

Evaluation of the Effectiveness of the Barnardos Wizards of Words Reading Programme

Final Report



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FOREWORD

I am very happy to welcome this report for the evaluation of Barnardos' reading programme Wizards of Words (WoW). The positive findings from this independent evaluation confirm our conviction that a Barnardos programme, the design of which was informed by evidence, and delivered in partnership with committed schools and volunteers, could make a real and lasting difference to children's reading skills.

The journey of the design, development, implementation and evaluation of WoW started in 2005 with a site visit by Barnardos staff to the Experience Corps programme in the USA. Inspired by this inter-generational reading intervention, and with the knowledge that a significant number of children attending Barnardos services had poor reading skills, we decided to develop an out-of-class, inter-generational reading programme for children aged between six and eight years of age. The programme was first piloted in 2007 with a small number of schools in Dublin. Between 2007 and 2012 Barnardos partnered with 10 schools in Dublin and Limerick and more than 100 trained volunteers over the age of 55 to deliver the programme to more than 300 children. The evaluation, conducted by the Child and Family Research Centre at NUI Galway on behalf of Barnardos, was undertaken between 2008 and 2012.

The process of programme design and development involved extensive research on a range of issues including how children's reading skills develop, the factors which influence reading achievement and the policy context in which reading and literacy skills are developed. Enormous effort was required, from a range of people, to operationalise the programme, including the design and development of programme materials, recruitment of project staff and volunteers, the identification of schools and the assessment and recruitment of children for whom the programme would be suitable. It is heartening to see that the attention paid to these issues has been affirmed by positive reports from the school principals and teachers, and the volunteers who participated in WoW. The tight focus of the programme, the structured nature of the sessions, the regular assessment and review of children's progress, the training of and support for the volunteers, the commitment to achieving outcomes and the professionalism of the Barnardos staff were all identified as important features of the programme's success from the school staff and volunteer perspectives.

The programme pairs first and second class students, aged between six and eight years, nominated by their teacher for extra reading support, with an appropriately trained older volunteer. The purpose of the programme is to improve children's reading, their enjoyment of reading and their self-belief in their reading competence. We are delighted therefore, that the evaluation shows that WoW does indeed improve children's phonemic awareness and phonic knowledge; improve their word recognition skills; improve their enjoyment of reading; and improve the children's perceived competence in their reading ability.

Early on in the design and development of the programme, Barnardos made a commitment to the inter-generational element of the programme. We had seen for ourselves, with our visit to Experience Corps in the USA, the warmth, commitment and experience that the older volunteers

brought to the programme; and we wanted to replicate this with WoW. The findings from this evaluation confirm our commitment to this feature of the programme. The evaluation shows that the one-to-one reading sessions with highly trained volunteers helped to build a very strong bond and relationship with the participating children and that the inter-generational dimension is key to the programme's success.

The publication of this report is the culmination of many years hard work for a variety of people involved in the development, implementation and evaluation of the WoW programme. I would like to express my thanks to all those who have contributed to the success of the programme:

- The Atlantic Philanthropies whose financial support made the development, implementation and evaluation of the programme possible
- Barnardos staff who contributed to the successful design, development, implementation and evaluation of the programme including, in alphabetical order: Sharon Brady, Niamh Conaty, Jim Corbett, Siobhan Greene, Sinead Hardiman, Claire Hickey, Monica Hynds, Suzie Lewis, Maura McMahon, Jennifer Murphy, Debbie Oxley, Kerri Smith and Angela Walsh
- School staff from all the schools involved in the implementation and evaluation of the programme, their commitment to improving outcomes for children, willingness to partner with us in delivering the programme, and their welcome to and accommodation of the WoW volunteers and WoW staff have all contributed to the success of the programme
- WoW volunteers who were so committed to the programme and the children with whom they read; without their contribution the successful implementation of the programme would not have been possible
- Members of Barnardos Best Practice Advisory Committee who provided invaluable support and advice during the evaluation process and in particular Mark Dynarski and Professor Jacqueline Barnes
- The evaluation team, led by Dr John Canavan, Dr Allyn Fives, Dr Carmel Devaney and Dr Noreen Kearns at the Child and Family Research Centre at NUI Galway who conducted the research on our behalf and were our partners in the evaluation process

The evaluation shows that a volunteer-based reading programme can ensure positive outcomes for children's reading ability and their reading confidence. The evaluation also shows that volunteer programmes, such as WoW, that lead to gains in reading for young children, are highly efficient given that they minimise costs for participating schools.

A handwritten signature in black ink, consisting of a large, stylized 'S' followed by a long horizontal stroke that curves downwards at the end.

Suzanne Connolly
Director of Children's Services
Barnardos

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Chapter 1 Introduction

This is the final report in the evaluation of the Wizards of Words (WoW) volunteer reading programme. The programme is run by Barnardos in schools in mainly disadvantaged areas in Dublin and Limerick. The research was carried out by the Child and Family Research Centre (CFRC) at NUI Galway.

WoW is a one-to-one reading support programme delivered by volunteers over the age of 55 years recruited and trained by Barnardos project leaders. Participants in the study were children in 1st and 2nd class from disadvantaged areas in Dublin and Limerick experiencing delays in reading but who did not need formal reading interventions. The study design combined a randomised controlled trial (RCT) outcomes study and a process study. The process study and outcomes study were integrated in an explanatory mixed methods approach. Data from the process study were utilised to expand on and provide plausible reasons for the outcomes study findings.

Chapter 2 provides an overview of recent Irish policy on literacy and social disadvantage, and a review of the evidence about volunteer reading programmes for young children considered 'at risk' of reading failure. The WoW Programme is discussed in detail in Chapter 3. Chapter 4 then outlines the methodology for the evaluation and the overall study design.

Findings from the process study are reported in Chapter 5. In Chapter 6 the RCT findings are reported and the presentation of the findings is organised by four key research questions. The findings are then discussed in Chapter 7 and the final chapter concludes with a summary of the main programme impacts and a discussion of the implications of the findings for both practice and policy.

Chapter 2 Educational Disadvantage and Reading Programmes

This chapter discusses the main policy developments which have taken place in the Irish educational system with regards to addressing the problem of low literacy levels, focusing particularly on vulnerable groups of children living in areas of disadvantage. This is followed by a review of findings from evaluations of reading programmes in the USA and the UK.

2.1 Irish Government Policy

The problem of low literacy skills in Ireland has been highlighted in several policy and research reports over the past decade or so. Currently one in ten children in Irish schools have serious difficulties with reading or writing, and in some disadvantaged schools this is as high as almost one in three (DES, 2011). Numerous Irish studies have found that gaps in reading achievement between advantaged and disadvantaged children exist prior to children starting school and that, among the disadvantaged groups, literacy achievement declines as children progress through primary school (Kennedy, 2009b; Eivers, *et al.*, 2005).

It is recognised that schools alone cannot redress educational disadvantage (Eivers *et al.*, 2005). In terms of how children are taught, there is therefore a need for a more holistic approach in responding to low literacy, and the need for such an approach was recognised in the definition of educational disadvantage contained in the 1998 Education Act, and also highlighted by the Educational Disadvantage Committee (2005). Some of the most commonly cited factors associated with low literacy levels amongst children are problematic home environments characterised by family conflict and/or breakdown, poverty, and a culture of low expectations in family and school environments (NESF, 2009; Eivers *et al.*, 2005). The risk factors and negative consequences associated with low literacy levels include: early school leaving, low-skilled employment, unemployment, poor health and well-being, poor economic prospects, and imprisonment (DES, 2011).

2.1.1 Educational disadvantage and policy approaches

The White Paper entitled 'Charting our Education Future' (Government of Ireland, 1995) acknowledged the serious problem of low literacy amongst a minority of primary school pupils and set an objective to eliminate this problem by the year 2000. The Learning Support Guidelines published by the Department of Education and Science in 2000 (Government of Ireland, 2000) provided practical guidance to teachers and parents in the provision of literacy and numeracy work. These aimed to improve reading standards among pupils with learning difficulties/low achievement at primary level. The Guidelines were a response to recommendations from the Survey of Remedial Education in Irish Primary Schools report (Shiel *et al.*, 1998). Up to 2005, educational disadvantage policy initiatives focused on improving staffing and resources in schools and the funding of programmes such as Early Start, Breaking the Cycle, and Giving Children an Even Break (NESF, 2009). Kennedy (2009a) points out that unlike similar programmes in the US and UK, there were no specific approaches to teaching literacy contained within these initiatives.

2.1.1.1 Delivering Equality of Opportunity in Schools (DEIS)

The government established DEIS, a targeted policy response to educational and social inclusion, in 2005. DEIS was focused primarily on identifying schools serving disadvantaged communities and targeting additional supports to such schools and vulnerable groups¹ under a range of measures (DES, 2005). The DEIS initiative is designed to ensure that the most disadvantaged schools benefit from a comprehensive package of supports to tackle literacy problems, while ensuring that other schools continue to get support in line with the level of disadvantage among their pupils. The first five year implementation action plan ran from 2005 to 2010. Nationally, DEIS is aimed at 22 per cent of the most disadvantaged primary schools. Improvement in literacy and numeracy outcomes are among the key areas in which schools are expected to improve, with a strong emphasis on individual schools establishing baseline data, setting targets and actions, and monitoring outcomes (DES, 2010).

As part of the DEIS Action Plan, primary schools can avail of support and training from the Primary Professional Development Service (PPDS) in literacy through First Steps² and Reading Recovery³ programmes. Seven of the nine participating schools in the WoW programme were classified as DEIS Urban due to the high levels of deprivation and social disadvantage in the areas.

2.1.1.2 Other policy frameworks targeting social inclusion, educational disadvantage and literacy

Various policy initiatives and schemes over the past three decades have focused on curricula reform, reducing pupil-teacher ratios, increasing the number of resource teachers, and provision of specialised teaching materials. Nonetheless, there has been little improvement in literacy levels in disadvantaged schools (DES, 2010; DES, 2011; NESF, 2009; Eivers *et al.*, 2005; Government of Ireland, 2000). The NESF report on Child Literacy and Social Inclusion (2005) emphasised that while there is no one approach suitable for all situations, a number of strategies can be recommended which, when combined with efforts to tackle educational disadvantage, are effective. These include ‘targeted literacy interventions,’ ‘structured literacy programmes,’ and ‘strong links with the community,’ all of which characterise the WoW programme. A further desirable objective is to raise the expectations of teachers and families for children in relation to literacy (NESF, 2009); an objective shared by the WoW programme with its focus on the child’s enjoyment of and perceived competence in reading.

A Draft National Plan to Improve Literacy and Numeracy in Schools was published by the Department of Education and Skills in November 2010 (DES, 2010). Following on from that, the first national strategy for literacy and numeracy, *Literacy and Numeracy For Learning and Life 2011-2020*,

¹ DEIS is targeted at Traveller students and students for whom English or Irish is not their first language, children of immigrants, and children from disadvantaged backgrounds

² First Steps is a literacy resource which offers teachers an accurate means of assessing and monitoring children’s competencies and progress in literacy. Training in three components of the First Steps literacy resource has been provided to PPDS advisors – writing, reading, and speaking and listening

³ Reading Recovery is an early intervention designed to reduce literacy problems in any education system. The specially designed series of lessons, individually planned and delivered, provides intensive help for children who fail to make sufficient progress in reading and writing after one year in school. Reading Recovery is delivered by teachers trained on a year-long in-service basis to administer a series of tests, analyse these tests to find a starting point and then design the 30 minute daily lessons according to the needs of each child

was published by the Department of Education and Science in 2011. The Strategy cites the findings of a recent OECD publication from The Programme for International Student Assessment (PISA) 2009 data on comparative literacy levels. The data show a decline in performance by Irish students compared with students from other OECD countries (OECD, 2009). In particular, the data show a significant drop in literacy standards amongst Irish teenagers, down from 5th in 2000 to 17th. The survey shows that 17 per cent of all 15 year olds and almost one in four teenage boys lack the literacy skills to function effectively in today's society (Hislop, 2011; DES 2011). In terms of addressing this issue, there are six areas for action contained in the ten year Strategy:

1. Enabling families and communities to support children's learning
2. Improve professional practice among teachers in school and the pre-school workforce in ECCE settings
3. Enabling principals and deputy principals to lead change and improvement at school level
4. Improving the curriculum and learning experience making sure the curriculum is clear about what children and young people are to learn
5. Supporting particular groups of students with additional learning needs (socio-economic disadvantage, children of migrants, special education needs and high achievers, and early school leavers) to achieve their potential
6. Harnessing the potential of assessment and evaluation to support better learning, combining assessment for learning (AfL) and assessment of learning (AoL) approaches

Over the period 2011-2020 the Strategy aims to achieve a better understanding of the importance of literacy and numeracy skills in the early years amongst parents, families, and communities. It also seeks to raise public awareness about the importance of oral and written language and mathematics. The Strategy aims to foster a culture of enjoyment of reading and more positive attitudes to mathematics amongst children and young people. The four target outcomes for primary school children are:

1. Ensure that primary school sets goals and monitors progress in achieving demanding but realistic targets for the improvement of the literacy and numeracy skills of its students in a school improvement plan
2. Increase the percentages of primary school children performing at Level 3 or higher (i.e. at the highest levels) in the National Assessment of Mathematics and English Reading by at least 5 percentage points at both second class and sixth class by 2020
3. Reduce the percentage of children performing at or below Level 1 (i.e. minimum level) in the National Assessment of Mathematics and English Reading by at least 5 percentage points at both second class and sixth class by 2020
4. Increase awareness of the importance of digital literacy and include assessments of primary students' ability to read digital material as part of the national assessments of English reading

2.2 Reading Programmes

Many studies have shown that one-to-one reading programmes delivered by highly trained and well supported volunteers can be effective in reducing the number of children at risk of reading failure (Vellutino *et al.*, 1998; Rimm-Kaufman *et al.*, 1999; Meier and Invernizzi, 2001; Pullen *et al.*, 2004; Allor and McCathren, 2004; Morrow-Howell *et al.*, 2009b; Lee *et al.*, 2011). This is significant as many of the children in the first years of formal schooling considered 'at risk' of reading failure either do not qualify for or are unlikely to benefit from formal reading supports. If regular classroom teaching on its own does not succeed in removing children from the risk of reading failure, volunteer reading programmes may be a cost-effective method of achieving positive outcomes for children.

2.2.1 Programmes in the USA

In the USA, there have been many studies of the effectiveness of volunteer tutoring programmes. The effect size reported in these studies represents the impact of the programme on those in receipt of it when compared with the progress made by children in a control group. The results from various studies show that success may be obtained in some reading skills and not others. A meta-analysis of 21 RCT studies of volunteer tutoring programmes for elementary and middle school students found significant improvements for some reading sub-skills, including decoding of words and knowledge of words ('reading letters and words': 0.43), and the ability to quickly and accurately read passages out loud ('reading oral fluency': 0.31). However, they did not show a significant effect on comprehension sub-tests ('reading comprehension': 0.07) (Ritter *et al.*, 2009: 19).

