
<td>Male</td>
<td>Consistent phonological disorder</td>
<td>None</td>
<td>Father (stammer)</td>
<td>Third Level</td>
</tr>
<tr>
<td>6</td>
<td>3;03</td>
<td>1:1gp</td>
<td>Male</td>
<td>Phonological delay</td>
<td>Grommets inserted 7/3/2013</td>
<td>-</td>
<td>PLC</td>
</tr>
<tr>
<td>7</td>
<td>5;00</td>
<td>NTgp</td>
<td>Female</td>
<td>Phonological delay</td>
<td>None.</td>
<td>Father &amp; sister (Asperger’s)</td>
<td>Third Level</td>
</tr>
<tr>
<td>8</td>
<td>3;09</td>
<td>PPgp</td>
<td>Female</td>
<td>Phonological delay</td>
<td>Normal hearing test. Has fluid in ear, may need grommets. Enlarged adenoids, may need them removed.</td>
<td>-</td>
<td>Third Level</td>
</tr>
<tr>
<td>9</td>
<td>3;06</td>
<td>PPgp</td>
<td>Male</td>
<td>Consistent phonological disorder</td>
<td>Normal hearing at 3yrs.</td>
<td>-</td>
<td>PLC</td>
</tr>
<tr>
<td>10</td>
<td>3;11</td>
<td>PPgp</td>
<td>Female</td>
<td>Phonological delay</td>
<td>Hearing test normal at 18 months.</td>
<td>-</td>
<td>PLC</td>
</tr>
<tr>
<td>11</td>
<td>4;06</td>
<td>PPgp</td>
<td>Male</td>
<td>Phonological delay</td>
<td>None</td>
<td>Sister (dyslexia)</td>
<td>Junior Cert</td>
</tr>
<tr>
<td>12</td>
<td>3;09</td>
<td>PPgp</td>
<td>Female</td>
<td>Phonological delay</td>
<td>Hearing test normal at 18 months. No ear infections.</td>
<td>Sister (attends SLT Cousin (dyslexia)</td>
<td>Leaving Cert</td>
</tr>
<tr>
<td>13</td>
<td>5;04</td>
<td>PPgp</td>
<td>Male</td>
<td>Phonological delay</td>
<td>No ear infections.</td>
<td>-</td>
<td>PLC</td>
</tr>
</tbody>
</table>

*Chronological age (at T1 for cases 1-7 and at T2 for cases 8-13) ** Post Leaving Certificate
Did the home programme cause an improvement to the children’s speech intelligibility according to parental report?

Questions 1-4 on Likert questionnaire 2, which was administered to all parents at the final assessment session in order to evaluate the home programme, were used to investigate this question. The results support the hypothesis.

**Question 1: ‘The home programme was beneficial for my child.’**

As figure 1 shows, 12 out of 13 parents (92%) of parents believed that the home programme was beneficial for their child, which supports the hypothesis.

**Question 2: ‘I think my child’s speech has improved over the last 5 weeks.’**

The results in figure 2 show that 12 out of 13 parents believed that their children’s speech had improved during the duration of the home programme. Parent 3 commented that: ‘My child is more fluent and trying to say more difficult words.’ The results from this question therefore also support the hypothesis.

*Figure 1. Parent responses to question 1*  
*Figure 2. Parent responses to question 2.*
Question 3: ‘I think my child is a more confident communicator now.’

The bar chart in figure 3 indicates that the results of this of this question support the hypothesis, and also indicate that parents perceived that the programme had a positive impact on the child’s confidence in their communication skills, not only the child’s speech intelligibility. Parent 13 commented that she had ‘noticed an increase in his confidence.’

Question 4: ‘Other people have commented that my child’s speech has improved over the last five weeks.’

Agreement by 69% of parents, see figure 4, is a strong indication that benefits of the home programme were observable to people other than the child’s parents. Parent 7 commented that her child ‘can communicate better in school and the teacher has seen much improvement over the past week.’

Parent 13 reported increased participation in school according to his teacher, as he read his work out to his class, something he would not have done before. This indicates that a child’s teacher noticed an increase in the child’s confidence within the duration of the home programme, which his parent attributed to the effect of the home programme. These results support the hypothesis.
Did the home programme have a positive effect on the children’s conversations?

Questions 2-5 (listed below) from Likert Questionnaire 1, which was completed by parents at each assessment session, investigate the parents’ perception of the impact their child’s speech difficulty has on their conversation with them, other members of their family, peers and strangers. The sum of these responses forms an impact index that can be used to investigate change in the parents’ perception of the impact of their child’s speech on their conversations across time. The change in the impact index scores for the NTgp and 1:1gp at T1, T2 and T3 are shown in figure 5.

**Question 2:** My child’s speech delay/disorder affects conversation between us as parent and child.

**Question 3:** My child’s speech delay/disorder affects their conversation with extended family.

**Question 4:** My child’s speech delay/disorder affects their interaction with their friends/peers.

**Question 5:** My child’s speech delay/disorder affects conversation with people they do not know.

**Impact Index Scores for NTgp and 1:1gp from T1 to T2:**

There was no significant change in this score from T1 to T2 for the NTgp (Wilcoxon signed ranks, n=3; z = -1.00, p = .377), nor the 1:1gp (Wilcoxon signed ranks, n=4; z = - .272, p = .785) therefore a stable baseline was established for the impact index.

**Impact Index Scores for NTgp and 1:1gp from T2 to T3:**

There was no significant change in this score from T2 to T3 for the NTgp (Wilcoxon signed ranks, n=3; z = -1.342, p = .180), nor for the 1:1gp (Wilcoxon signed ranks, n=4; z = -1.069, p = .285).

Therefore according to the impact index, there was no significant change in parental perception of the impact of their child’s speech difficulty on their conversations for either
of these groups during the control period (T1 to T2) or after the five week home programme (T2 to T3).

Figure 5. Impact index scores for NTgp and 1:1gp.

**Impact Index Scores for the PPgp from T2 to T3:**

The sum of the impact index for the 6 participants in the PPgp before the programme (T2) was 93. This decreased to 90 after the programme (T3), however, this decrease was not found to be significant (Wilcoxon signed-ranks, n=6; z = -.412, p = .680).

**Impact Index Scores for all participants before and after the programme:**

Comparing the scores for all participants before and after the programme did not reveal any significant change. Therefore while the programme had a positive effect on the children’s speech intelligibility according to the parent’s perception, it did not cause enough change to be detected by the impact index.
Does the home programme affect the child’s awareness of their speech sound difficulty?

Question 1, ‘I think my child is aware of their speech delay/disorder’, from Likert Questionnaire 1, measures parental perception of their child’s awareness of their speech delay or disorder. Figure 6 shows the results for NTgp and 1:1gp at T1, T2 and T3, and the results for PPgp at T2 and T3. There was no significant change in parental perception of their child’s awareness of their speech difficulty for NTgp (Friedman, n=3; $X^2 (2) = 0$, $p = 1$), 1:1gp (Friedman, n=4; $X^2 (2) = .800$, $p = .670$) or for PPgp (Wilcoxon signed-ranks, n=6; $z = -1.732$, $p = .083$).

Since there was no significant change in parental perception of their child’s awareness of their speech difficulty for either control group from T1 to T2 all participants were analysed as a pretest-posttest design from T2-T3 which revealed a small significant change in parent perception of their child’s awareness of their SSD (Wilcoxon signed ranks, n=13; $z = -2.00$, $p = .046$).

Figure 6. Parent responses to question 1, Likert Questionnaire 1, for all groups.
Did the home programme affect levels of parental concern?

Question 6, ‘I am concerned about my child’s speech delay/disorder’ from Likert Questionnaire 1, assessed the parents’ concern regarding their child’s speech delay or disorder. Figure 7 shows the results for the multiple baseline groups: NTgp and 1:1gp at T1, T2 and T3, and the results for the pretest-posttest group at T2 and T3. There was no significant change in parental concern during the initial control times, nor after the home programme for NTgp (Friedman, n=3, $X^2(2) = .667, p = .717$) or the 1:1gp (Friedman, n=4, $X^2(2) = .264$). There was no significant change in parental concern for PPgp from T2 to T3 (Wilcoxon signed-ranks, n=6, $z = -1.342, p = .180$). However, comparing all participants scores from T2 to T3 does indicate a small significant decrease in parental concern after carrying out the home programme (Wilcoxon signed-ranks, n=13; $z = -2.070, p = .038$). These results indicate that the home programme may have caused a decrease in parental concern.

Figure 7. Parent responses to question 6, Likert Questionnaire 1, for all groups.
Evaluation of the Usability of the Home Programme

Did participants enjoy using the programme?

Question 5 ‘My child enjoyed the programme’ and question 6 ‘I enjoyed doing the programme with my child’ from Likert questionnaire 2 assess the parents’ enjoyment carrying out the programme and their perception of their child’s enjoyment of the programme. The results shown in figures 8 and 9 indicate that the programme was enjoyable for parents and that the parents perceived that their children enjoyed it also. Parent comments gathered using LQ2 also indicated that the participants enjoyed the programme:

- Parent 4: ‘E really enjoyed the stories.’
- Parent 7: ‘B loved the games and scrapbook. She would ask to do the programme every day.’
- Parent 11: ‘Really enjoyed doing the programme.’
- Parent 13: ‘Really enjoyed the programme especially the stories.’

Figure 8. Parent responses to question 5.

Figure 9. Parent responses to question 6.
Did parents find the programme easy to use?

Question 7 ‘The instructions provided were adequate to carry out the programme’ and question 8 ‘The materials provided were adequate to carry out the programme’ from Likert questionnaire 2 assessed whether parents found the programme easy to use. Since all parents agreed, in fact most strongly agreed, with questions 7 and 8, see figures 10 and 11, it can be derived that the programme instructions and materials provided were sufficient for parents to feel able to work with their children and carry out the programme. These results are further supported by the results of question 13 ‘I felt confident using the programme with my child’, see figure 13.

Figure 10. Parent responses to question 7.  
Figure 11. Parent responses to question 8.  
Figure 12. Parent responses to question 13.
How well did the home programme fit into daily living?

Question 9 from Likert questionnaire 2, ‘It was easy to find time to do the programme with my child’ investigated whether parents found it easy to accommodate the time required by the programme. Some parents found it difficult to fit the programme into their daily life, as four parents disagreed with this statement. However 2 parents agreed and 2 parents strongly agreed with this statement. Five parents neither agreed nor disagreed with the statement, see figure 13. Parent 4 commented: ‘It was quite hard to find the time every evening to do the programme... Every second night may have been easier.’

Question 11 from Likert questionnaire 2, ‘I will continue doing these activities with my child’ asked parents opinions of whether they would continue to use the programme activities after the study had finished. Despite the fact that some parents found it difficult to find the time to do the programme with their child, all parents agreed or strongly with this statement and intended to continue doing the programme with their child after the final assessment date, see figure 14. Therefore indicating parents believed that the benefits of the programme outweighed any inconvenience regarding the time commitment. Parent 6 commented: ‘The hardest part for me was finding the time, but I do intend to keep doing the programme at home.’

![Figure 13. Parent responses to question 9.](image13.png)  ![Figure 14. Parent responses to question 11.](image14.png)
Question 10 from Likert questionnaire 2, ‘I spent more one-to-one time with my child because of the programme.’ According to parent responses to this statement, the home programme increased the amount most participants spent engaged in 1:1 time with their child. Seven parents agreed and 4 strongly agreed with this statement, 2 neither agreed nor disagreed, see figure 15. Results from question 12 from Likert questionnaire 2 ‘The activities are useful to do with my other children’ (if applicable) revealed the programme was perceived by five parents to be an activity that they could use with their other children, see figure 16, therefore increasing how well it might fit into their daily lives. This question was not applicable to 2 parents.

Figure 15. Parent responses to question 10.  
Figure 16. Parent responses to question 12.
Parental report of speech intelligibility compared to PCC measures:

Table 4 illustrates that the parental perception of the success of the home programme in improving their child’s speech, as measured by questions 1-4 from Likert questionnaire 2, corresponds with an improvement in PCC for 9 out of 13 cases. Parents 4, 10 and 12 perceived an improvement in their child’s speech intelligibility after the programme, whereas there was a decrease in the PCC score. Parent 2 did not perceive an improvement in their child’s speech intelligibility after carrying out the programme, however, this child showed the greatest change in PCC 10.5% increase, after the programme.

Fidelity and Compliance

The data contained in Appendix L, indicates that there was a high level of compliance with the programme in terms of time spent; many parents carried out the programme for more time than was required for compliance. Some parents found it difficult to adhere to the programme due to time constraints and some parents did not complete the diary but reported that they had carried out the programme as instructed.
### Likert Questionnaire 2 Responses Compared to PCC scores

Table 4 shows whether parent responses to items 1-4 in Likert questionnaire 2 correspond to the direction of change in PCC.