The results show an important difference between programmes where tutors received training and programmes where there was no training. A meta-analysis of RCT studies reported higher effect size for programmes with trained tutors (0.59) than for programmes with untrained volunteers (-0.17) (Elbaum *et al.*, 2000, in Pullen *et al.*, 2004: 24). Wasik (1998) identified the following characteristics of a successful tutoring program: a designated coordinator who knows about reading and reading instruction; the presence of structure in the tutoring sessions; and the provision of ongoing training to the tutors.

The importance of structure in the reading sessions is illustrated by three successful tutoring programmes in the US. In the *Howard Street Tutoring Programme* sessions combined reading at the appropriate level, word study, and writing tasks. The sessions lasted for an hour, were delivered once a week, and the programme lasted for a year. In an RCT study, significant effects were found on word recognition (0.68), passage reading (1.77), and spelling (0.82) (Wasik, 1998: 271). In the *Intergenerational Tutoring Programme* sessions focused on letter recognition, word study, phonemic awareness, printing and writing, and guided reading. Preliminary analysis indicated the programme had an impact on letter identification but not on word reading, phonemic awareness, or reading connected text (Baker *et al.*, 2000: 499). In *Start Making a Reader Today (START)*, the child and volunteer read at the same time, the volunteer read to the child, the child re-read sections read by the volunteer, and the volunteer asked the child questions during the reading. The intervention group made statistically significant gains in word reading, reading fluency, and word comprehension (i.e. reading vocabulary), but improvements on passage comprehension were not significant (Baker *et al.*, 2000: 507).

2.2.1.1 Experience Corps

The WoW programme was inspired by the *Experience Corps* programme developed in the USA (Barnardos, 2008a). The evaluation of *Experience Corps* found that children in the programme made statistically significant gains on reading comprehension (measured by the Woodcock Johnson passage comprehension subscale) and on the teachers' assessments of reading skills, and also gains on phonemic awareness approaching statistical significance (measured by the Woodcock Johnson word attack subscale) ($p = .07$). The effect sizes (Cohen's d) were 0.10, 0.13, and 0.16 respectively (Morrow-Howell *et al.*, 2009b: 18). The impacts were greater when comparing the control group with those in the intervention group who received the recommended dosage of sessions: 0.13 on word attack, 0.17 on passage comprehension, and 0.17 on grade-specific reading skills (*ibid*: 15-16). There was also a significant association between the quality of the tutoring relationship and gains made by students (Morrow-Howell *et al.*, 2009: 17).

2.2.2 Programmes in the UK and Northern Ireland

In the UK, the Department of Education and Skills published a review of findings from 25 evaluations of intervention schemes designed to help children with reading difficulties (Brooks, 2002). Among those evaluated were 'partnership schemes,' where children who were poorer readers were 'tutored one-to-one, or in small groups, by better readers of the same age, or by older children, or by adult volunteers, or ... by their teachers' (*ibid*: 15). It found that a partnership scheme is effective if it provides poorer readers with 'substantially increased time for reading, supported by a sympathetic, more skilled reader who has received structured training for the purpose, and receives ongoing support' (Brooks, 2002: 15).

The *Paired Reading* programme in Kirklees matched children with adult 'tutors.' The study (Topping and Lindsay, 1992) found large effect sizes for accuracy (0.87) and comprehension (0.77). The *Better Reading Partnership* in Worcestershire paired children with their parents, reading together twice a week for 15-20 minutes. The study found a 'medium' effect size for the programme (*ibid*: 81).

The UK review found that self-esteem counselling by trained non-professionals, when combined with a reading intervention, was 'very effective' in raising reading attainment (Brooks, 2002: 13). The review concludes that working on self-esteem and reading in parallel 'would seem to have definite potential' (*ibid*: 13). It did not investigate whether improved self-esteem was a measured gain resulting from participation in a reading programme, where self-esteem counselling was not part of the programme, as is the case in the WoW programme.

In Northern Ireland, *Time to Read*, a volunteer mentoring programme established in 1999, involves adult employee volunteers recruited through membership of the Business in the Community NI movement spending one hour per week of company time working with primary school children with the aim of improving reading skills (Miller *et al.*, 2011). An RCT found evidence of the effectiveness of *Time to Read* improving outcomes for children in the core foundational skills of decoding (Cohen's $d = 0.15$), reading rate (Cohen's $d = 0.22$), and reading fluency (Cohen's $d = 0.14$). The findings revealed a positive programme effect on children's aspirations for the future (Cohen's $d = 0.11$; although not statistically significant), in part due to the positive relationships built up between

children and adult volunteers. The study noted that the number of sessions provided impacted positively on reading fluency and enjoyment of reading (Miller *et al.*, 2011).

2.2.4 Programmes in the Republic of Ireland

Two area-based interventions currently underway in Dublin are *youngballymun*⁴ and Tallaght West *Childhood Development Initiative* (CDI)⁵. Both are jointly funded by the Department of Children and Youth Affairs and the Atlantic Philanthropies, and both are currently being evaluated. The CDI programme, *Doodle Den*, is an after school service which provides intensive literacy support for targeted senior infant pupils and is delivered three times a week after school. In contrast the *youngballymun* initiative supports capacity building for teachers in the context of school and literacy promotion with community organisations and families. At the time of writing this report no outcomes findings were available from these evaluations.

2.3 Chapter Summary

Recent studies have shown that gaps in reading achievement between advantaged and disadvantaged children exist prior to children starting school and, among the disadvantaged groups, literacy achievement declines as children progress through primary school. In Ireland, the DEIS initiative was designed to ensure that the most disadvantaged schools benefited from a comprehensive package of supports to tackle literacy problems. The NESF report on Child Literacy and Social Inclusion recommended ‘targeted literacy interventions,’ ‘structured literacy programmes,’ ‘strong links with the community,’ and raising the expectations of teachers and families for children in relation to literacy. In 2011, the first national strategy in Ireland for literacy and numeracy was launched, *Literacy and Numeracy for Learning and Life 2011-2020*, which aims to foster a culture of enjoyment of reading and more positive attitudes to mathematics amongst children and young people.

Current research suggests volunteer reading programmes may be a cost-effective source of positive outcomes for children considered ‘at risk’ of reading failure. A meta-analysis of RCT studies in the US also reported higher effect sizes for programmes with trained tutors than for programmes with untrained volunteers. A further meta-analysis found significant improvements for many reading sub-skills, including decoding and knowledge of words, and reading accuracy, but not comprehension. The evaluation of *Experience Corps* reported small gains for reading comprehension, teachers’ assessments of reading skills, and phonemic awareness. Gains were greater for those who received the recommended dosage, and there was a significant association with tutoring relationship.

A review of reading programmes in the UK found that a ‘partnership’ scheme was effective if it provided poorer readers with substantially increased time for reading, supported by a sympathetic, more skilled reader who receives structured training and ongoing support. In Northern Ireland, *Time to Read* improved outcomes for children in the core foundational skills of decoding, reading rate,

⁴ See website:

http://www.youngballymun.org/our_model/our_prevention_and_early_intervention_model/literacy_and_language/ Accessed 14.05.12

⁵ See website: <http://twcdi.ie/> accessed 16.05.12

and reading fluency. Other support programmes available include *Ready to Learn* (in Northern Ireland), and *youngballymun* and the Tallaght West *Childhood Development Initiative* (both in the Republic of Ireland).

Chapter 3 The WoW Programme

This chapter provides a detailed description of the WoW programme. It discusses the background to the programme, the literacy approach adopted, selection criteria for the programme, and the role of the WoW project leaders.

3.1 Background

Barnardos is Ireland's largest independent children's charity. It was established in 1962 and works with children whose well-being is under threat and who live in disadvantaged communities. In 2005, Barnardos set out a twelve year strategy for the period 2005 – 2016, articulating its mission: to support and challenge families, communities, society and government to make Ireland the best place in the world to be a child, focussing specifically on children whose well-being is under threat (Barnardos, 2005). A Family Support Strategy was developed in 2006 (see Barnardos, 2008a) and it identified two high-level outcomes for children: increased capacity for learning and development and improved emotional well-being. These two outcomes were chosen on the basis that if a child's learning and development and emotional well-being are successfully and measurably improved then the child's ability to benefit from life opportunities and manage life challenges will be improved. Barnardos developed the WoW programme as a response to reading difficulties experienced by young children in disadvantaged areas, and the likely risk of early school leaving (see Barnardos, 2008b).

WoW was inspired by the *Experience Corps* programme in the USA, identifying it as the model which would meet the Barnardos objective of improving capacity for learning. *Experience Corps* is a school-based mentoring programme for children who are having a difficulty reading. The service pairs a child in public elementary schools with an older adult (aged 55 and over) who reads with them three times per week over the course of a school year. The programme is designed to have a high impact on the academic outcomes of young children (Morrow-Howell *et al.*, 2009b). In 2005 and 2006, representatives from Barnardos participated in two site visits to observe the *Experience Corps* programme in the US. These visits were arranged and funded through the Atlantic Philanthropies. A Randomised Controlled Trial (RCT) of *Experience Corps* studied the impact of involvement in the programme on the health and well-being of the older volunteers and also demonstrated the impact of the programme on participating children's reading levels.

3.2 The WoW Model

WoW is a school-based inter-generational programme, pairing an eligible child who is having difficulty acquiring reading skills with a trained volunteer aged 55 and over, for one-to-one reading sessions. The thrice-weekly sessions were to last at least 30 minutes. Children may read with more than one volunteer to ensure the maximum numbers of sessions each week. Based on the advice of the Barnardos Best Practice Advisory Committee (BPAC)⁶, a decision was made in 2008 to increase the number of reading sessions from two to three weekly, and to introduce systematic phonics as

⁶ The Best Practice Advisory Committee is a sub-committee of the Barnardos board and contributes to the strategic development of Barnardos services to children, young people and their families. The BPAC provides advice, based on best international practice and research knowledge, on specific service designs and advice on evaluation strategies and methodologies used to demonstrate the impact of the new service designs.

part of the programme half-way through that 2009-2010 academic year (early in 2010). All involvement with the children takes place within the school premises and during school hours. Two manuals outlining the purpose, structure, and format of the WoW programme were designed and developed by Barnardos for the WoW project leaders and the volunteers respectively.

The WoW programme has the following aims:

- to make improvements in the children’s reading, targeting the areas of reading comprehension, reading fluency, vocabulary building, and phonemic awareness
- to encourage and promote their interest in and love of reading
- to improve their perceived competence and enjoyment of reading by building their confidence in their own ability to read and comprehend the books and print material they encounter in their day-to-day life

3.2.1 Reading Instruction: Balanced Literacy and Guided Reading

WoW adopts a balanced literacy approach, combining the most effective strategies from two primary instructional approaches to teaching children reading, namely Whole Language (comprehension, including vocabulary, grammar, and verbal reasoning) and Phonics (decoding, including phonics, phonological awareness, and reading fluency) (Barnardos 2008b). This approach corresponds with current Department of Education and Science (DES) reading initiatives and English curriculum expectations. The balanced literacy approach is implemented through use of a guided reading approach (Barnardos, 2008b) that targets four areas of reading as identified in the Primary School English Curriculum (PSEC) introduced in 1999:

- *Phonics* - aimed at reinforcing letter/sound knowledge for the child
- *Vocabulary building* – getting the child to see new words and understand them; also, to be able to take words apart, put them back together again and see patterns, for example rhyming word families (e.g. the /at/ family – rat, cat, mat and sat) or using prefixes to change word meanings (e.g. what happens when you add /dis/ to a word – dis/able or dis/like)
- *Reading comprehension* - helping the child to understand what he/she is reading, word by word, sentence by sentence, page by page, and book by book
- *Reading fluency* - reading quickly and accurately with expression and understanding

The volunteers follow three stages of the WoW guided reading approach during the one-to-one reading sessions with the children. Each of these stages is used to explicitly teach children about the four areas of reading.

3.2.1.1 Pre-reading

The pre-reading stage is designed to cue children to new words in the book, and the conversation element is designed to help enrich vocabulary and encourage children to express themselves in whole sentences. It is also important for language development, as it develops the children’s ability to express themselves clearly in whole sentences.

3.2.1.2 Reading

The reading stage includes various different methods of reading with the child: the child listening to the volunteer read, the child and volunteer taking turns to read either flexibly or as planned, the child rereading what the volunteer has read ('echoed'), the child and volunteer reading together ('choral'), and the child reading independently. The objective is ultimately for the child to read independently.

3.2.1.3 Follow-up activities

The final follow-up stage is intended to reinforce one or more of the key reading areas, selected by the volunteer. These activities can include using magnetic letters or Playdoh to create new words, playing a game where the volunteer and child suggest a word or letter pattern and then scan the book for it, playing word games to reinforce new spellings, writing stories and memories that include new spellings, and experimenting with word endings. Follow-up activities include 'prediction' (e.g. asking the child 'what do you think will happen next?'), 'questioning' (e.g. asking the child 'did the actions of the character make sense?'), 'summarising' (e.g. asking the child to summarise the beginning, middle, and end of the story), 'clarifying' (making connections between the child's background and the story), and 'visualizing/imagining' (asking the child to discuss or draw what they would feel if this had happened to them).

Through this approach, the child benefits from having individual attention that is focused on his/her reading and from the development of a positive relationship with an older adult.

3.2.2 Eligibility criteria and selection of children

The WoW programme is targeted at 1st and 2nd class children in mainly disadvantaged schools and/or areas. The children's teachers from the previous year are asked to nominate children who they believe meet programme criteria. The criteria for inclusion are:

- Children's reading level should be between the following thresholds (as measured on WIAT Single Word Reading):
 - For 1st class children, the lower threshold is 18 months behind the age-appropriate reading level and the upper threshold is 4 months behind
 - For 2nd class children the lower threshold is 24 months behind and the upper threshold is 4 months behind
- Children must not need specialist support, that is, they:
 - do not have diagnosed general or specific learning disabilities, or behavioural difficulties
 - are not in the Reading Recovery programme or receiving supplementary teaching in English with a Learning Support teacher
- Children must not have planned/foreseeable extended absences from school

Entry to the programme is dependent on parental and child consent and if, after an assessment of the nominated child's reading skills, the child is identified as having a reading need that matches the programme criteria.

3.2.3 Programme materials

The Service Design group⁷ in Barnardos chose programme materials from the *Oxford Reading Tree* (ORT).⁸ There are many units in the ORT, and in the WoW programme the *Biff*, *Chip*, and *Kipper* stories are used. The ORT is a well-established English reading programme, and comprises a set of books from the easiest (appropriate for children aged between 3 ½ and 4 ½ years) to the most difficult (appropriate for children aged between 7 ½ and 8 years). The stories at levels one to four build the young reader's foundation reading skills. They introduce different characters and illustrations are matched with simple texts; core high frequency/sight word vocabulary is repeatedly used and the reader becomes familiar with phonically regular words. Higher levels focus on growth, consolidation, and reinforcement of reading skills, specifically expanding vocabulary, introducing longer sentences, longer stories that are more complex, and real and fantasy worlds. The WoW programme also uses the *Robins* as an extension of Level 9 and *The Time Chronicles* series at Level 10/Level 11. A number of resources accompany the ORT books for the volunteers to use when planning and delivering the reading sessions, including *Take Home Cards* and *Teaching Notes*. Other ORT resources include: activity sheets, workbooks, and dictionaries. Separate from the ORT resources, there are a selection of games in the volunteers' 'tool boxes' to support the teaching of phonics, fluency, new vocabulary, and comprehension.

The ORT was chosen by Barnardos for the following reasons:⁹

- The programme offered a balanced literacy approach
- The reading material was accessible for use by volunteers
- The reading material could be used flexibly by the volunteers
- The reading material was compatible with the Irish curriculum
- It was already in use in some Irish schools, including two WoW pilot schools
- It appeared to have a wide and varied selection of material to keep the child's interest
- The ORT was included as a suggested programme in the UK standards for teaching early reading which is based on the recommendations of the Rose Report (2006)

Each child joining WoW is initially assigned a reading level primarily based on what the reading assessment says. Some children on WoW who reach their age-appropriate reading level on the ORT before the end of the academic year graduate out of the programme early. Further, some 1st class students who do not reach their age-appropriate reading level by the end of the year may be offered the programme for a second year. Children's progress in reading is assessed at the beginning and end of the programme by the WoW project leader using a standardised test, the Weschler Individual Assessment Test II (WIAT-II). Project leaders also use the ORT 'Assess and Progress' toolkit throughout the year to ensure that children are moved up (or down) the reading levels when appropriate and that they are on the correct level that will provide them with the right amount of challenge.

⁷ A group, established by Barnardos, of key staff who developed the WoW programme

⁸ <http://www.oup.com/oxed/primary/literacy/ort/>

⁹ The reasons for choosing ORT were considered as part of the Year 1 Process Study

In addition to the above material, for the 2010/2011 cohort phonics instruction was based on *Floppy Phonics* (also provided by ORT). The tasks focus on phoneme-grapheme identification (single letter, more than one letter, double vowels, and different spellings of double vowel sounds), the identification of initial, medial, and final phonemes, and also phoneme blending. The tasks also include looking at rhyme sounds. Instruction is based around a story, with pre-reading, reading, and follow-up activities. The reading activities focus on phonics. Flash cards and word cards are used for the tasks of blending and segmenting of phonemes. Follow-up activities include word searches and anagrams.

3.2.4 Management and coordination

The programme is managed and coordinated by two Barnardos project leaders. The project leaders have a professional background in education, as it is important to have the capacity to understand literacy development and educational support in children, to understand teacher training and the school setting, and to be able to impart this knowledge and skills to a volunteer population. Schools delivering the WoW programme are divided into two clusters, one in Dublin city and one in Limerick city, comprising groups of four schools in each cluster so that they can be managed efficiently and effectively. The project leader is the key liaison and communicator between the WoW programme, the volunteers, the school staff, and the Barnardos Children's Services Management team.

Project leaders read with the children on a regular basis to ensure progress is being made, they observe volunteer reading sessions, monitor the children's reading records, provide feedback to volunteers, record and report on each child's progress to the school staff, and liaise with schools to ensure a good working relationship. Training and supporting the volunteers involves:

- Comprehensive induction training over a two-day period (information on Barnardos, their policies and procedures, and WoW-specific training such as reading and instructional strategies)
- Introduction to the programme staff and other WoW volunteers
- Familiarisation with the school they are working in

In addition, a wide range of ongoing supports are provided by project leaders to volunteers:

- Ongoing availability to discuss children's progress, any concerns arising, and to agree action plans and follow-up meetings
- Regular review and support sessions including reflection on working style, teaching strategies, and the experience of volunteering
- One-to-one coaching sessions on instructional strategies as required
- Ongoing training targeted to meet existing needs
- Group meetings between all of the WoW Volunteers within a region to share experiences and learning about what works and what does not work
- Monthly newsletter sharing programme updates and instructional strategies
- Social occasions (Christmas and summer luncheons)

Project leaders are also responsible, in consultation with school staff, on the timetabling and scheduling of WoW sessions. They match the children with their volunteers, organise volunteer

substitution in the event of volunteer absences, and in some cases ensure the suitability and readiness of the WoW session reading space.

3.3 Chapter Summary

Barnardos developed the WoW programme as a response to reading difficulties experienced by young children in disadvantaged areas, and the risk of early school leaving. WoW reflects the two high-level outcomes for children identified in the Barnardos Family Support Strategy: increased capacity for learning and development and improved emotional well-being.

WoW is a school-based inter-generational programme, pairing an eligible child with a trained volunteer aged 55 and over for one-to-one reading sessions. The WoW programme aims to make improvements in the children's reading comprehension, reading fluency, vocabulary building, and phonemic awareness; to encourage and promote their interest in and love of reading; and to improve their perceived competence and enjoyment of reading. WoW utilizes the 'Balanced Literacy Approach,' which combines elements from a Whole Language approach and a Phonics approach. Reading sessions are scheduled twice or three times a week, last for at least 30 minutes, and divided into pre-reading, reading, and follow up activities.

The criteria for inclusion in WoW were:

- Children's reading level should be between the following thresholds (as measured on WIAT Single Word Reading):
 - For 1st class children, the lower threshold is 18 months behind the age-appropriate reading level and the upper threshold is 4 months behind
 - For 2nd class children the lower threshold is 24 months behind and the upper threshold is 4 months behind
- Children must not need specialist support, that is, they:
 - do not have diagnosed general or specific learning disabilities, or behavioural difficulties
 - are not in the Reading Recovery programme or receiving supplementary teaching in English with a Learning Support teacher
- Children must not have planned/foreseeable extended absences from school.

Programme materials used in WoW are taken from the *Oxford Reading Tree*, including *Floppy Phonics*. Two project leaders, one in each city, manage and coordinate WoW. The project leaders have a professional background in education, as it is important to understand literacy development and educational support in children, to understand teacher training and the school setting, and to be able to impart this knowledge to volunteers.

Chapter 4 Methodology and Study Design

The chapter provides an overview of methodology and study design. It discusses the integration of the process study and outcomes study, hypothesised programme impacts and research questions, sample size, random allocation, data collection, and ethical issues.

4.1 Integration of Process and Outcomes Studies

In the evaluation of WoW the outcomes study used an experimental design and was based completely on quantitative data, that is, data from standardised and criterion referenced tests of reading ability, and survey data and self-report measures. This was combined with a process study based primarily on qualitative data from interviews, focus groups, observations, and documentary analysis with some quantitative data from surveys and project implementation records. An explanatory mixed methods approach was adopted (see Creswell and Clark, 2007; Wight and Obasi, 2003). As this was an experimental study design, the process study played a supportive role to the outcomes study, and process study data were used to expand on and to find plausible reasons for findings from the outcomes study. The mixed methods study design is represented in Figure 4.1.

The purpose of the process study was to answer the following question:

- Was programme implementation successful?

The purpose of the outcomes study was to answer the following question:

- Was the programme effective in achieving outcomes for participating children?

And the purpose of integrating the two studies was to help answer the following question:

- What was the relationship between programme implementation and outcomes for children?

However, it is important to note that causal inferences cannot be made when the outcomes study and process study are integrated. Rather, it may be possible for the combined process study and outcomes study to expand on and to find plausible reasons as to why, for example, one sub-group fared better in the intervention than another.

Figure 4.1 Explanatory Mixed Methods Model

Year	Phase	Procedure	Product
Year 1	Process study	Observations, interviews, documentary analysis, surveys Dublin only	Qualitative and quantitative data Research question: Was programme implementation successful?
	Connecting Process & Outcomes	Utilise process study findings to develop measures for outcomes study	Develop questionnaires; self-report measures for teachers; volunteers; and children
Year 2 & Year 3	Process study	Observations, interviews, documentary analysis, surveys Dublin & Limerick 2 years	Qualitative and quantitative data Research question: Was programme implementation successful?
	Outcomes study	RCT design 2 years Standardised measures Criterion-referenced measures Self-report measures	Quantitative data Research questions: Was the programme effective? What modified programme impact? What predicted response to intervention?
Year 4	Integrating Process & Outcomes	Explanatory mixed methods Using data from process and outcomes studies	Research question: What was the relationship between programme implementation and outcomes for children?

4.2 Hypothesized Programme Impacts and Research Questions

The WoW programme is premised on the benefits of volunteers aged 55 and over reading on a one-to-one basis with children experiencing delays in their reading. Volunteers, because of their life and work experience and because they belong to the same community, may be able to act as role models for these children. If children have an adult who can read with them on a one-to-one basis, this may lead to improvements in reading skills which may lead to increased aspirations for the future.

The expected outcome of the programme was an effect size of between 0.1 and 0.2. The outcomes measured in this study were:

1. Reading ability as defined to include the domains of reading comprehension, reading accuracy, word recognition, vocabulary, phonemic awareness and phonic knowledge
2. Children's reading self-beliefs, in particular their enjoyment of and perceived competence in reading and schoolwork

4.2.1 Study objectives

The objectives of the outcomes study were as follows:

- i. Test whether the WoW programme was effective in creating improvements in the programme outcome areas using an RCT design
- ii. Carry out further analysis on variables that may have modified the impact of the programme and variables that predict participants' response to the intervention

The objectives of the process study were as follows:

- i. To consider programme utilisation, and the extent and nature of programme take-up
- ii. To examine programme organisation; how well the programme was organised and run
- iii. To review programme fidelity, and the extent to which the programme was implemented in line with the model as specified in the programme manual
- iv. To explore how the programme was experienced by children, teachers, school principals, and volunteers

The objective of the combined outcomes and process studies was as follows:

- Integrate the findings from the outcomes study on programme impacts with findings from the process study on programme organisation, fidelity, utilisation, and experience of the programme

4.2.2 Research questions

To meet these objectives the following were the research questions for this study:

1. Was receipt of the WoW programme effective in creating improvements in children's reading ability and reading self-beliefs?
2. Did some variables modify the impact of the programme?
3. Did some variables predict participants' response to the intervention?
4. What was the relationship between programme implementation and outcomes for children?

4.3 Overall Design of Study

4.3.1 Randomised Controlled Trial (RCT)

The design of the outcomes study was a randomised controlled trial (RCT). A randomised experiment is one 'in which the units are assigned to receive the treatment or an alternative condition by a random process such as toss of a coin or a table of random numbers' (Shadish *et al.*, 2002: 12). This study was a 'pre-test/post-test control group design' (*ibid*). There was a pre-programme assessment (Time 0), followed by the random allocation of children to control and intervention groups. Children were assessed again, at the end of the school year (Time 1; 8 months later), and once again during the next academic year (Time 2; 12 or 16 months later). For the majority of participants, Time 2 data were collected in January (16 months after pre-programme). The one exception was 1st class control

children. As they were entitled to be considered for inclusion in the programme at the start of the next academic year, their follow-up measure was conducted at that point (12 months later) when they entered 2nd class. The same option was not available to 2nd class control children as the programme was not provided to 3rd class children. See Appendix 1 for the inclusion of follow-up data from the two different time points.

4.3.2 Process study

The process study was formative and summative and combined quantitative and qualitative data collection methods, using mainly the latter. A semi-structured interview guide with open-ended questions was used to understand and capture points of view of various stakeholders including school staff, volunteers, parents and children, without predetermining those viewpoints (Creswell and Clark, 2007). Direct observations of the reading sessions were carried out and analysis of the WoW reading records was also included. Quantitative data were collected from volunteers who completed surveys on their attitudes to and experiences of the WoW programme.

4.3.3 Sample size and recruitment

The sample required for the RCT study was determined by study power, the level of statistical significance, and the effect sizes to be observed. The lower the power and the smaller the sample size, the more difficult it is to detect small effects that are statistically significant (Rossi *et al.*, 2004: 312). By conducting a covariance analysis, the statistical power of the analysis can be increased significantly (see Appendix 2).

Participants were recruited to the outcomes study in the following way. Teachers nominated children who they thought the programme would suit. Written informed consent was sought from all parents of nominated children and then from the child his or her self. All children who had consented to take part were then screened to ensure the programme was suitable to meet their reading needs. Children were included if they met the inclusion criteria for the programme discussed above (see section 3.4.).

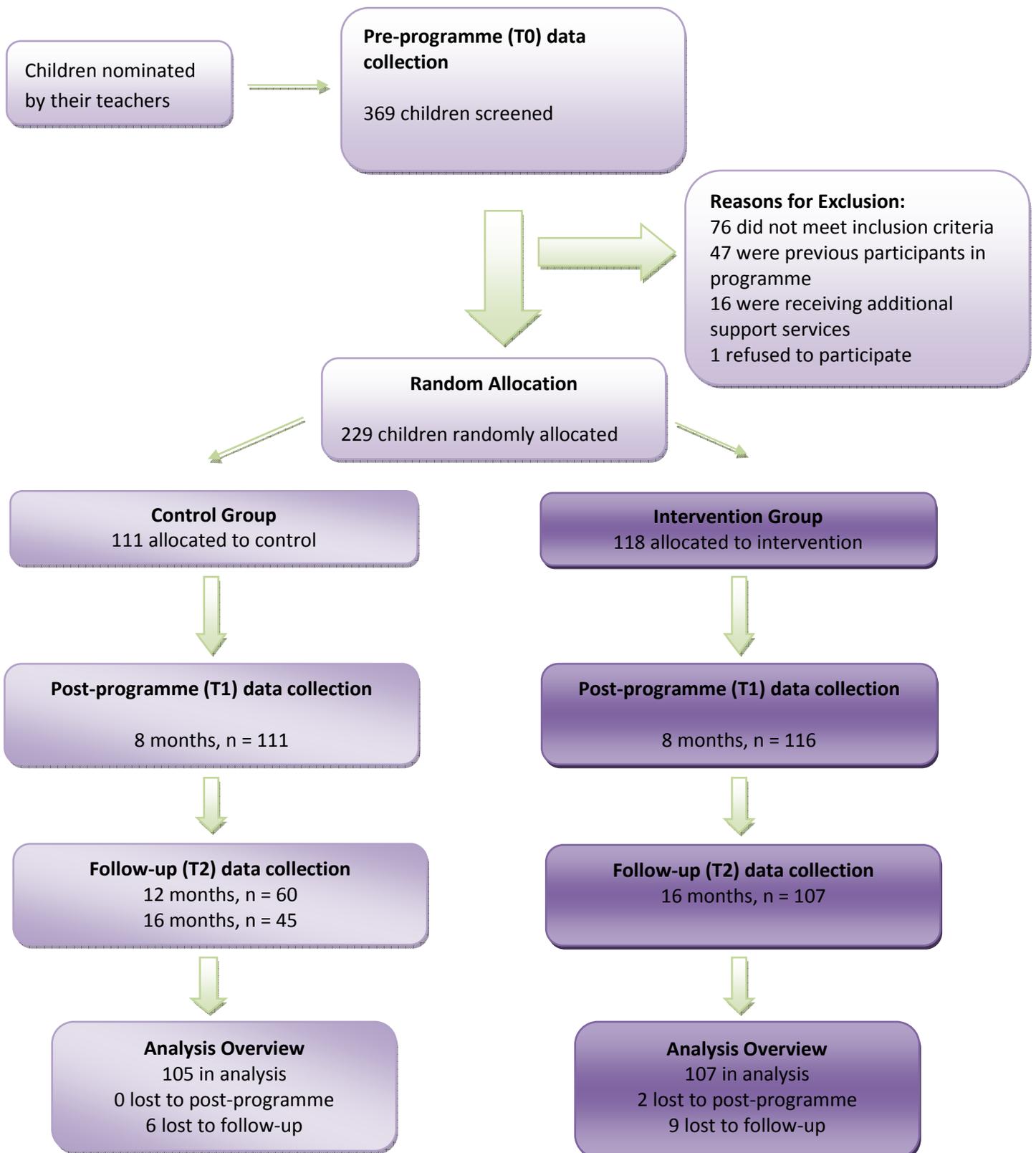
For the process study, the selection of the sample group varied over the three years of the study, contingent on the research focus at particular times. A full sample of school staff, volunteers, and relevant Barnardos staff members were included each year. Data were collected from school personnel in Dublin in Year 1 and Limerick in Year 2, and from participants from both cities in Year 3. In Year 1, the Barnardos staff members who were involved in the design of WoW were included whereas in Years 2 and 3 the sample included only the staff that had ongoing involvement in the programme. Children participating in the programme were randomly selected for inclusion in both face-to-face interviews and reading session observations in Year 1 (Dublin) and Year 3 (Dublin and Limerick). In Year 1, all parents of participating children were also invited to take part in an interview (Dublin).