Table 4. Change in PCC (Cases 1-7 difference between mean PCC at T1 & T2 and PCC at T3, Cases 8-13 difference between PCC at T2 and T3)

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<th>Case No:</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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<tr>
<td>Change in PCC (%)</td>
<td>8</td>
<td>10.5</td>
<td>5</td>
<td>-4</td>
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<td>1.5</td>
<td>2.5</td>
<td>10</td>
<td>8</td>
<td>-4</td>
<td>4</td>
<td>-4</td>
<td>8</td>
</tr>
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<td>The home programme was beneficial for my child.</td>
<td>Strongly agree</td>
<td>Neither agree/disagree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td></td>
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<tr>
<td>I think my child’s speech has improved over the last 5 weeks.</td>
<td>Agree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Agree</td>
<td>Strongly agree</td>
<td>Agree</td>
<td>Strongly agree</td>
<td></td>
</tr>
<tr>
<td>I think my child is a more confident communicator now.</td>
<td>Agree</td>
<td>Neither agree/disagree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Strongly agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Strongly agree</td>
<td></td>
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<tr>
<td>Other people have commented that my child’s speech has improved over the last five weeks.</td>
<td>Neither agree/disagree</td>
<td>disagree</td>
<td>Neither agree/disagree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Strongly agree</td>
<td>Agree</td>
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<td>Strongly agree</td>
<td>Neither agree/disagree</td>
<td>Strongly agree</td>
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**Key:**  
= correspond  
= do not correspond
Discussion

Speech Intelligibility

The results of this study reveal that parents perceived a noticeable improvement in their child’s speech intelligibility after carrying out the home programme, according to questions 1-4 in Likert Questionnaire 2. Parents reported that they believed that the programme had been beneficial for their child, and had also improved their child’s confidence when speaking. The fact that other people, such as the children’s teachers, had also noticed an improvement in some of the children’s speech provides further qualification that the improvements were real, rather than optimism on the part of the parent who was carrying out the programme. Interestingly, four of the parents’ reports about the success of the programme did not correspond to the changes in PCC scores as measured by other researchers in the team (Meaney and O’Hara 2013). Reasons for this may be that PCC calculated using pictorial probes for single words may not be a reliable measure of connected speech intelligibility (Shriberg and Austin 1997). It may be possible that changes in speech intelligibility noticeable to parents are not measurable by these traditional means. The DEAP is a useful diagnostic tool that does not appear suitable for monitoring changes in children’s speech accuracy (Meaney and O’Hara 2013). It is also possible that these parents optimistically perceived an improvement in their child’s speech intelligibility that was not real.

Impact of SSD on the children’s conversations

The impact index which used responses to four questions in Likert Questionnaire 1 did not reveal a change in the parents’ perception of the impact of their child’s speech sound disorder on their conversations during the control period for the multiple baseline design nor after carrying out the programme. Parents, and other people, noticed improvement in the children’s speech; but the change may have been too small to be measureable using the impact index. A more sensitive measure might have been useful to give an indication of the degree of change perceived; for example increasing the Likert item scales from 5 point to 7 point.
Impact on the children’s confidence and participation

There was no significant change in the child’s awareness of their speech delay or disorder according to parent report during the control period, for the multiple baseline groups, nor before and after the programme when analysing the three groups separately. There was a small significant increase in the children’s awareness of their SSD when all participants were analysed in a pretest-posttest design from T2 to T3. This may be due to the Mixed-up Marty stories drawing attention to speech production errors made by the main character. However, the stories emphasise the confusion that can be caused by speech errors in a helpful rather than derogatory tone. In fact parents also reported that they perceived an increase in their child’s confidence when speaking after carrying out the programme. Parents and teachers of some children also noticed increased participation in activities at school, and attributed it to the effect of taking part in the home programme. Reports of increased confidence and participation in activities indicate an increase in quality of life for the child; information that cannot be directly derived from more traditional outcome measures, such as PCC, that have been used in previous studies.

Impact on Parental Concern

Parents who volunteer to take part in a study like this can be assumed to have a reasonably high level of concern about their child’s speech sound disorder. The level of their concern was found to remain stable during the control times for the multiple baseline design, forming a stable baseline before the home programme was administered. Parent concern was found to decrease when measured in a pretest-posttest design for all three groups before and after the home programme. The reason for this may be because parents felt that their child’s speech intelligibility had improved, but it may also be due to the fact that they were engaged in doing something that was intended to improve their child’s speech difficulty.

Current findings in relation to previous research

Previous studies have found that home programmes have been successful targeting the underlying deficits of phonological delay and disorder as measured by PCC and changes in phonological processes (Brady, Carey and Schofield 2011; Elomari 2012). This research has
found this home programme to be successful as measured by parent report. There is some evidence that parents experience more satisfaction from speech and language therapy services when they have involvement and that parental involvement can be successful (Bowen and Cupples 2006; Watts Pappas and McLeod 2009) there is also evidence that parents enjoy being involved when the clinician is directing therapy (Watts Pappas et al 2008). The current research provides evidence that parents had a high level of satisfaction with this home programme where no training was required and they had minimal contact with the researchers; the home programme contained a significant level of written guidance that parents found satisfactory.

**Usability of the home programme**

The results of the research also revealed that the parents and children all enjoyed carrying out the type of activities provided in the programme. This is an important finding as enjoyment is an important factor for successful intervention (Watts Pappas et al 2008). Some parents reported that not all activities suited the age of their child, or that their child did not enjoy every activity in the programme all of the time, but the variety and quantity of material provided was sufficient for this not to be a problem.

The time commitment required for carrying out the programme was difficult for some participants to adhere to. If home programmes were to be used as a service delivery method, it would be important to consider the suitability of participants on an individual basis. It would fit into the circumstances and lifestyles of some families, but not all. It was interesting to note that even though some parents found it a struggle to carry out daily, they were still prepared to continue doing the activities, although this would be without the requirements for doing the programme for the specified time and keeping the diary.

**Conclusions**

Parents perceived this ‘no training needed’ home programme to cause an improvement in their child’s speech intelligibility and confidence speaking. Increased participation at school was also attributed to the programme in some cases. Parents found the programme easy to
carry out, and were confident using it. This corresponds to parent satisfaction with the materials provided and the quality of the accompanying instructions. Some parents found it hard to schedule the programme into their lifestyle yet all parents believed that they would continue to use the programme activities with their children in the future.

**Limitations**

This study included 13 parent and child participants, a larger sample would be more representative of the population targeted.

Parents carried out the programme and were also the main assessors of its success; their investment in carrying out the programme may influence their judgment of its success.

The parent participants were volunteers to the study, and therefore have certain characteristics such as good self-motivation and insight into their child’s speech difficulties. Alongside wanting to improve their children’s speech, parents may have been affected by the ‘good subject effect’ wanting to please the researchers and producing the positive programme evaluation results from Likert Questionnaire 2 (Nichols and Maner 2008).

Research volunteers have been found to be more conscientious than non-volunteers (Lonnquist et al 2007). Therefore the results of this study cannot be assumed to be truly representative of the population of parents of children with phonological delays or disorders. The Hawthorne effect may also be affecting participants, which has been found to affect the generalisability of research to practice (Carney et al 2007).

All parent participants had a second level education qualification or above which indicates sufficient literacy skills to carry out the programme. Levels of literacy in the general population must be considered before recommending parent-led intervention as a delivery method.

An interview style final assessment session could have obtained more detailed feedback about parents’ perception of the change in their child’s speech intelligibility, how it impacted on their quality of life and whether their level of concern had changed.
Clinical Implications

The fact that these parents volunteered to undertake a home programme within a research study, means that it can be inferred that some parents would be willing to carry out a tried and tested home programme if they felt that it would help their child’s speech intelligibility. This study provides evidence that given sufficient material to work with and adequate written instruction, parents can carry out these types of activities with their child.

Parental reports of increased confidence and participation are extremely valuable in assessing the impact of an intervention on a child’s quality of life. Making goals more holistic and using outcome measures that include parental and teacher reports on the child’s level of confidence and participation in activities could lead to more meaningful outcomes of therapy.

Providing intervention for speech sound disorders through a ‘no-training needed’ home programme would need to be considered on an individual basis. The circumstances, lifestyles and personal characteristics of parents would influence successful implementation of such a programme.

Future Research Recommendations

Further research into methods of monitoring speech intelligibility over time would be a useful both for research and clinical settings.

Further investigation into what activities within this home programme were enjoyed most would be useful for further developing resources. Investigating which activities were suited to which age groups would help to provide a more individually tailored programme.

Whether a suggestion from Parent 4 that carrying out the programme every second night might have been better could be investigated in terms of the programme’s success and participant compliance.
References


Appendix A
Parent Information Sheet

Study title: A no training needed home programme for children with speech sound disorders.

We would like to invite your child to take part in a research study. Before you decide you need to understand why the research is being done and what it would involve for your child. Please take time to read the following information carefully. Talk to others about the study if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?
Children with speech sound disorders are the biggest group of children who present for Speech & Language Therapy Services. At the moment they often spend a long time on waiting lists before they get treatment. The purpose of this study is to find out if a new treatment program that can be carried out by parents is effective.

Why has my child been invited to take part?
Thirty to forty children will take part in this study. Your child has been chosen because:

- He/she has difficulty with speech sounds
- He/she is in the age range of the study: 3 to 5 years.

Do I have to let my child take part?
It is up to you to decide. We will describe the study in this information sheet. We will then ask you to sign a consent form to show you have agreed to take part. You are free to withdraw at any time, without giving a reason. This would not affect any services you or your child receives.

What will happen to my child if we take part?
Your child will be given some tests by the researchers, who are final year student SLTs under the supervision of a qualified Speech & Language Therapist. These tests will include activities such as asking your child to name pictures, to repeat words and sentences, to find matching pictures and to point to the correct picture. This will take about 30 to 40 minutes.

These tests will be carried out three times: first to get a picture of your child’s speech difficulties. Then again after six weeks, so we can see if your child’s speech is getting better without treatment. At this session you will be given the program, which is a mixture of stories and activities that you do with your child for about 15 minutes every day, six days a week for six weeks. You will also be given a diary to fill in to say which activities you did. After the six weeks of the program we will test your child again to see if his/her speech is better.

Are there any disadvantages or risks in taking part?
There are no risks to your child. A disadvantage is that your child might become more aware of his/her speech difficulty. However the activities are designed to be fun for the child and to present speech difficulties in a fun way.
Are there any benefits in taking part?
Your child will receive a very thorough speech assessment and you will get a program that should help improve your child’s speech. The information we get from this study should help improve the treatment of children with speech sound difficulties in the future.

What happens when the research study finishes?
After all the results have been collected, the researchers will write the study up. The results will be analysed and shared with other Speech & Language Therapists to help them decide the best way to treat children with speech sound difficulties. We will give you a summary report of the findings regarding your own child. You may request a copy of the report of all the findings at the end of the study. Your child will not be identified in any research report or publication.

Will my child’s taking part in the study be kept confidential?
Yes. All information which is collected about your child during the course of the research will be kept strictly confidential, and any information about him/her which leaves the clinic will have the name and address removed so that he/she cannot be recognised. You have the right to check any data held about your child for accuracy and correct any errors.

What will happen if I don’t want my child to carry on with the study?
You can take your child out of the study at any time, without giving a reason. This will not affect any services you or your child would normally receive.

What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to the principal investigator who will do her best to answer your questions (Aileen Wright, 061 234234). If you remain unhappy and wish to complain formally, you can do this through:

Who is organising and funding the research?
The research is being carried out as part of final year Speech & Language Therapy students’ Master’s thesis under the supervision of a lecturer and qualified SLT at the University of Limerick in Castletroy.

Who has reviewed the study?
All research in the University is looked at by independent group of people, called a Research Ethics Committee to protect the safety, rights, wellbeing and dignity of those taking part. This study has been reviewed and given favourable opinion by the University of Limerick Research Ethics Committee. If you have concerns regarding this study, please contact: Chairman, Education and Health Sciences, Research Ethics Committee, EHS Faculty Office, University of Limerick, Tel (061) 234101 Email: ehsresearchethics@ul.ie

Further information and contact details.
For further information please contact the researcher, Aileen Wright (061 234234, or aileen.wright@ul.ie).

Thank you very much for taking the time to read this information sheet. We will be very grateful if you decide to let your child take part in the study.

If you decide to let your child take part in the study, please sign the attached consent form and return it to Aileen Wright, Department of Speech & Language Therapy, Health Sciences Building, University of Limerick, Limerick. You will then be contacted by phone to arrange an appointment.
Parent Consent Form

Study title: A novel home program for children with speech sound disorders

Name of Principal Researcher: Aileen Wright, BA(Hons), MSc. MIASLT. University of Limerick

- I confirm that I have read and understand the information sheet dated.................... (version............) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

- I understand that my child’s participation is voluntary and that I am free to withdraw him/her at any time without giving any reason, and without his/her healthcare or legal rights being affected.

- I understand that my child’s identity will be kept confidential and it will not be possible to identify him or her in any reported findings.

- I agree to let my child take part in the above study.