4.3.4 Random Allocation and Participant Flow

In an RCT, participants are randomly allocated to their study condition: either a control group or an intervention group. The purpose of random allocation is to eliminate 'selection bias.' Selection bias refers to 'systematic differences over conditions in respondent characteristics that could also cause

the observed effect' other than the difference between treatments (Shadish *et al.*, 2002: 55). The CONSORT statement for reporting RCT studies recommends both describing the method used to generate the random allocation sequence and whether the implementation of the allocation sequence was concealed (Altman *et al.*, 2001).

Figure 4.2 Participant Flow in the RCT Outcomes Study



In this study, 'stratified randomisation' was used. This is achieved by performing a separate randomisation procedure within each subset of participants. The subsets were created based on the participant's cohort (cohort 1 or cohort 2), school (one of eight in each cohort), and class year (1st class or 2nd class within each of the 8 schools in each cohort). Further, allocation was 'blocked' to ensure a close balance in numbers assigned to each study condition within each stratum (see Altman *et al.*, 2001: 672). In order to conceal the allocation sequence only one member of the research team assigned ID numbers to participants and then carried out the allocation sequence. The research team assigned ID numbers before data were collected from participants and therefore such data could not have been used to influence allocation to study condition. The participants' study condition was 'blind' to the data collectors at all times. The participants themselves did not know their study condition at the time of baseline data collection, but would be made aware shortly afterwards. Between Time 0 and Time 2 the study sample reduced from n = 229 to n = 212, an attrition rate of 7 per cent.

4.4 Data collection

4.4.1 Reading assessments

In the outcomes study, data were collected from children over three sessions at each of the three data collection time points (Time 0; Time 1: 8 months later; Time 2: 12 or 16 months later) for each of the two cohorts. The data collection procedure was as follows:

Session 1: (approximately 15-20 minutes)

- WIAT Single Word Reading (SWR)

Session 2: (approximately 30 minutes)

- Enjoyment of Reading and Perceived Competence
- York Assessment of Reading

Session 3: (approximately 30 minutes)

- Phonemic awareness & Phonic knowledge
- British Picture Vocabulary Scale
- WIAT Spelling

See section 6.1 for a discussion of the measures listed above.

4.4.2 Teachers' survey

Every teacher with students in the WoW study was asked to participate in a postal survey. The purpose of the survey was to record teachers' views on the children's reading related behaviour such as enjoyment, ability, and phonemic awareness and phonic knowledge. The teachers were also asked for information on the children's receipt of additional support services. For the cohort 1 data collection, of the 29 teachers, 28 participated at Time 0 and 24 participated at Time 1. Data were missing on five children at Time 0 and 20 children at Time 1. For cohort 2, of the 31 teachers, 29 participated at Time 0 and 28 at Time 1. Data were missing on 13 children at Time 0 and 24 children at Time 1.

4.4.3 Volunteers' survey

Volunteers also completed surveys on children participating in the WoW programme. The purpose of the survey was to record volunteers' views on the children's willingness to read, interest in reading, comprehension, enjoyment, communication, relationship with the volunteer, experience of the programme, changes in self-esteem and reading ability, phonemic awareness and phonic knowledge, and willingness to read aloud and read independently. For the first cohort, data were collected at Time 1 only; and for the second cohort data were collected at both Time 0 and Time 1. Data were collected on 111 children in total: 55 children at Time 0 and Time 1 (cohort 2) and a further 56 at Time 1 only (cohort 1).

Other data collected by the research team included the following:

- *Programme dosage*: How often the child attended WoW and the length of sessions. These data were collected from WoW project leader records
- *School attendance*: How often the child attended school. These data were collected at the end of the academic year from school staff
- *Receipt of additional reading supports*: This information was gathered from teachers
- *Gender*: This information was recorded on parental consent forms
- *Age*: These data were collected from parents on the parental consent forms, from children during assessments, and checked with school records at the end of the year

An overview of the participants involved, the methods employed, and the response rates over the course of the RCT study are provided in Appendix 4.

4.4.4 Process study data collection

Children, parents, school staff, and Barnardos staff all participated in face-to-face or telephone interviews either on an individual or group basis. WoW volunteers were invited to participate in focus groups held in both Dublin and Limerick. Data were collected from volunteers on the recruitment process, the introduction to Barnardos and the schools, the training and ongoing supports, the WoW manual, the reading session, their relationship with the children, and their experience of the programme overall. Anonymous questionnaires were also completed each year by the volunteers. This aspect of the research was interested in the volunteers' own experience of their participation in the programme.

The WoW children's reading records were reviewed in detail in Year 2 and Year 3. Data on the number of sessions attended, the reading areas covered in a session, and the progress made were documented for each child involved in the study by the volunteers. This information was used to inform the findings on the fidelity to the WoW programme model.

An overview of the participants involved, the methods employed, and the response rates over the three years of the study are provided in Appendix 3.

4.5 Ethical issues

The research team were guided in their ethical requirements for this evaluation by the National University of Ireland, Galway Research Ethics Committee (see NUIG, 2009). Full ethical approval was sought and granted separately for both the process study and the outcomes study. Conducting a study with children from disadvantaged areas experiencing delays in their reading raises ethical issues, while the RCT design also raises its own ethical issues. In addition, systems and processes were put in place to manage potential child protection issues (see Appendix 17), to ensure the confidentiality and anonymity of the participants, to secure informed consent, and to minimise any disadvantage to control group children not in receipt of the programme.

4.6 Chapter Summary

The study design combined a randomised controlled trial (RCT) outcomes study with a process study evaluation of programme implementation. The two were combined in an explanatory mixed methods approach, as process study data were used to expand on and to find plausible reasons for findings from the outcomes study.

The RCT study was a pre-test/post-test control group design. There was a pre-programme measure (Time 0), followed by the random allocation of children to control and intervention groups. Children were measured again, at the end of the school year (Time 1; 8 months later), and once again during the next academic year (Time 2; 12 or 16 months later).

Teachers nominated children who they thought the programme would suit. Written informed consent was sought from all parents of nominated children and then from the child his or her self. All children who had consented to take part were then screened to ensure the programme was suitable for them. Random allocation was 'stratified' based on the participants' cohort (cohort 1 or cohort 2), school (one of eight in each cohort), and class year (1st class or 2nd class within each of the 8 schools in each cohort).

Outcomes study data were collected using the following measures: WIAT Single Word Reading (word recognition) and WIAT Spelling, BPVS (vocabulary), York Passage Reading (reading comprehension, reading accuracy), a child self-report measure (Enjoyment of Reading and Perceived Competence), and a teachers' survey and a volunteers' survey (children's reading ability and reading self-beliefs). Data also were collected on dosage, receipt of additional support services, gender, and age.

Chapter 5 Process Study Findings

This chapter presents the findings from the process study of the WoW programme. The findings are based on qualitative and quantitative data collected from the study participants. The chapter is structured around four key research questions:

1. What was the extent and nature of programme take-up (i.e. programme utilisation)?
2. How well was the programme organised and run (i.e. programme organisation)?
3. What was the extent to which the programme was implemented in line with the model as specified in the manual (i.e. programme fidelity)?
4. How was the programme experienced by children, school staff, and volunteers?

Data from the process study will also be presented in Chapter 6, when the findings from the evaluation of programme implementation are integrated with the evaluation of programme impacts.

5.1 Programme Utilisation

This section is based on qualitative data collected from Barnardos staff, school principals, and class teachers on the introduction and implementation of the programme. This includes the selection of the schools, children, and volunteers, the experience of introducing WoW to the key parties involved, and subsequent implementation of the programme in the school setting. The experience of the recruitment and induction process from the volunteers' perspective is also considered.

5.1.1 Targeting and selection of schools

Barnardos first approached national schools in Dublin to introduce the programme and assess the level of interest in WoW. Potential school sites that were clustered in three urban areas of disadvantage and covered under DEIS were approached. Further considerations included a school ethos that emphasised a holistic approach to children's well-being and recognised the importance of family and community in their lives, and an existing relationship or the potential to develop a relationship with Barnardos.

Once an expression of interest was received from the four schools, a formal process ensued to introduce the WoW programme to the school principals. The programme was also presented to the wider school team including staff with a specific brief for literacy support. In 2007, a memorandum of agreement was finalised between the four Dublin schools and Barnardos and the pilot phase of WoW commenced. All four schools in Dublin are included in the DEIS initiative (see section 2.1.1.1).

In 2008, Limerick city was chosen as a second location for the programme. The decision to introduce WoW in Limerick was based on the existing cluster of Barnardos family support projects in the city, the positive relationships these projects had with the local national schools, and the high level of disadvantage and low literacy levels in Limerick city. Barnardos staff in Limerick were in a position to present a well-developed and comprehensive programme to the school principals for their consideration. This was due to the programme development work undertaken by the service design group during 2007 and 2008 and the learning from earlier implementation in Dublin.

Three of the four schools who initially implemented WoW in Limerick were under the DEIS programme and were connected with existing Barnardos family support projects. The fourth school was not based in a disadvantaged area, it had a mixed cohort of students, with a number of its pupils living in communities designated as disadvantaged, and relatively large class sizes. Memoranda of agreement were signed by Barnardos and the Limerick schools. In Limerick the establishment process for WoW took from September 2008, when the schools were initially approached, until February 2009 when the implementation of the programme commenced.

There were particular challenges in the implementation of WoW in Limerick. The numbers participating in the programme were low because literacy levels were outside of the threshold for WoW and also because of the small number of children in three of the four selected schools. In addition, one of the original four schools left the programme at the end of the 2009-2010 school year. The school principal made this decision as there were only six children in the WoW programme and a significant amount of reading resources already in the school. Barnardos then approached another school and the WoW programme commenced in this school at the start of the 2010/2011 school year. The school that left the programme was a DEIS school and the new school was not, reducing to two the number of DEIS schools in Limerick participating in the study.

5.1.2 The appeal of WoW

A number of characteristics of the WoW programme appealed to the school principals and were instrumental in attracting them to WoW. They included the focus on literacy support, the threshold for participation, and delivery of the programme by a highly respected external agency.

5.1.2.1 Literacy support

The school principals described how their initial interest in the WoW programme was due to its focus on literacy support. The principals repeatedly expressed their general commitment to promoting literacy development within their schools. Seven out of the nine schools are designated as disadvantaged. As part of the DEIS programme these schools focused their efforts on improving children's literacy. As explained by one school principal:

'Our priority here is literacy and we kind of throw the kitchen sink at it, everything we have we put into literacy which is why we jumped at the opportunity to take this programme on.'

Although not under the DEIS programme, the remaining two schools also had a strong focus on literacy support. Language development was highlighted as an area where children required additional support, with a deficit in language acquisition apparent in many of the children attending these schools. As noted by one principal, *'it is very difficult to teach the skills of reading without having the language skills first.'* Overall, the potential for improved literacy skills through participation in WoW appealed immediately to all the school principals concerned and was a key factor in their decision to become involved.

5.1.2.2 Threshold for participation

A further reason for the interest shown in WoW by school staff was the programme's target population, which school staff referred to as 'middle children.' Some children did not require any additional reading support, some were significantly behind and required structured supports provided by the Department of Education and Science, while 'middle children' presented with a lower level of need but nonetheless were falling behind. This is the target population for WoW and the school staff emphasised the importance of this. According to one school principal:

'The major, major benefit is the support for those children that I would just say are in the middle category, slightly striving at frustration level, not weak enough to get learning support, but not good enough to feel that they're succeeding at reading. So they're the children who would be at risk of failing reading, not becoming real readers and not enjoying reading for the pleasures that it can afford. Nobody ever looks at these children; they're kind of the invisible children always.'

All school principals emphasised that the targeting of this cohort of children was a crucial factor in their decision to become involved with WoW, and that Barnardos was correct in targeting this level of need and it was exactly the type of additional support that the schools needed.

5.1.2.3 An external programme provider – Barnardos

A further deciding factor was that the WoW programme was designed, organised, and coordinated by an external agency. This was highlighted as particularly appealing by both the school principals and the class teachers. With their already full work load the school staff welcomed a support programme that required only a relatively small amount of additional work from them. As one school principal observed:

'As all the work is done by Barnardos it makes it really advantageous for a school setting. There's minimal involvement of the principal and the class teacher, the class teacher doesn't have to do any extra work. So in selling it to the teachers this means it's not an additional burden. It isn't another programme we have to teach and squeeze into our curriculum and teachers love it because of that.'

The reputation of Barnardos for delivering high quality services to children and families also enhanced the appeal of the programme. School principals believed that any programme delivered by Barnardos would be of high quality, well-designed, and well-delivered. Many of the schools had direct contact with Barnardos through its family support services while others knew indirectly of their reputation for high quality.

According to one school principal:

'Barnardos equals everything is done properly, everything is evaluated. Barnardos don't do things by halves. They research well, they evaluate, they resource their programmes well both on a human level and financially.'

In addition, the programme was well-structured, volunteers were highly trained, child protection procedures were excellent, and Barnardos provided ongoing supports to volunteers. A further factor was the manner in which the WoW project leaders introduced and outlined the programme and discussed any potential difficulties with the schools.

5.1.3 Recruiting volunteers

The recruitment and selection of WoW volunteers was facilitated through the Volunteer Manager who was based in the Human Resources Department in the Barnardos national office in Dublin. The wider WoW team including the project leaders were also involved in this process. The recruitment of volunteers was an ongoing process with a number of recruitment drives initiated throughout the calendar year. The majority of WoW volunteers who participated in the study had initially heard about the programme in their church parish newsletter or through their active retirement group. A number of volunteers who were retired teachers had read a notice advertising WoW in their professional magazine. Volunteers had also heard of the WoW programme through ‘word-of-mouth’ or had seen an advertisement in the library.