Name of Child: ___________________________________________ DOB:__________

Name of Parent: ___________________________ Date:__________
Signature: ___________________________

Address:___________________________________________________________________________
____________________________________________________________________________

Telephone: ___________________________
Email address: ___________________________

This research has received ethical approval from the University of Limerick Research Ethics Committee. If you have concerns regarding this study, please contact: Chairman, Education and Health Sciences, Research Ethics Committee, EHS Faculty Office, University of Limerick, Tel (061) 234101 Email : ehsresearchethics@ul.ie
Appendix B
Do you know a child who has speech sound difficulties?

Final year Master’s students in Speech and Language Therapy in the Department of Clinical Therapies are looking for parent volunteers to test a new program of stories and activities that should help children’s speech sounds to develop.

If you have a child aged between 3 and 5 who has difficulties with speech sounds, or you know someone who does, and would like to know more, please ring or email Aileen Wright: 061 234234, aileen.wright@ul.ie.
Appendix C
Recruitment poster

Is your child’s speech hard to understand?
Would you like to take part in a program that might help?

Speech and Language Therapists in the Department of Clinical Therapies at UL are looking for parent volunteers to test a new program of stories and activities that should help children’s speech sounds to develop.

If your child is aged between 3 and 5 and he or she has difficulties with speech sounds, you could take part.

Interested? Ring or email Aileen Wright: 061 234234, aileen.wright@ul.ie, to find out more.

www.clinicaltherapies.ul.ie
Case history form

<table>
<thead>
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<th>Case No:</th>
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<table>
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<th>Age</th>
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I consent to this session being recorded on audio. The recording **may/may not** (delete where applicable) be used for teaching purposes by the University of Limerick. My child will not be identified.

Signed: ___________________________ Date: ________________________

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<th>Articulation</th>
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<th>Waitlist for therapy</th>
<th>Assess language</th>
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Aileen Wright, SLT
### Your Concerns

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<tr>
<th>My child does not speak properly</th>
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</tr>
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<tr>
<td>My child is difficult to understand:</td>
<td>Y/N</td>
</tr>
<tr>
<td>My child has very few words</td>
<td>Y/N</td>
</tr>
<tr>
<td>My child is not joining words into phrases</td>
<td>Y/N</td>
</tr>
<tr>
<td>I am concerned about my child’s behaviour</td>
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**I have other concerns (Please give details):**

### Family history

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<tr>
<th>Other people in my child’s family have difficulty with speech or language. (Please give details):</th>
<th>Y/N</th>
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<tr>
<td>Other people in my child’s family have difficulty with reading or writing (Please give details):</td>
<td>Y/N</td>
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### Parents’ education: Please tick each box that applies:

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<th>Leaving Cert</th>
<th>Post leaving cert e.g. FETAC</th>
<th>Third level (University, IT etc)</th>
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<tr>
<td>Father</td>
<td>Junior Cert</td>
<td>Leaving Cert</td>
<td>Post leaving cert e.g. FETAC</td>
<td>Third level (University, IT etc)</td>
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<td>My child was born prematurely</td>
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<td>My child has some eating/drinking difficulties now</td>
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<td>My child drools a lot</td>
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<td>My child uses a soother</td>
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<td>My child sat up at age:</td>
<td>Months</td>
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<td>My child walked at age:</td>
<td>Months</td>
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<tr>
<td>My child has difficulties with motor skills, e.g. running, climbing, picking up small things</td>
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<table>
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<td>My child babbled as a baby</td>
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<td>My child said his/her first words at age:</td>
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<td>My child joined words together at age:</td>
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<td>My child has been in hospital: (please give details)</td>
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<td>Result of hearing test:</td>
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<tr>
<td>My child has had ear infections:</td>
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<tr>
<td>My child is very shy</td>
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<tr>
<td>My child plays well with others</td>
</tr>
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<td>Child care</td>
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<td>---------------------------------------------------------------------------</td>
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<td>My child is at home with a parent</td>
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<tr>
<td>My child is looked after by a childminder</td>
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<td>My child goes to crèche/nursery</td>
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<td>My child goes to playschool</td>
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<td>My child goes to school</td>
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<td><strong>Exposure to other languages</strong></td>
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<tr>
<td>English is the only language spoken at home</td>
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<td>My child hears Irish spoken in the home</td>
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<td>My child hears another language spoken at home</td>
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<tr>
<td>My child hears another language spoken outside home</td>
</tr>
<tr>
<td>My child speaks another language</td>
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<tr>
<td>My child goes to Naionra/Gaelscoil</td>
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</tbody>
</table>
Home Programme Project – Parental Questionnaire

Please answer the questions on a scale of 1-5 where:

1 = strongly disagree  2 = disagree  3 = neither agree nor disagree  4 = agree  5 = strongly agree

7. I think my child is aware of their speech delay/disorder

   1   2   3   4   5

8. My child’s speech delay/disorder affects conversation between us as parent and child.

   1   2   3   4   5

9. My child’s speech delay/disorder affects their conversation with extended family.

   1   2   3   4   5

10. My child’s speech delay/disorder affects their interaction with their friends/peers.

    1   2   3   4   5

11. My child’s speech delay/disorder affects conversation with people they do not know.

    1   2   3   4   5

12. I am concerned about my child’s speech delay/disorder.

    1   2   3   4   5
Appendix F
Home Programme Project – Parental Questionnaire 2

Please answer the questions on a scale of 1-5 where:

<table>
<thead>
<tr>
<th>1=Strongly disagree</th>
<th>2=Disagree</th>
<th>3=Neither agree nor disagree</th>
<th>4=Agree</th>
<th>5=Strongly agree</th>
</tr>
</thead>
</table>

14. The home programme was beneficial for my child.

1 2 3 4 5

15. I think my child’s speech has improved over the last five weeks.

1 2 3 4 5

16. I think my child is a more confident communicator now.

1 2 3 4 5

17. Other people have commented that my child’s speech has improved over the last five weeks.

1 2 3 4 5

18. My child enjoyed the programme.

1 2 3 4 5

19. I enjoyed doing the programme with my child.

1 2 3 4 5

20. The instructions provided were adequate to carry out the programme.

1 2 3 4 5
21. The materials provided were adequate to carry out the programme.
   1 2 3 4 5

22. It was easy to find time to do the programme with my child
   1 2 3 4 5

23. I spent more one-to-one time with my child because of the programme.
   1 2 3 4 5

24. I will continue doing these activities with my child.
   1 2 3 4 5

25. The activities are useful to do with my other children (if applicable).
   1 2 3 4 5

26. I felt confident using the programme with my child.
   1 2 3 4 5

Any other comments or feedback?

Thank you for completing the programme.

We hope that it was a positive experience for you and your child.
Appendix G
What is Let’s Talk?

Let’s Talk is a pre-school speech program designed for parents and carers of children who are having difficulty with speech sounds. Each issue contains:

- “mixed up” stories
- sound stories
- scrapbook activities
- nursery rhymes
- other activities

What do we need?

- Your copies of Let’s talk
- A scrap book
- Crayons or markers
- Scissors and glue stick
- Old magazines, Argos catalogue

You are your child’s best teacher

As parents, you are the most important people in your child’s early development. By trying a few simple ideas, you can really help your child’s speech to develop.

How much time does it take?

You should aim to spend 15 minutes a day, 6 days a week reading the stories and doing the activities with your child.

Don’t try to do all the activities in each issue each day, pick one or two. Do read at least one “mixed up story” every day.

Keep it fun! Your child doesn’t need to talk, just listen.

Important points!

Your child has a phonological problem. This isn’t a problem with saying the speech sounds, it is a problem with recognising which speech sounds she or he needs, in order to make a difference between words, and where they go. Please do not correct your child’s speech during this program, it should start to change by itself, but that may take some time. Use modelling and recasting, explained on page 3, instead. As your child hears you using the sounds in one-to-one activities, they will work out how to say them themselves. Read further to find out how the activities work.
The Activities

Modeling & Recasting

Read this first. It explains how to help your child develop better speech without correcting them. Use modelling all the time, and Recasting 3 or 4 times a day.

Mixed-up stories

These are stories about children or animals who have a speech difficulty. It shows how people get mixed up when you say the wrong words.

Listening to these stories frequently will make your child realise which sounds go together to make a difference between words, so they can get their message across. Try to read one every day.

Nursery Rhymes

The rhythm, rhyme and repetition of words in nursery rhymes and songs helps children develop speech sounds, vocabulary and basic concepts. The ability to rhyme is very important in learning to read.

And children love them! Saying nursery rhymes with your child gives them a headstart to great listening and reading skills.

Sound stories

An activity to develop your child’s ability to learn more about sounds, what they should sound like, and to recognise words that start with the same sound. An important skill for reading.

Sounds different

Activities to help your child hear and discriminate speech sounds accurately. If they can’t hear the sound properly, they won’t be able to say it. This ability is also very important for learning to read and spell later.

Resource Pages

Materials to help you carry out the activities described
Helping your child develop better speech sounds:

Modeling and Recasting

Speech & Language learning:

All children are language learners.

• Part of their speech and language development happens naturally.
• Part of it is learned through the Modeling of people around them.
• Parent(s) are young children’s main speech and language models.

What is Modeling?

Modeling is when you provide a good ‘model’ or example of how to speak. You model a good example of the speech ‘target.

What is a ‘target’?

A ‘target’ is a speech or language ‘behaviour’ we want to encourage your child to use when communicating: for example a word he or she says wrong.

You are “modeling” when you use in conversation, lots of times, a word that he or she says wrong.

How to be a good model:

Use:

• an unhurried speech rate
• clear speech
• short sentences
• simple vocabulary
• more repetition and re-stating than with an adult

There are many ways to model: see the next pages
Ineffective ways to model:

- C = child  A = adult
- What did the child hear?
- ‘bid’ was heard twice and ‘big’ once
- adult cancelled him/herself out!

- Child tunes out
- Child heard ‘bid’ three times, and ‘big’ once (if they were listening)

Pointless Modeling

C: That’s a bid bird.

Ineffective Modeling

C: That’s a bid bird.
A: Not a bid bird. You don’t say ‘bid bird’.

Exaggerated Modeling

C: Pease can I have one?
A: You mean puh-leeze. Puh-leeze may I

This exaggerated sort of Modeling is inadvisable.

- It distorts the sounds, so that the child does not hear the target properly.

C: [thinks] Huh?

“Modeling” with NO model!

C: He hurt his weg.
A: Hurt his weg? What are you supposed to say?

Imitating the child

C: I want the wed one pweeze.
A: You want the which one pweeze?

In these examples NO speech model has been provided.

Didactic Modeling

C: Tan you det it?
A: Not tan you det it. Can you get it. You say it: can you get it.

Followed by short talk on ‘can’, ‘tan’, ‘get’ and ‘det’ – sigh!
Modeling just once:

This is the way parents typically ‘model’ when their child makes a speech error. The adult ‘recasts’ what the child says ...ONCE

It ‘comes naturally’ to model this way;

it is OK for a ‘typical’ language learner
but not ‘powerful’ enough for a child with a speech sound difficulty.

){// 230x216 228x199 ‘Weak’ Modeling (single recast)

C: That’s a bid bird.

Effective conversational Modeling

The following examples are of ways to model effectively when speaking to children who are having difficulties with speech sound development.

Modeling corrections

C: I like his punny pace.

A: I like his funny face too. It’s a really funny face. A funny face. Do you know what that guy with the funny face is called?

C: Det it down!

A: Get what down? Oh, get this down? OK. I’ll get it for you. I think I can reach. Uh-huh, I can get it.

Recasting

The term ‘recasting’ means repeating a sentence with a mistake in, but with the mistake corrected. Recasting when a child says a word incorrectly provides a Modeling correction

- without overt criticism ...
- without interrupting the ‘flow’
- without getting in the way of listening

Frequency of recasting

• aim for 12 to 18 “recasts” per minute
• for 3 or 4 minutes of a day
• for the SAME word
• or for the SAME sound pattern

How to make it frequent:

12 TO 18 RECASTS

Twelve to eighteen can seem rather a lot! This is how you do it, making sure you choose a relevant target for your child (e.g., don’t recast “cow” many times while your child is chatting about “keys”/ “teas”)!

Child: Him’s tar talled Batmobile.

Adult: His car? (1) His car’s (2) called Batmobile? That’s a strange name for a car (3). Our car’s (4) a Toyota. Our car’s (5) not a Batmobile! You have a lot of cars (6) there! Is one of those cars (7) a Batmobile?

Child: This tar is. It he’s Batmobile tar.
Adult: This car (8). Oh! This car's (10) the Batmobile car (11).

Not this car (12), not this car (13), not this car (14), not this car (15), it's THIS car (16). May I play cars (17) with you?

Who's driving the Bat car (18)?

Child: Me drive Bat tar ... car

Adult (thinks): RESULT!

(Please note: you won't get a result every time, and it may take days or weeks before your efforts start to bring results, so don't expect too much too soon. Progress will be gradual.)

To get your recasts "in" you can use a bit of nonsense at times ("Oh I do love this little car-car-car-cardee-car-car-car. It's my best car-car-car-cardee-car-carcar. It's the best car-car-car-cardee-car-car-car on the road! (that's 18!). You can also use songs and rhymes (Take me riding in your car-car...).