The first formal step in the recruitment process involved potential volunteers completing a registration form outlining their interest in and reasons for applying to the programme. Once applicants met the criteria they were invited to an ‘interview’ to discuss their motivation and interest in both reading and working with children. This also afforded potential volunteers an opportunity to discuss any concerns they may have or make any necessary clarifications. The Barnardos team, who participated in the research, described changes introduced to the interview process as their experience of the programme developed. Such changes included a focus on the challenges of engaging children in the reading sessions, how to deal with children’s disruptive behaviour, and providing a detailed overview of the WoW training and programme material. Garda vetting¹⁰ and references were required for successful applicants.

Overall, the interview process was described by WoW volunteers as very satisfactory. The only issue raised was with regard to delays in the recruitment process, which were caused by the need to obtain Garda vetting for people working with children. Barnardos have no input into this system and cannot allow volunteers to work with children until this process is completed with a satisfactory outcome.

Volunteers explained that a ‘love of reading’ and of ‘working with children’ prompted them initially to enquire about the programme and to subsequently join the WoW team. In the main, the WoW volunteers were motivated by the opportunity to support children from disadvantaged areas with their reading and to instil a sense of confidence in their reading ability.

¹⁰ In Ireland, all who are involved in working with children on either a paid or voluntary capacity must have police clearance from An Garda Síochána. This process can take some time due to the demand on the systems within An Garda Síochána.

As one volunteer stated:

'I heard the ad on the local radio. It just screamed at me to be answered because I have a friend who is working in a prison in England and she's working with them [disadvantaged adults] at the other end. So I said this is so important and I really thought Barnardos are doing something fantastic. So it just screamed at me. I had to. I didn't really want to, I hadn't the time, but I had to.'

The majority of volunteers are retired, have some spare time and are motivated to use it productively. There is a strong sense of altruism evident amongst the volunteer group. As one volunteer explained:

'You're working all your life and rearing children, the whole lot and then you reach a stage where all that is behind you and you would just like to do something for someone else.'

5.1.4 Volunteer training

Training of volunteers involved an initial three-day training period and a further two days training during the school year. The volunteers were very satisfied with the training, particularly at the earlier stage of their involvement. Volunteers described how the training covered the content and structure of the reading sessions themselves, including techniques on how to engage and interact with young children, but also focused on child protection, children's emotional and behavioural issues, and diversity. Volunteers were generally very impressed with the level and quality of the training, although some were initially daunted by the structured nature of the reading programme and the level of detail involved in delivering WoW. The technical aspects of the WoW programme were also initially challenging for many of the volunteers. However, volunteers reflected that assimilating all the detailed information was an ongoing process that occurred gradually over the year while reading with their WoW children:

'At first I was a bit daunted at the whole programme but as I got into it, it worked out well. I just learned as I went and by the end of the year I find I've put the training into place and I'm very familiar with it all.'

Volunteer training was amended over the course of the three years of the study. Volunteers received more training on phonic knowledge and phonic skills and also managing the emotional and behavioural needs of children. The phonological training was described by the volunteers as initially very challenging. However, many of the volunteers expressed confidence in now engaging with the phonics sessions and a number said they preferred them to the sessions focused on comprehension, vocabulary, and fluency:

'I found the training very difficult and I didn't think I'd stay. I found it too professional and too structured and I really didn't think I'd be saying I'd be coming next year... but I am. I've found my own level in it and I found phonics extraordinarily difficult but I now am more relaxed and confident in my ability.'

However, for others, phonics continued to be a challenge, and some availed of an option to leave the phonics sessions to another ('paired') volunteer.

As the programme became more established Barnardos arranged for experienced WoW volunteers to meet with newly recruited volunteers to share their knowledge and understanding of WoW. This was described by volunteers as a reassuring experience, giving a sense of: *'if they can do it then so can we.'*

Experienced volunteers who had been involved in a number of training sessions suggested that a 'graded' approach to the training programme would be welcome. These volunteers welcomed a refresher on the reading techniques and information on new approaches or materials but were of the view that certain sections such as the child protection policies were somewhat repetitive year on year.

5.1.5 Implementing WoW

All schools participating in WoW had common issues to address in order to successfully implement the programme. The school staff and Barnardos team highlighted how specific attention was paid to:

- accommodating the reading sessions
- the timetabling of the sessions
- the withdrawal of the children from the classroom

The school principals interviewed described these particular issues as routine and very manageable.

5.1.5.1 Accommodating WoW

As space is at a premium in all the schools, accommodating WoW required significant consideration. An additional issue was that the WoW equipment (programme materials and reading records) required storage that was accessible but secure. The school principals and the WoW project leader negotiated a solution to the accommodation needs of the programme in each school. Across the schools the reading sessions took place in a variety of settings. These included: classrooms, the school library, computer rooms, the school hall, and a learning support room. All schools successfully accommodated the reading sessions with adequate space also available for secure accessible storage.

5.1.5.2 Timetabling WoW

The timetabling of the WoW programme also required considerable thought. It was essential that the children who attended WoW did not miss core subjects or regularly miss the same activity or non-core subject. This issue is returned to in Chapter 6. It was also necessary to ensure that the children who remained in class benefit during this time and did not experience any set back in their

reading compared with the WoW children. The class teachers and school principals worked with the project leader to schedule the reading sessions at an appropriate time. Once the timetable was finalised at the beginning of the school year, the class teachers reported no difficulty with the scheduling of WoW thereafter.

The WoW team were very aware of the importance of timetabling for the school setting and emphasised the need to collect and return children on time to their classrooms. As one Barnardos member of staff highlighted:

'The schools are running to a really tight timetable that a few minutes can affect. That awareness is crucial so that WoW is not an inconvenience.'

5.1.2.3 Withdrawal of children

For the majority of teachers, the withdrawal of children from the classroom is an established feature of teaching. This is particularly so in DEIS schools where children are withdrawn from class for a number of programmes, including maths recovery, reading recovery, or behavioural support programmes. The class teachers held mixed views on the process in place for withdrawing children for WoW. The majority of teachers were satisfied with the process for withdrawal. However, for others it was rather disruptive, particularly at the start of the school year when volunteers started arriving at the class door. However, as the year progressed teachers explained how they got used to the system and felt that the volunteers were more discrete. Other teachers reported that they would barely notice the children leaving the room. Overall, after a period of acclimatisation early in the school year classroom teachers accepted the withdrawal of children as a regular part of the day. All teachers agreed that any potential disruption associated with withdrawing the children was outweighed by the benefits accrued by the children in attending WoW.

5.1.2.4 Limerick

Implementation of the programme in Limerick was informed by the earlier experience of implementation in Dublin. The staff team was able to fully discuss with school principals the potential impact of the programme on the school system, and discuss the options involved in dealing with issues such as withdrawal of children from the classroom for reading. The awareness of the importance of WoW fitting with the school system and the flexibility demonstrated by the school staff (particularly the principals) facilitated a positive experience in implementing WoW in the Limerick schools. The Barnardos staff also drew attention to a number of specific challenges involved in Limerick, in particular the fast pace at which the programme was introduced. The identification of the schools and securing their agreement, and the recruitment, selection, and training of volunteers happened over a shorter period. Although the volunteers were introduced to a '*streamlined*' programme, the process of introducing and implementing the programme overall was relatively rapid and involved a steep learning curve.

5.2 Programme Organisation

This section explores the ways in which the programme was organised and run. A number of specific aspects of WoW were identified as contributing to the overall successful organisation of the programme. These characteristics included the nature of the programme itself and the relationships with the project leaders, the volunteers, the school staff, and the Barnardos team. These findings are based on the data collected in the interviews with the school principals, the class teachers, the Barnardos team, and the volunteers.

5.2.1 The WoW programme

The WoW programme was very well received by the school staff. The school principals reported a very high level of satisfaction with the organisation of the programme. WoW was well-assimilated within the school system and was essentially viewed as part of the school curriculum. The school staff viewed the programme as one of the positive resources within the school complementing and enhancing other supports available for the children.

The positive impact of the individual attention offered by the volunteers was viewed by the principals as invaluable to the children participating in WoW. The male volunteers were specifically mentioned as a welcome resource in schools where the majority, and in some cases all staff, were female. In a number of schools, there were additional initiatives developed, prompted by the intergenerational aspect of the WoW programme. For example, in one school the volunteers were asked to talk to the school children about life when they were young as part of a history session, while in another school there were plans for an intergenerational arts and crafts class with older volunteers from the community teaching the children to crochet and knit.

The design of the programme itself was a contributing factor to its successful organisation. WoW is a structured reading support programme which was developed following a very thorough design process. Its balanced literacy approach complements the teaching styles and methods that are currently employed in the primary education system. The programme also uses complementary reading material through the *Oxford Reading Tree* series and adopts the same approach to systematic phonics as is used by the schools. The complementary nature of the programme was a key feature in the success of WoW within the school setting.

One school principal explained the importance of this:

'Probably the biggest advantage of the programme is the correlation between WoW and the way we teach reading at primary level. So the children are not getting mixed messages. It's all very much the same, how the alphabet is taught and the reading games and the emphasis on phonological awareness as well.'

As a structured programme, WoW also incorporates assessments and a measured review of the children's progress. The school staff commented very positively on the recording templates used by the volunteers and how impressed they were with the level of detail and the scale of information

recorded by the volunteers. The schools also valued the results of the broad range of assessments completed on each child, which they would not have access to without the WoW programme:

'Very specific things are done in the reading sessions, the volunteers are required to maintain very meticulous and detailed records of each child and the children are tested before and after. It's a great resource for the school.'

The teachers reported little impact on the wider class group from the WoW programme. The teachers did however see an indirect benefit for the children who remained in the class. With smaller numbers the class teachers tended to use that time for reading activities. They described using the WoW time for reading stories to the remaining children or for library time where children selected their own books to read.

All class teachers agreed on the added value of WoW and expressed a strong interest in having the programme continue. The potential for children to have regular structured reading sessions on a one-to-one basis was viewed as a very positive additional resource within the school. One teacher described the impact of WoW as:

'Just like gold dust those children being read with three times a week on a one-to-one situation and having the oral language development, the comprehension skills and reading fluency.'

5.2.2 The Project Leaders

School principals believed that the approach, attitude and expertise of the project leaders was exemplary. The professional educational background of the project leaders was attributed as a key factor in their professional approach to the programme. The principals described how the preparatory work undertaken by the project leaders, their technical knowledge about literacy development, their clarity regarding the programme requirements, their understanding of the school system, and the ongoing monitoring of programme operations ensured that WoW was delivered in a highly professional manner with little disruption to the school schedule.

Principals appreciated that project leaders shared all school policies, procedures, and guidelines with the volunteers and also inducted the volunteers into each school system. The school principals also appreciated that, in the main, the project leaders managed the detail of programme delivery. The class teachers also emphasised the all-encompassing role played by the WoW project leader, as well as the extremely professional manner in which the project leader conducted the programme.

The project leaders themselves also highlighted how the strong working relationship with the school staff allowed them to identify and address any potential difficulties at an early stage, whether it was an issue with timetabling, children's attendance, or reading materials. Each of the project leaders outlined the direct benefits of the strong working relationships established between themselves, the school staff, and the volunteers:

'I think it's a case of the volunteers are coming to know the staff a bit better and I think that makes a great difference to the children as well, that they see that we're all part of one team rather than that's my class teacher and that's WoW.'

'It means we've got better relationships with the teachers and if there's a little problem you can go and sort it out straight away and it doesn't have to be done in such a formal manner.'

All volunteers also had immense praise for the work of the WoW project leaders. Their accessibility, the detailed planning and preparation, and the overall level of support received were highlighted as key factors in the ongoing organisation of the programme. As described by one volunteer:

'I think the Project Leader is great because she gives you such support and creates a feeling of unity, that we're all together which is very helpful. I find that she is most supportive in everything.'

As the school staff do not have the capacity to provide the resources required to develop or deliver any additional support programmes the external management of WoW was a very positive feature of the programme. One school principal highlighted the issues:

'Programmes that are successful are the ones that the school has assistance in running. Where it falls on the school, our resources are just too thinly stretched. It just isn't possible for us to do anything additional.'

Of particular value to the class teachers was that WoW does not require any additional input or workload from them during the school day. Due to both the programme is design and its effective organisation the class teachers reported having very little to do with its day-to-day operation. The class teachers described the structured nature of their day and their strict timetabling in order to meet their curriculum targets with no capacity for additional activities or initiatives. The lack of time commitment required from teachers for WoW was emphasised as a key strength of the programme. As explained by one class teacher:

'WoW is so effortless. There's no, oh did you get that book or where is this folder? Children come and go and the teachers don't have to do anything. It's just effortless really on the part of the teacher, anyway.'

5.2.3 The WoW volunteers

The school personnel and the Barnardos team reported a very positive experience of working with the volunteers and their part in the WoW programme. Their commitment to the programme, their

enthusiasm for their role, their interest in reading and their very obvious love of working with children was noted. The school principals described how their schools experienced the WoW volunteers:

'I have to say that we've been just delighted with the programme, just the way it's organised, the motivation of the volunteers, the skill level of the volunteers and their ability to form relationships with the children and I guess form relationships with us as a school. So we see them very much as part of the extended team of the school.'

'The volunteers are wonderfully dedicated. They never miss a day. They're here an hour early and then we meet up for a cup of tea over in the staff room, they have great enthusiasm, great energy and real concern for the children which is lovely.'

The maturity of the volunteers was also viewed as an asset. The fact that the volunteers have 'life experience' along with work experience was seen as a significant strength. One school principal described the influence this maturity has in the reading sessions:

'An advantage with the volunteers is that most of them are grandparents and they bring a grandparent style of working with them which is lovely and conducive to the work they're doing because for the children, the children need that respite out of the formal teacher learning context. It's structured but it's relaxed and they notice the difference.'

The commitment of the volunteers was also evident in the effort they put into the delivery of the reading programme. The volunteers explained their endeavours to ensure they were doing exactly as expected of them in their interaction with the children and the attention paid to the specific sections of the reading sessions:

'I think it's a measure of the standard of the volunteers that we all feel inadequate and we all try to be better. We're not sitting back on our laurels and just doing reading. We know what has to be done and that follow-up filling in the form, that's so important but all of us now, we're always trying to learn a little bit more.'

The relationship that was built up over time between the volunteers and the WoW project leaders was also had a very positive impact on the running of the programme. There was a very low attrition rate, with many involved with the programme for over three years. The majority of volunteers who started with WoW continued with the programme. As a result the group of volunteers built a strong working relationship with the project leader, and were very familiar with the WoW programme and with the schools in which it was delivered. An informal system of experienced volunteers assuming increased responsibility in the organisation of WoW developed over time. The more experienced volunteers took responsibility to ensure children were collected from their classrooms and fed-back any necessary information on occasions when the project leader was not on site. Less experienced

volunteers also emphasised the support they received from their more experienced colleagues and the positive impact that had on their confidence.

5.2.4 The School staff

The approach of the school team was also noted as a key contributing factor in the successful organisation of WoW. The professional style of the school principals, the class teachers, and staff with a specific role in literacy support was highlighted repeatedly by the non-school-based research participants. The volunteers had a strong sense that they were part of the school team. They recalled some apprehension when starting in the schools (particularly those from a non-teaching background) but the friendly and welcoming nature of the school staff quickly dispelled any concerns. Being formally introduced to the school staff helped all the volunteers to feel comfortable in the school setting.