This handout was adapted from “Facilitating Language Learning” by:

Caroline Bowen PhD at www.speech-language-therapy.com
Children develop at different rates. The range of “normal development” is very large. Your child’s speech seems to be developing more slowly than the typical child’s.

What can we do?

Unfortunately there’s no pill or potion for this. We can’t prescribe exercises either. Children learn to speak and understand by listening to others and having other people try to communicate with them. They learn from the language they hear around them.

What we can do is provide an “enriched speech environment” around your child to help them catch up. This is an environment where your child is exposed to more speech than might normally be the case. Words are repeated more often, and words are put together in the stories to highlight the “mix ups” that occur when the child says the word in a different way to an adult. This helps them work our which sounds they need to put together to make the word sound right.

This should work for many children, but if it doesn’t work for your child, he or she can go to a Speech therapist, who will use other individual treatment techniques to help your child.

Making progress: use your diary

Please record in your diary a brief note of what story/activity you did each day with your child. If you couldn’t complete a day, just put in a short note, like “child sick”, or “away”, so we can measure how much your child used the program.

If your child says something new, or if someone comments that she is easier to understand, please put that in the diary too!

Half of all of children with speech and language difficulties at age 3 will get better by themselves. We just don’t know which half! So this program is good for all of them
**These stories/activities are too easy/too hard for my child**

The program is aimed at a broad range of children. Even if an activity is easy, your child can still gain a lot from doing it.

If a story or activity is too hard, leave it for now, try something else, and try again in a few weeks.

---

**My other children want to join in**

Let them! The more the merrier.

Language enrichment activities are useful for all children.

But make sure you have at least 15 minutes a day of one-to-one time with the child who is in the project, on their own.

---

**My child won’t concentrate!**

At first, your child may not be able to concentrate on one story or activity for more than a couple of minutes.

Change activity every few minutes to keep him interested at first, then try to make each activity last a little bit longer each week.

It’s important to find something the child enjoys.
Speech versus Language.

What’s the difference?

Speech and language are often confused, but there is a distinction between the two:

Speech
the way we pronounce words.

Language
Comprehension, what we understand
Expression: what we can say, the process of changing a thought into words and putting the words together to make sentences.

Language is much broader than speech. Language can be heard or read, and spoken or written. There is also body language, where we communicate without any words at all.

When someone speaks a foreign language to us, we can hear the speech, but we don’t understand the language.

A child may have problems with speech, or language, or both.

A child with a language problem may be able to pronounce words well but have very few words, or be unable to put words together. Another child may speak well but have difficulty following directions.

Remember, always give lots of praise and encouragement. Keep it fun. It might not work today, but it will one day!
Here are some nursery rhymes. Your child will only learn to rhyme by hearing lots of rhymes. Being able to rhyme is important in reading and spelling.

Read these rhymes to your child, and add in actions where you can.

Point out the rhyming words to your child, say, in Humpty Dumpty for example:

“Wall and fall rhyme, they sound a bit the same, don’t they. They rhyme. Men and again rhyme too. They sound the same at the end.

Things to do with nursery rhymes.

• When your child gets to know the rhyme, say it together. You can stop before the rhyming words and let your child fill them in. If they don’t get it straight away, just say it for them. Try again another time.

• Clap out the rhythm together,

  e.g. Hump-tee Dump-tee sat on a wall
  clap-clap clap-clap clap clap clap clap
  o First clap out the syllables together
  o When your child get good, let her clap out rhythm alone
Appendix H
Instructions

Carrying out the program

- Try to spend 15 minutes each day using the program with your child in a one-to-one situation. Please read at least one of the stories to him/her and carry out one of the activities each day. Let your child choose the story or activity as much as possible, but try and spend some time on the stories that demonstrate difficulties like those she/he has a few times a week.
- If your child would like to read lots of stories or do lots of activities, that is fine! Just take into account that you need to keep his interest for five weeks.

Filling in the diary

- Please fill in the diary each day with the name of the story or stories you read and activity you did. Please also add any comments about things like whether your child enjoyed the activity, or whether you felt it was suitable.
- If your child is sick or out of sorts, or if you have to miss a day for any reason, please just note this in the diary so we know how much time your child spent on the program.
- Please fill in a comment also whenever you see signs of progress, for example if you hear your child use a new sound, or if a relative comments that they can understand him/her better, or if your child shows more confidence, e.g. speaking on the phone or to a stranger for the first time.

Using the star chart

- We have given you a star chart so you can put a star or sticker in each day that the child does something in the program. If your child is hard to motivate, you might use a little reward, such as an outing to the park or something nice to eat, every time they get a certain number of stars.

Have any questions or need some advice?

- Please ring 086 4478771 or contact aileen.wright@ul.ie if you need any help or advice.
<table>
<thead>
<tr>
<th>Week 1</th>
<th>What you did you do today? (which stories or activities)</th>
<th>Comment: (e.g. enjoyment, progress)</th>
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<tr>
<td>Time spent:</td>
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Appendix I
Marty grows vegetables

Today Mixed up Marty and his friends Fix up Fi and Di are playing outside in the garden.

Marty and his mother have been growing vegetables. They are growing tomatoes and peas. Marty shows his friends the vegetable plants.

'Look how big our vegetables are', he says, 'We might be able to eat them soon.'

'What are you growing?' asks Di. 'We’re growing tomatoes and bees.' Says Marty.

'Bees aren’t vegetables!!' says Di.
'Yes they are!' says Marty. 'Look at these bees, they're almost ready to eat.'

'But you can't eat bees Marty!' says Di. 'They might sting you!'

'We’re growing BEES not BEES!' says Marty. Di is confused. Luckily Fix up Fi is there. 'Marty has mixed up again', she says, 'He means peas not bees.'

'Oh!' says Di, 'Marty is growing peas!' Just then Marty's mother comes outside. 'Has Marty been showing you the vegetables that we've been growing?'

'Yes he has', say Fix up Fi and Di.
'Well, today the vegetables are ready to eat. Will you all help me to pick the ripe tomatoes and peas, and we can eat them with dinner'.

So Marty, Fi and Di help to pick the tomatoes and peas and they taste great with their dinner that night.

Why not start growing something together in a pot on the windowsill? Peas or beans, or even just mustard and cress on a damp paper towel.
Find other words that Marty might get mixed up

<table>
<thead>
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<th>peep</th>
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<tr>
<td>park</td>
<td>bark</td>
<td>pig</td>
<td>big</td>
</tr>
<tr>
<td>Path</td>
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Appendix J
Scrapbook Activity

For this activity you will need a scrapbook, scissors and a glue stick.