The openness of the class teachers to a new programme was also highlighted by the school principals as a further key factor in facilitating the organisation of WoW. Existing curriculum requirements for teachers during the scheduled class time are quite extensive and teachers were required to accommodate WoW within this timeframe. Therefore, as one principal noted,

'it is essential that they see value in additional programmes in the school particularly where the children are being withdrawn from the class room.'

5.2.5 Barnardos

The school staff and the volunteers were very positive about the support received from Barnardos. All the school principals reported that they found the overall approach from Barnardos to be very professional and extremely well-organised. While in the main having direct contact with the project leaders, the schools have also regularly met the Assistant Director of Children's Services and other Barnardos staff. Volunteers, in their answers to the survey questions, were either very satisfied (94 per cent) or satisfied (six per cent) with the on-going supports and training provided by Barnardos. The volunteers particularly appreciated their inclusion in decisions on programme development and potential changes to aspects of the programme. Their opinions were sought and taken on board with regards to programme developments.

As one volunteer explained:

'Whenever there are changes to be made, they always ask us what we think about it. We are always consulted. So that means we are actively part of the whole thing and what we say is always taken on board, because we are the ones on the front-line!'

One key point emphasised by both the schools and the volunteers was the inclusive approach Barnardos has to the children in 1st and 2nd class not receiving WoW. Barnardos have organised gifts of books for all children in those classes at holiday times, given sports or art equipment to the schools, organised trips outside of school, and even arranged for Santa to visit at Christmas. It was

believed Barnardos make a determined effort to negate any sense that the WoW children were receiving more than their classmates.

5.3 Programme Fidelity

The WoW manual (2008) was developed by the Service Design team in Barnardos following an extensive programme design process. Adhering to and maintaining the programme model as specified in the manual is a core facet of the role of the project leader and other Barnardos staff. Findings on this aspect of the programme are based on observations of the reading sessions, documentary analysis of files and records, focus groups with volunteers, and interviews with the project leaders and wider Barnardos staff group.

5.3.1 Observations of the reading sessions

In the WoW reading sessions that were observed as part of the evaluation volunteers were focused on the task at hand, keen to adhere to the WoW manual and to have a productive session with their child. The volunteers were very structured in their approach to the sessions. The children were collected on time from their classrooms with the reading session starting very promptly. The volunteers engaged in pre-reading activities almost immediately, looking through the story book, talking about the pictures, or practicing words contained in the text. The sessions moved smoothly on to reading, with volunteers supporting the children to read using paired reading or helping them to sound out difficult words. When the reading or phonics activity was complete volunteers concluded the session with follow-up activities. Volunteers finished their sessions promptly or even a little bit ahead of schedule.

Alongside the structured nature of the sessions the disposition of the volunteers was noteworthy. The language used in their interaction with the children was extremely positive, their tone was low-key and supportive, and the volunteers sat close to the children and were completely engaged in the session. There was a constant stream of encouragement and reassurance from the volunteers with all of the children's efforts recognised and commended. Phrases such as; 'good boy/girl,' 'well done,' 'very good attempt,' 'if you see a hard word we will work it out,' 'I like the way you are stopping at your full stops,' and 'don't worry' were plentiful. Volunteers were also firm when necessary in order to keep the children on task. Gentle prompts such as; 'now you're only guessing,' 'don't forget your full stops,' 'you're taking chances,' or 'you sound out a word and I'll guess it first and then I'll sound it and you can guess' encouraged the children to remain focused in a positive and supportive manner. A positive and relaxed relationship and a warm atmosphere were evident.

Although there were a number of child- volunteer dyads reading in close proximity to each other there was little attention paid to the other pairings. The volunteers were totally focused on their children and the required activities with the result that children engaged only with their own work and had no interest in the work of others in the room.

5.3.2 Record-keeping

The volunteers were required to record the detail of each reading session using a specific template with sections on the:

- Details of the child and volunteer and the date of the session

- Level and amount of reading material covered including the reading type used
- Progress across the four literacy areas as used in the guided reading approach
- Follow-up activities and what went well/was a challenge in the session
- Plan of work for the next reading session

The records of each child involved in the programme and the research study in Limerick and Dublin were reviewed in detail as part of the documentary analysis. The number of sessions attended, the named volunteer overseeing the session, and the progress made by each child across the ORT materials was easily accessed and clearly recorded. The plan for the next reading session was also decided and recorded in advanced.

However, the volunteers did not record detailed information on all specified areas following each reading session. The records also show that dosage levels were less than intended. The average weekly dose was 1.8 sessions, whereas initially the intention was to deliver 2 or 3 sessions per week and then, from 2008 on, to deliver 3 sessions per week.

5.3.3 Project Leaders

The project leaders reviewed the reading records on an on-going basis in part to ensure programme fidelity. Project leaders supported the ongoing fidelity of the programme by observing the reading sessions, talking with the children on the way to and from their classroom, and regularly liaising with the volunteers. Familiarity with the programme and an awareness of the importance of ensuring fidelity to the programme design combined with working with the newly recruited volunteers and knowing many of the volunteers well supported the project leaders in maintaining the fidelity of the WoW model.

5.3.4 The WoW manuals

The WoW manual for volunteers was described as very helpful by all participating volunteers in ensuring they adhered to the agreed programme. Volunteers tended to use the manual at varying stages in their involvement with the programme. A number of volunteers explained in the focus groups how they found the manual invaluable at the beginning of their involvement in WoW, whereas others described how they started using the manual at a later stage and found it very useful and interesting at that point. As one volunteer explained; *'I find I refer to it a lot, it's invaluable really. It's my bible and it's very well done.'* Overall, the use of the manual supported the volunteers to adhere to the programme model.

All volunteers who participated in the quantitative research were asked in their questionnaire to rate their level of satisfaction with the WoW manual and the record keeping system. Over half of the volunteers reported that they were satisfied with the use of the WoW manual (58 per cent) with a significant number (31 per cent) reported to be very satisfied. Furthermore, 48 per cent did not want to see any changes to the record keeping system. Changes were suggested by 29 per cent of participants. Changes suggested by volunteers to the record keeping system included:

- Less detail and a shorter form
- A rephrasing of the questions to reflect the fact that the records were being completed after the reading session had taken place

- Less frequent record keeping as there was little change on a day-to-day basis
- Multiple choice options
- More detailed and specific comment under each section
- Access to a suitable area to write the records

However, volunteers accepted that completion of the reading records was a necessary part of participating in WoW. The volunteers emphasised how the reading records were a particularly useful resource when substituting for another volunteer, as reviewing a colleague's completed records updated the volunteers on the work recently completed and the planned work for the subsequent sessions.

The WoW manual for managers was also identified as a resource in ensuring fidelity to the programme model. As one project leader explained during her interview, it was a great resource in ensuring the WoW programme was introduced and implemented as intended:

'the manual is so systematic and so clear I could literally take it step by step in the set up and it meant that I wasn't missing anything out and wasn't duplicating anything.'

5.4 Participants' Experience of WoW

The WoW programme operated in Dublin from late 2007 and in Limerick from early 2010. At the end of its third year in operation in Dublin (2010) and its second year in Limerick (2011) all involved reflected on their experience of the programme and the value they placed on it. The perceived value of the programme for the schools, the children, and the volunteers is presented in this section.

5.4.1 Experience of school staff

A number of aspects of the WoW programme were highlighted as of particular value to the schools. These included: the focus on literacy; the complementary nature of the programme; the level at which the programme is targeted; the professional nature of the volunteers; the relationship between the volunteers and children; the professionalism of the project leaders; and the delivery of WoW by an external agency. Much of this material has been covered in section 5.2.1 'The appeal of WoW'.

5.4.2 Experience of the children

The children themselves, the school principals, the class teachers, the volunteers, the project leaders, and the Barnardos staff all noted that the children enjoyed participating in the WoW programme.

5.4.2.1 The children's views

All of the children interviewed were very positive about their experience with WoW and were clear that they went to WoW for help with their reading. The children described enjoying all aspects of the WoW programme and particularly liked reading, phonics, and playing word games. There was also a

sense that their reading has improved, with children describing how they were now better at their reading. The relationship between the volunteers and the children was also described very positively by the children with a definite sense of camaraderie between both. The children did not wish to change any particular aspect of the sessions and were happy that WoW continued in its usual format. As noted above the researcher observed the children engaged in very positive and supportive sessions which they appeared to enjoy.

5.4.2.2 Views of School Staff

The school principals described the positive feedback received from the class teachers on children's experience of the programme with a sense expressed that their school was 'lucky' to have WoW. All the class teachers reported an increase in the children's confidence generally and specifically in their enjoyment of reading, interests in books, and willingness to read aloud in class. Improvements were also noted in their fluency and expression. The emotional and social gains made by the WoW children were also emphasised. One teacher described the progress a 1st class child had made:

'she has excelled, especially in her reading. She's reading now confidently with expression and even as well her course work, her sounds, her ability to identify different sounds and words as well has improved dramatically since term one.'

While impressed with the WoW programme and placing a high value on its work, school staff noted how, in the absence of the findings from the outcomes study, it was difficult to attribute any change in children's reading or self-esteem specifically to WoW. All emphasised the whole school focus on literacy and the wide range of individual, small group, or classroom-based supports that the children who attend WoW were receiving. As discussed in section 2.1, as part of a Government-led focus on literacy supports (particularly in DEIS schools) the schools increased their attention to literacy more generally during the lifetime of the WoW programme. The other initiatives available in schools included Reading Recovery, learning support, a move from single class readers to graded readers for all children, and increased attention to phonics in the junior classes; as well as less regular initiatives such as a mobile library, book week, or poetry week. Teachers drew attention to the fact that children in 1st and 2nd class experienced this strong emphasis on literacy from the time they started in school and highlighted how generally there was a difference between the level current 2nd class children read at and the reading level of their counterparts prior to the increased emphasis on literacy. As one teacher explained:

'I don't know how you would actually say well this improvement is due to WoW and this improvement is due to the graded readers. I don't think you can but I think we were lucky that these things happened more or less simultaneously. So in that respect they were all part of this drive and change in the way we did things. So it came at a perfect time in that respect for us.'

5.4.2.3 The WoW volunteers' views

The WoW volunteers also reported very favourably on the value of the programme for the participating children. They recounted in great detail the progress made by the children emphasising

their increased confidence and interest in reading and also improvements in their comprehension, reading (fluency and expression), and phonological awareness. The volunteers also described how the children appeared to really enjoy the reading sessions and seemed happy to be attending WoW. They highlighted how generally the children were quite shy and reserved when they started reading with them and did not have the confidence to attempt words they did not know or offer an opinion on the stories. However, as the sessions progressed the children become more talkative, had direct eye contact, offered opinions, told stories, were willing to attempt words they did not know, put expression in their voice when reading, and were readily willing to read aloud:

'You can actually see the changes happening in front of you , even the way they want to read the book, they want to choose the book, they even want to do the writing, they want to play the game. You see they actually want to do it whereas before they wouldn't want to do it at all because they're afraid of it.'

Participating volunteers were also requested to complete a section in the postal questionnaire on each child they tutored over the 2010/2011 school year period. First, volunteers reported their view on the children's experience of the reading sessions. Half were described by their volunteers as very positive with 37 per cent described as positive. Just two per cent of children's experiences were described as negative by volunteers.

Table 5.1 Child's experience of reading sessions

Experience of Reading Sessions (n=130)	Percent	Valid percent	Relationship with WoW child (n=131)	Percent	Valid percent
Very positive	46	50	Very positive	60	63
Positive	34	37	Positive	28	29
Average	11	11	Average	5	6
Negative	2	2	Negative	2	2
Total	93	100	Total	95	100

Volunteers also described their relationship with the children they read with, 92 per cent reported positively and 5 per cent described as average and 2 per cent described as negative. All participants in the study emphasised the relationship between the volunteers and the children as a special and unique aspect of the WoW programme. The volunteers, the school staff, and the Barnardos team emphasised the positive intergenerational relationships that developed as part of the programme.

Table 5.2 *Change in reading ability*

Change in reading ability (n=129)	Percent	Valid percent	Level of improvement (n = 119)	Percent	Valid percent
Yes	83	90	Greatly Improved	57	67
No	4	4	Improved	27	32
Don't Know	6	6	Don't Know	1	1
Total	93	100	Total	85	100

Table 5.3 *Change in self-esteem*

Change in self-esteem (n = 130)	Percent	Valid percent	Level of change (n=110)	Percent	Valid percent
Yes	78	84	Greatly Improved	51	65
No	10	11	Improved	27	35
Don't Know	5	5	Don't Know	--	--
Total	93	100	Total	78	100

Volunteers also offered their views on the progress of the children’s reading ability. A very positive result was reported with 90 per cent of children viewed as having improved in their reading ability. Four per cent were reported as not having improved. Of the 90 per cent who had improved, 67 per cent were described as being greatly improved and an additional thirty two per cent as having improved.

Volunteers similarly reported perceived changes in the children’s self-esteem. A positive change was noted in 84 per cent of the children with 65 per cent of these reported as having greatly improved self-esteem. Eleven per cent of children were reported as not having an increase in their self-esteem.

5.4.3 Experience of the volunteers

The volunteers reported high levels of satisfaction with their own involvement in WoW. The majority of volunteers had been with the programme for a number of years. The attrition rate of the volunteers was less than 10 per cent since the programme began in Dublin in 2007. The volunteers emphasised their satisfaction with their association with WoW from their initial expression of interest through their recruitment, induction, school introductions, and ongoing implementation of the programme. There were a number of specific areas that were particularly mentioned by volunteers.

The ongoing support received from the WoW project leaders and the Barnardos team was repeatedly emphasised by all volunteers. At a wider level the volunteers highlighted how the Barnardos team ensured they felt part of the organisation. The support received from the project leaders specifically was seen as instrumental in ensuring the WoW volunteers had a positive experience.

The volunteers described how their involvement in the programme gave them a sense of purpose and of reward that was hard to achieve when not involved in structured activity. The volunteers expressed a sense that they were involved in something worthwhile and that they were putting their free time to good use. One volunteer described what being involved in the programme meant to her:

'You could feel quite useless after you have retired as well and it's so important getting children to improve and read. And I'd hate to give up my job and not do something. It certainly is good for our self esteem to be doing something. To dress up and go out two mornings a week is good for you.'

Literacy is recognised by the volunteers as a crucial component in children's educational development and WoW gave the volunteers an opportunity to contribute to improving the well-being of children who were experiencing difficulty. The volunteer's sense of civic engagement and altruism was evident in their discussion of why they became involved with the WoW programme, such as working with children in need of additional educational support, and giving something back to society at this stage in their lives:

'I love books myself and I would hate to think somebody would leave school without being competent at reading.'

'All my life I had been lucky, I've got on so well, everything has worked out and I thought when you retire it is nice to give something back.'

The social networks accrued by the volunteers through their participation in WoW were also highlighted. There was a strong sense of camaraderie among the volunteers who provided wide ranging support to each other. A supportive network was described in terms of both general social interaction among the volunteers and also the availability of support directly related to the challenges of delivering a formal reading programme to children. The level of support and friendship that developed among the volunteers was particularly highlighted as a positive outcome of their involvement in WoW. These relationships built and strengthened through WoW acted as a protective factor for the volunteer's positive well-being, as the following quotes highlight:

'There's great camaraderie amongst the group that are doing it. I think there is an awful lot out of it for the volunteers themselves.'

'Before we start reading we'd go off down and get a cup of tea and then when we're finished go off down again, you'd be comparing notes with the others to see how they got on and how they found it.'

'You get great friendships and that out of the people that you're with, you get great value, you feel great after it, that you're, as if you are achieving something like that.'

The volunteers also supported each other with the technical aspects of the programme and the challenges involved in working with children who may have additional behavioural or emotional needs. As one participant stated:

'Literacy in itself is a bit of a challenge because you've children that might be a bit hyperactive or whatever and you could be at your wits end at times in order to come to terms with them and you can talk all that out.'

Surveys completed for the evaluation provide further information concerning how volunteers perceived their own well-being. Question areas included how the volunteers spent their time, what activities they were involved in outside of WoW, and their sense of self worth. Outside of WoW the majority of respondents were engaged in activities such as reading (94 per cent), watching the TV (91 per cent) and exercise (80 per cent) on a daily basis. Just over half of the respondents also used a computer (54 per cent) and communicated with friends, neighbours, or relatives via telephone or email (54 per cent) daily. A number of participants provided childcare (31 per cent) or care very regularly to a relative or friend due to a disability (21 per cent). A majority (70 per cent) were also involved in a physical hobby on a regular basis.

Volunteers were also asked about their overall well-being in terms of their sense of self-worth and their contribution to community. The majority of respondents (82 per cent) reported a strong interest in teaching and a sense that they were a good influence on others (74 per cent). However, when asked whether they had important skills they think they could pass along to others, 43 per cent believed this was 'only a little true.' In terms of their contribution to society, the majority of respondents (66 per cent) felt that others would say they had made a contribution to society and the vast majority of participants (88 per cent) rated their contribution to the welfare of others positively.

5.5 Chapter Summary

What was the extent and nature of programme take up (i.e., programme utilisation)?

The WoW programme appealed to school staff for a number of reasons. It offered literacy support; it targeted children in the 'middle' range experiencing delays in reading but who were not eligible for formal reading interventions; and it was provided by an external agency with a high reputation and resulting in a relatively small additional workload for the school staff. Volunteers received an initial three days of training and two subsequent days. Training of volunteers was changed for the second cohort of children, with greater emphasis placed on phonics and a refinement of training in this area. Some more experienced volunteers found part of the training content repetitive. In the implementation of WoW, specific attention was required in relation to: accommodating the reading sessions in the school premises, the timetabling of the sessions, and the withdrawal of the children from the classroom.

How well was the programme organised and run (i.e., programme organisation)?

The programme was well run, and factors contributing to successful organisation included the following: school staff valued the balanced literacy approach, which complemented current teaching styles and methods, and the assessment of children's progress; the project leaders' efforts, including their preparatory work, technical knowledge about literacy development, clarity regarding the programme requirements, understanding of the school system, support of volunteers, and the ongoing monitoring of delivery; the close relationship between project leaders and school staff, which allowed them to identify and address any potential difficulties at an early stage; and the volunteers' commitment to the programme, their enthusiasm, their interest in reading, their maturity, and their love of working with children.

What was the extent to which the programme was implemented in line with the model as specified in the manual (i.e., programme fidelity)?

The data show that, in the main, the programme was implemented with fidelity. In the reading sessions, volunteers were keen to adhere to the WoW manual and to have a productive session; their interaction with the children was positive, supportive, and encouraging. Records completed by volunteers show the content of the sessions reflected the programme design, but also average dosage (1.81 per week) was lower than planned (3 per week).

How was the programme experienced by children, school staff, and volunteers?

Children enjoyed the sessions, felt their reading had improved, and had positive relationships with their volunteers. School staff observed children's emotional and social gains and improved reading ability, although it was hard to ascribe gains to WoW in a context of increased focus on literacy and in the absence of findings from the outcomes study. Volunteers also observed improvements in children's reading ability and self-esteem. Volunteers themselves benefited, as they valued the sense of purpose they received from this worthwhile activity as well as the social benefits.

Chapter 6 Randomised Controlled Trial (RCT) Findings

The outcomes study for the evaluation of the WoW programme was a randomised controlled trial (RCT). Participating children were randomly allocated to either a control group (receiving regular classroom teaching only) or an intervention group (receiving regular classroom teaching plus WoW).

The RCT study was to answer three research questions:

- Was receipt of the WoW programme effective in creating improvements in children's reading ability and reading self-beliefs?
- Did some variables modify the impact of the programme?
- Did some variables predict participants' response to the intervention?

Findings from the process study were also utilised to expand on the outcomes study findings in an explanatory mixed methods approach to answer the following research question:

- What was the relationship between programme implementation and outcomes for children?

Findings from the RCT study are presented below, and the chapter is structured around these four research questions. The chapter begins with an overview of the measures used and data analysis, and concludes with a summary of main findings.

6.1 Measures and Data Analysis

6.1.1 Measures

In the pilot study for this evaluation, the research team considered the skills and abilities which needed to be measured, the age range of the children participating in WoW, and the measures available which were suitable for this population. In the evaluation of WoW, the research team used three standardised tests:

- The single word reading (WIAT SWR) and spelling (WIAT Spelling) tests from the WIAT-II^{UK}-T were used to measure word recognition and spelling
- The York Assessment of Reading for Comprehension Passage Reading Test (Snowling *et al.*, 2009) was used to measure reading accuracy (York Reading Accuracy) and reading comprehension (York Reading Comprehension)¹¹
- The British Picture Vocabulary Scale (Dunn *et al.*, 1997) was used to measure vocabulary (BPVS)

The research team employed the following criterion-referenced test:

- The measure of phonemic awareness and phonic knowledge developed by Professor Morag Stuart, University of London, for the purposes of this study (see Appendix 5)

The research team also developed the following measures:

¹¹ Data collected on 'reading rate' were not used in the analysis due to a floor effect on this sub-test resulting in a low number of children gaining a baseline score.

- The child's self-report measure, enjoyment of reading and perceived competence, to measure children's reading self-beliefs
- The Teachers' Survey and Volunteers' Survey¹² to measure teacher and volunteer perceptions of the children's reading ability and reading self-beliefs

6.1.2 Data analysis

6.1.2.1 Intervention effects

In the RCT study the main research question was as follows: Was receipt of the WoW programme effective in creating improvements in children's reading ability and reading self-beliefs? To answer this question, first, the gains of the control group and the intervention group were compared. If differences in gain scores were statistically significant this means that they were unlikely to have been caused by chance and instead are explained by whether the children were in the control group or the intervention group.

- An Independent Samples T-Test was used to compare the gain scores of the two study conditions between Time 0 and Time 1, and Time 0 and Time 2

In the second step taken to answer the first research question, the difference in mean scores between the two study conditions were analysed while 'controlling' (or 'adjusting') for the effects of other variables, known as covariates. Some of the differences observed between the control group and the intervention group will not have been due to whether or not they received WoW but rather covariates, such as the child's reading ability prior to the programme. A type of analysis that adjusts for the effects of these other variables and increases study power and the likelihood of returning a statistically significant finding when there has been a programme impact (see discussion of study power in this section) are:

- A multivariate analysis of covariance (MANCOVA). This was used to explore the programme impact including both Time 1 and Time 2 results together as dependent variables in the one analysis, while controlling for Time 0 scores. As more than one dependent variable is used, the power of the analysis is increased. When differences were observed the next question to answer was whether this result was explained by differences at Time 1 only or Time 2 only
- An analysis of covariance (ANCOVA). This was used to analyse the differences at Time 1 or Time 2 between the two study conditions (control and intervention) while controlling for the effects of additional variables: scores at Time 0, gender, school, city, class year, and cohort

6.1.2.2 Moderator variables

The second research question was as follows: Did some variables modify the impact of the programme? It may be that the WoW programme was more effective for some sub-groups than others, for example, boys rather than girls:

- A simple effects analysis was conducted. This type of analysis allows us to answer the following question: were the gains made in the intervention group by one sub-group (e.g. children with 'below average' reading levels) different from the gains made by another sub-group (e.g. children with 'average' reading levels)?

¹² Only data on children's outcomes and children's experiences of the programme were used in the outcomes study; the process study used data on volunteer well-being collected using this measure.

6.1.2.3 Predictors of response to intervention

The third research question was as follows: did some variables predict participants' response to the intervention? For example, it may be that the WoW programme was more successful for those who received a high dosage or those who had good school attendance.

- Multiple regression analysis was conducted to explore the relationship between children's outcomes and a number of predictors (e.g. programme dosage). The results indicated which variables in a set of variables were the best predictors of children's outcomes

A full description of the tests used in this study is given in Appendix 6.

6.1.2.4 Effect sizes

The effect size in this study represents the impact of the WoW programme on those in receipt of the programme when compared with the progress made by children in the control group. Wherever possible, effect sizes have been presented as Cohen's *d* values (in some instances they have been converted from other values, such as '*f*'). The convention recommended for the interpretation of Cohen's *d* values is that 0.2 is small, 0.5 is medium, and 0.8 is large (Cohen, 1988: 19-27).

6.1.2.5 Power analysis

'The power of a statistical test of a null hypothesis is the probability that it will lead to the rejection of the null hypothesis'; that is, 'the probability that it will yield statistically significant results' (Cohen, 1988: 1, 4). The convention (unless further considerations require otherwise) is to set the desired power value at .80 (*ibid*: 56). A post-hoc power analysis was run using the GPOWER software based on the results from an analysis of covariance for Time 2 data on phonemic awareness. There was an effect size of $f^2 = .04$, an alpha level of .05, $n = 212$, and six covariates. The results of the analysis were as follows: Power = .83, Critical $F(1, 203) = 3.89$, Lambda = 8.48. Therefore, the study had sufficient power (83 per cent) to detect the effect sizes returned in the analysis of the data.

6.2 Preliminary Analyses

6.2.1 Characteristics of study children at Time 0 (Pre-programme)

The Time 0 demographic characteristics of all the participants in the study are given in Table 6.1. There were comparable numbers from each cohort, city, gender, and from children aged 6 and 7. There were more children from 1st class than 2nd class, but there was no statistically significant imbalance between study conditions on these variables. It is understandable that fewer 2nd class children participated in the study as previous participants in the programme were not eligible for the study, and many previous 1st class participants were ruled out for that reason.

Table 6.1 Time 0 (Pre-programme) Demographics

		Control n=111	Intervention n=118	Total n=229	Chi-square Test	
					Phi value	p
Cohort	1 (2009-'10)	55 (24%)	58 (25%)	113 (49%)	.004	.952
	2 (2010-'11)	56 (25%)	60 (26%)	116 (51%)		
City	Dublin	61 (26%)	66 (29%)	127 (55%)	-.010	.882
	Limerick	50 (22%)	52 (23%)	102 (45%)		
Gender	Boys	56 (25%)	60 (26%)	116 (51%)	-.004	.952
	Girls	55 (24%)	58 (25%)	113 (49%)		
School Year	1 st	64 (28%)	67 (29%)	131 (57%)	.009	.893
	2 nd	47 (21%)	51 (22%)	98 (43%)		
Age	5 years	0 (0%)	1 (.5%)	1 (.5%)		
	6 years	56 (24.5%)	54 (23.5)	110 (48%)		
	7 years	50 (22%)	53 (23%)	103 (45%)		
	8 years	5 (2%)	10 (4.5%)	15 (6.5%)		

Figures represent numbers of participants followed by percentages of overall sample in parentheses. Chi-square tests were not run on 'age' data due to high number of cells with less than 5 units

6.2.2 Comparison of control and intervention groups at Time 0 (Pre-programme)

Children's scores on tests of reading ability at Time 0 were also analysed (see Table 6.2). Control children recorded higher mean scores on six of the eight measures. This indicates an imbalance between the two study conditions prior to the receipt of their respective treatments. However, as the allocation of participants to study condition was random and as the generation of the allocation sequence was concealed (see section 4.3.4) selection bias was avoided.

Scores on the standardised measures also illustrate the position of the participants relative to the population mean (a standard score of 100). The children started with scores close to the population mean on two outcomes (vocabulary, reading comprehension), and lower scores on other outcomes (word recognition, reading accuracy, spelling). As we shall see in the next section, children in both groups made larger gains on the outcomes where their pre-programme scores were lower. However, standardised scores on the measure of vocabulary declined over time in both groups, which may reflect the difficulties disadvantaged children have in developing vocabulary (Hart and Risley, 1995) but may also be because the high starting point made it less likely to improve over time. Scores on the measure of vocabulary may have been further affected by the scoring procedure. Due to lack of demographic information, the researchers were not in a position to use

the technical supplement which makes allowances for children where English is not their first language.

Table 6.2 Comparison of Control and Intervention groups at Time 0 (Pre-programme)

Measure	Study Condition	N	Mean	Std. Deviation
WIAT SWR	Control	111	81.05	9.56
	Intervention	118	79.14	7.93
York Reading Accuracy	Control	100	89.41	8.47
	Intervention	112	88.05	9.12
York Reading Comprehension	Control	100	98.35	8.61
	Intervention	108	97.09	8.87
WIAT Spelling	Control	110	82.20	9.17
	Intervention	116	82.16	8.53
BPVS	Control	111	95.51	10.35
	Intervention	118	94.60	9.77
Phonemic awareness	Control	110	32.53	9.16
	Intervention	118	31.16	8.57
Phonic knowledge	Control	110	27.24	4.82
	Intervention	117	27.26	4.96
Enjoyment/ Competence	Control	99	16.76	2.48
	Intervention	106	16.77	2.74

6.3 Research Question 1: Did Receipt of WoW Lead to Improvements in Children’s Reading Ability and Reading Self-beliefs?

Data were collected from participating children at three time points:

- At pre-programme or Time 0 (September 2009 and 2010), baseline scores were recorded before children were allocated to either the control group or the intervention group
- At post-programme or Time 1 (May 2010 and 2011), children were tested at the end point of their respective treatments
- At follow-up or Time 2, children were tested in the next academic year, either four months after post-programme for the 1st class control children (September 2010 and 2011) or eight months after post-programme for the remainder of the sample (January 2011 and 2012)¹³

¹³ See section 4.3.2 and Appendix 1

6.3.1 Mean Scores at Three Time Points

The intervention group began with lower mean scores on six of the eight measures (WIAT SWR, York Reading Accuracy, York Reading Comprehension, BPVS, WIAT Spelling, and Phonemic Awareness). By Time 1, the control group continued to score higher than the intervention group on those six measures. At Time 1 the intervention group scored higher than the control group on two measures only (phonic knowledge and enjoyment of reading and perceived competence). By Time 2, the mean score of the intervention group was higher than the mean score of the control group on six measures (WIAT SWR, York Reading Accuracy, WIAT Spelling, Phonemic Awareness, Phonic Knowledge, and Enjoyment of Reading and Perceived Competence). The control group continued to receive a higher score on two measures only (York Reading Comprehension, BPVS). (The data from the three time points are presented in Figure 6.1 and in a table in Appendix 7.)