On the next two pages there are some sound pictures. Cut them out and stick one at the top of each page in the scrapbook. If you child mixes two sounds up all the time, for example says “t” when it should be “k”, make sure you stick these on opposite sides of the pages, so you can see both at once.

Then get a pile of magazines or catalogues, like the Argos catalogue, and cut out pictures for the two sounds, for example, teapot, tiger, tie, table, kitten, kick, kettle, kitchen.

Spread the pictures out on the table and help your child decide if each one goes on the t page or the k page. You child may not be able to do this at first, so you will actually decide, but let him see how you do it, e.g. say

“Kick, k, k, Kick.
Yes, Kick begins with k
It goes on the k page
k,k,k, kick.
It’s not t, t, t, kick, is it?
It is k,k,k, kick.
Do you think it goes on the k page?
Yes it does”

http://www.letterland.com/parent-guide/alphabet-sounds

Do one or two sounds each day, till you have made pages for all the sounds.

REMEMBER

You need to say the sound of the letter, not the letter name, e.g. Say, “buh” not “bee”.

If you want to check the letter sounds, you can do it on the internet at the link below

Sh and ch are separate sounds, they don’t begin with the s and c sounds.

But c and k are the same sound, e.g. cat and kitchen. (don’t use words where c sounds like s at this stage)
Appendix K
Getting to know the structure of long words

Some children miss out bits of longer words, for instance they might say “puter” for computer. This is normal for very young children, but starts to cause problems if children are still doing it when they are older, especially when they are learning to read.

In the pictures below, longer words are split up into a series of little words. The game is to put the little words together to make the long word. This will make your child realise they need to put all the parts of the word in when they say it.

You will have to show your child how this works a few times before he or she gets the idea.

Instructions

Get ready
- Choose one word/strip to work on at a time.
- Cut the sheet into strips and each strip into squares.
- Focusing on the first picture of the strip ask your child to name the picture or describe what he/she sees. Talk about the picture together. Once understood move onto the second picture of the strip. Repeat the process with the remaining pictures in the strip.
- Reveal the word segment pictures of the strip, keeping the answer picture covered. Point and say each word with your child. Ask your child to say the words themselves. Then point and say the three pictures together while revealing the fourth picture. Do this 3 times. For example: 'wheel, baa, row, makes wheelbarrow'.
- You will need to teach your child the letter names for D (dee), O (oh), B (bee), E (ee) and the sound for a (a as in ant), and the er! sound, (as in butter).
- If your child forgets the name of one of the words, go back and repeat the earlier process. Take one word from the strip and talk about it together saying its name several times. Give your child an example of where you would use/see this word. For example: 'queue, these people are standing in a line called a queue. We make a queue when we’re waiting to buy ice cream, or when we are waiting to buy match tickets. We have to wait our turn and make a queue behind the person in front of us'.

Play the game

- Once your child is familiar with the words in the strip, mix them up and then get your child to put the little words in the right order to make the big word. Keep saying the words as often as you can
Make it harder
- Once your child has the hang of the game, mix up the parts of two words together. Add more words as he gets better at it.

Can you think of any other long words you can make out of little words?
Appendix L
Parent Comments about the Programme and Levels of Compliance

Table 4 provides information about the time each parent and child spent on the programme. Full compliance was 450 minutes overall (15 min per day, 6 days a week for 5 weeks). Time spent on the programme is given in minutes as recorded in the diary and as a percentage of the full compliance time. Comments are quotes from the LQ1 comment boxes, which are noted in inverted commas here. Other comments were received verbally by the researchers during the final assessment (T3).

Table 4. Parent comments and level of compliance.

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Comments</th>
<th>Compliance</th>
<th>Minutes and % of total</th>
</tr>
</thead>
</table>
| 1           | ‘It was sometimes hard to motivate my child to do the
programme, especially if they were tired.’ | Complied. | 335 min 74% |
|             | Parent reported notable improvements in their child’s
connected speech. Parents do intend to continue using it. | Child sick for 8 days. | |
| 2           | Parent reported that the child really enjoyed the
programme and that the child understood the concepts
presented in the stories. | Diary not returned. | - |
| 3           | Parent reports that child is more fluent and trying to say
more difficult words. Parent found it difficult to implement
the programme while also working full time. Child loved the
coloured materials, stories and cutting out.
‘Colour pictures very useful.’ | Complied 2 weeks but low compliance 3 weeks | 205 46% |
| 4           | ‘E really enjoyed the stories. His resource teacher especially | Complied | 520 |
**Wks 3-5**

<table>
<thead>
<tr>
<th>Wk</th>
<th>Resource teacher carried out programme 100%+</th>
<th>Resource teacher carried out programme 100%+</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Complied 600</td>
<td>Complied 600</td>
</tr>
<tr>
<td></td>
<td>100%+</td>
<td>100%+</td>
</tr>
<tr>
<td>6</td>
<td>‘I did enjoy doing the programme with A. He enjoyed the stories, nursery rhymes but he did find the slippery slide and scrapbook more difficult. The hardest part for me was finding the time, but I do intend to keep doing the programme at home. Thank you for your help.’</td>
<td>(Wk4 grommets inserted) Unclear</td>
</tr>
<tr>
<td>7</td>
<td>‘B loved the games and scrapbook. She would ask to do the programme every day. B can communicate better in school and the teacher has seen much improvement over the past week.’</td>
<td>Complied 484 100%+</td>
</tr>
<tr>
<td>8</td>
<td>‘Found it very helpful thank you.’</td>
<td>Not clear Time spent not recorded</td>
</tr>
<tr>
<td>9</td>
<td>None</td>
<td>488 100%+</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td>Compliance</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>10</td>
<td>‘A lot of work to get through as she had the group therapy as well.’</td>
<td>Could not fully comply</td>
</tr>
<tr>
<td>11</td>
<td>‘Found the programme really helpful, and enjoyed doing with him. Cause of his age hard to know does he know himself he has a problem and is shy around people don’t know so would really have conversation with. Sometimes hard to find time and had to do it when putting to bed so was tired sometimes. He liked some things more than others and would put more time into it but if he didn’t like it would mess. Really enjoyed doing the programme.’</td>
<td>Complied</td>
</tr>
<tr>
<td>12</td>
<td>None</td>
<td>Complied</td>
</tr>
<tr>
<td>13</td>
<td>‘Really enjoyed the programme especially the stories.</td>
<td>Complied</td>
</tr>
</tbody>
</table>

*Noticed an increase in his confidence and using s, l, f more accurately. K knew (predicted) what Marty was going to do before the confusion occurred in the story.*

*Parent reported increased participation in school as informed by his teacher, as he read out his work in front of his class which he would not have done before.*