6.3.2 Analysis of Gains Made

Having looked at the mean scores of the control group and the intervention group over the course of the programme and at follow-up, the next step is to explore whether observed differences were due to the impact of the programme. First, the 'gains' made by the control group and the intervention group were compared by conducting a 'simple change score' analysis. Scores from the pre-programme tests (Time 0) were subtracted from post-programme scores (Time 1), and pre-programme scores (Time 0) were subtracted from follow-up scores (Time 2). The differences between the control and intervention groups in gains made were then analysed.

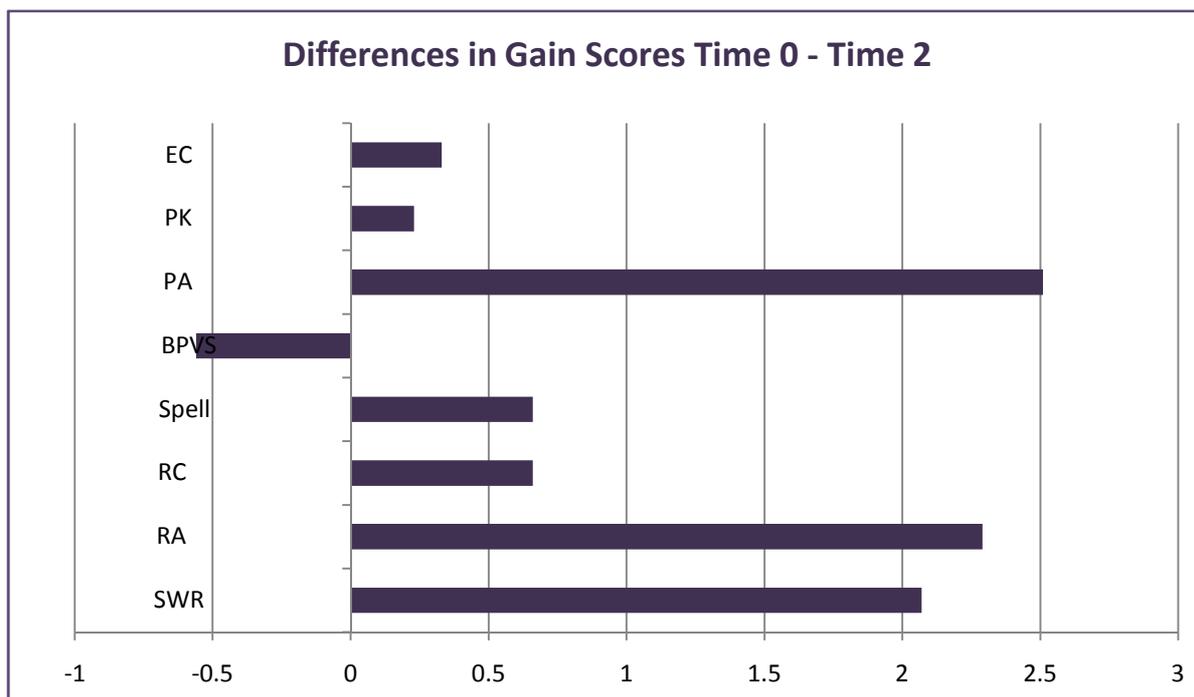
6.3.2.1 Differences between control and intervention in differences between Time 0 and Time 2

Between Time 0 and Time 2, the intervention group made a statistically significant greater gain on Phonemic Awareness ($p = .01$, mean difference = 2.73, $t = 2.57$, $d = 0.35$). The intervention group also made greater gains than the control group, although the differences were not statistically significant, on WIAT SWR ($p = .13$, mean difference = 1.41, $d = 0.21$), and on York Reading Accuracy ($p = .14$, mean difference = 3.69, $d = 0.21$).

6.3.2.2 Differences between control and intervention in differences between Time 0 and Time 1

Between Time 0 and Time 1 the intervention group made greater gains than the control group, although the differences were not statistically significant, on Phonic Knowledge ($p = .18$, mean difference = 0.78, $d = 0.18$) and on the total score for children's enjoyment of reading and perceived competence ($p = .17$, mean difference = 0.63, $d = 0.20$). When individual questions on the enjoyment of reading and perceived competence measure were analysed, intervention group children were more likely to 'really like' reading in class than control group children after receipt of the programme ($p = .07$, $\phi = .16$).

Figure 6.1 Differences between Control and Intervention Groups on Gains Made (Unadjusted Scores)



Measures are coded as follows: WIAT Single Word Reading (SWR), York Reading Accuracy (RA), York Reading Comprehension (RC), WIAT Spelling (Spell), British Picture Vocabulary Scale (BPVS), Phonemic Awareness (PA), Phonic Knowledge (PK), Enjoyment of Reading and Perceived Competence (EC)

The differences in gain scores are represented in Figure 6.1. Each bar in the figure represents the difference between the gains of the control and intervention groups on one measure between Time 0 and Time 2. A bar extending to the right of the line on the vertical axis (with a positive value on the horizontal axis) represents an intervention group gain score greater than the gain score for the control group.

6.3.2.3 Differences between control and intervention in differences between Time 1 and Time 2

More light can be shed on the impact of the programme by analysing gains made between Time 1 and Time 2. Although not an analysis of programme impact per se, as it does not use Time 0 as its starting point, this analysis helps illustrate when programme impacts occurred. Between Time 1 and Time 2, the intervention group made a statistically significant greater gain on WIAT SWR ($p = .01$, mean difference = 2.46, $d = 0.39$) and Phonemic Awareness ($p = .03$, mean difference = 1.94, $d = 0.30$). Between Time 1 and Time 2, the intervention group also made greater gains than the control group, although the difference was not statistically significant, on York Reading Accuracy ($p = .11$, mean difference = 1.41, $d = 0.21$).

Time 2 data were collected from the 1st class control group after 12 months and from the remainder of participants after 16 months. For that reason, there was a concern that the results would underestimate the performance of the 1st class control group. However, further analysis shows that while class year modified the impact of the programme for the first cohort and among girls, it did not do

so in the second cohort or among boys. For that reason, the research team concluded that timing did not account for the observed impact of the programme (see Appendix 1).

6.3.3 Analysis of scores adjusting for covariates

In the second step of the analysis, the differences between the control group and the intervention group were analysed while 'controlling' (or 'adjusting') for the effects of other variables known as covariates.

First, a repeated measures multivariate analysis of covariance (MANCOVA) was used to analyse the data, controlling for Time 0 scores. In addition, a univariate analysis of covariance (ANCOVA) was conducted, adjusting for covariates (Time 0 scores, gender, city, school, class year, cohort).

On WIAT SWR and Phonemic Awareness, the changes made by the intervention children were significantly more positive than the changes made by the control children. After adjusting for Time 0 scores, there was a statistically significant difference between the control group and the intervention group on WIAT SWR ($d = 0.38$, $p = .02$) and Phonemic Awareness ($d = 0.37$, $p = .03$), when the data from Time 1 and from Time 2 were analysed together. Further univariate analysis of scores for phonemic awareness showed that, at Time 2 there was a statistically significant difference between the control group and the intervention group ($d = 0.36$, $p = .01$). Scores for WIAT SWR showed no significant differences when analysing data from Time 1 only or from Time 2 only.

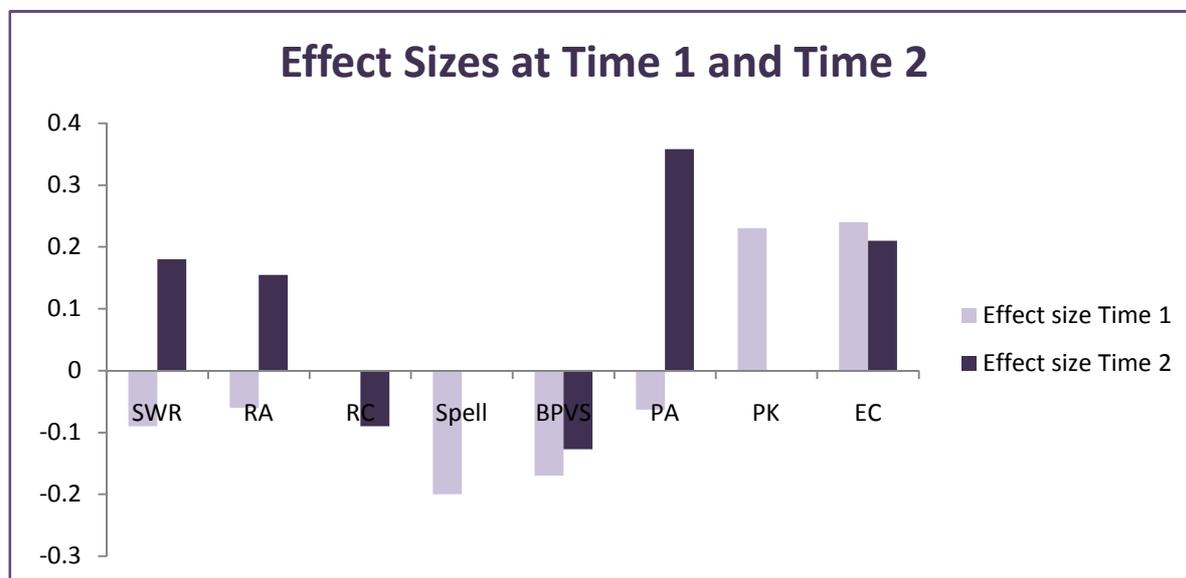
These findings show that the gains made by the intervention group were greater than the gains made by the control group after receipt of the programme. This is corroborated by findings from a mixed between-within subjects analysis of variance. By including data from all three time points (Time 0, Time 1, Time 2), it tells us whether the change in scores on WIAT SWR and Phonemic Awareness was different for the two groups, that is, whether the rate of change was different in the two groups. The results show that the change in scores was different for the two groups, with the intervention group gaining by more over time, as there was an interaction between time and study condition, both for WIAT SWR (Wilks Lambda = .96 $F(2, 207) = 4.09$, $p = .02$, $d = 0.40$) and for Phonemic Awareness (Wilks Lambda = .96 $F(2, 204) = 4.03$, $p = .02$, $d = 0.40$).

Programme impacts were also observed on phonic knowledge, in this case at Time 1. After controlling for covariates, the difference between the control group and the intervention group was approaching statistical significance, the intervention group scoring higher than the control group ($p = .09$, $d = 0.23$). On the total score for children's enjoyment of reading and perceived competence, the intervention group gained by more than the control group at Time 1 (controlling for Time 0), and the difference was approaching statistical significance ($F(1, 195) = 2.72$, $p = .10$, $d = 0.24$). On this measure the intervention group also gained by more at Time 2 (controlling for Time 0), but the results were not statistically significant ($F(1, 164) = 1.73$, $p = .18$, $d = 0.21$).

Three other results from the MANCOVA deserve mention. The gains made over the three time points (from pre-programme to post-programme and through to follow-up) were greater for those who received WoW, although the results were not statistically significant, on York Reading Accuracy

($p = .27$, $d = 0.20$) and Phonic Knowledge ($p = .17$, $d = 0.26$). In contrast, greater gains were made over the three time points in the control group on the measure of vocabulary ($p = .57$, $d = 0.14$), but the findings were not statistically significant.

Figure 6.2 Effect Sizes at Time 1 and Time 2



Effect sizes were calculated using ANCOVA. Measures are coded as follows: WIAT Single Word Reading (SWR), York Reading Accuracy (RA), York Reading Comprehension (RC), WIAT Spelling (Spell), British Picture Vocabulary Scale (BPVS), Phonemic Awareness Tasks 1-5 (PA), Phonic Knowledge (PK), Enjoyment Competence (EC).

The effect sizes at each time point, which represent the standardised mean differences between the two groups, are presented in Figure 6.2. All positive values (above the horizontal line) represent intervention group scores greater than control group scores.

6.4 Survey Results

Below are results from surveys completed by teachers and volunteers. The instruments provide further data on reading ability.

6.4.1 Teachers' survey

6.4.1.1 *Enjoyment and motivation, phonemic awareness and phonic knowledge, reading ability*

Teachers answered questions concerning various aspects of their students reading ability, interest in and enjoyment of reading, reading confidence, phonemic awareness and phonic knowledge, and overall schoolwork. An exploratory factor analysis revealed three latent variables, and composite scores were calculated and used in further analyses based on these factors. Factor 1 (*Enjoyment and Motivation*) included questions about willingness to read, interest in reading, comprehension, enjoyment, and communication; Factor 2 (*Phonemic Awareness and Phonic Knowledge*) included the three questions on phonemic awareness and phonic knowledge; and Factor 3 (*Overall Ability*) included questions on overall reading ability, confidence in reading, standard of schoolwork, and standard of homework. The gains made by the control children and the intervention children on

each of the factors were compared. There were no significant differences in gains made on any of the factors.

More detail can be seen by looking at answers to individual questions. The control group saw significant increases in median scores on only one question from the teacher's survey: 'Overall reading ability.' In the intervention group, there were significant improvements in scores on four questions: 'The child helps other pupils with reading related activities,' 'When reading in class, the child breaks the words into sounds,' 'When reading in class, the child applies phonic rules,' and 'Overall reading ability.'

6.4.2 Volunteers' survey

6.4.2.1 Enjoyment and motivation, phonemic awareness, phonic knowledge and confidence, and programme experience

Volunteers completed surveys on children in the intervention group only. Surveys were completed at Time 0 and again at Time 1 for the second cohort of children. Once again, an exploratory factor analysis was run, and it revealed three underlying latent variables. Composite scores were created based on these three factors. Factor 4 (*Enjoyment and Motivation*) included questions about willingness to read, interest in reading, comprehension, enjoyment, and communication. Factor 5 (*Programme Experience*) included questions on the relationship with the volunteer, the child's experience of the programme, and changes in the child's self-esteem and reading ability over the course of the programme. Factor 6 (*Phonemic Awareness, Phonic Knowledge and Confidence*) included questions on phonemic awareness and phonic knowledge and willingness to read aloud and read independently. Significant improvements were observed in the children's scores on Factor 5 *Programme Experience* (mean difference = 2.40, $p = .00$) and Factor 6 *Phonemic Awareness, Phonic Knowledge and Confidence* (mean difference = 1.02, $p = .00$).

Looking at individual questions, there was an improvement in 'When reading your child breaks the words into sounds,' $z = -2.57$, $p = .01$, and the median score remained unchanged at 4; 'When reading your child blends sounds to make words,' $z = -3.18$, $p = .00$, and the median score increased from 3.5 to 4; 'Change in your child's reading ability,' $z = -4.20$, $p = .00$, and the median score increased from 4 to 5; and 'Change in your child's self esteem,' $z = -4.13$, $p = .00$, and the median score increased from 4 to 5.

A summary of the analysis of programme impacts is provided in Table 6.3. The table contains mean differences where possible along with effect sizes, reported as Cohen's d . See Appendix 7 for data analysis results.

Table 6.3 Summary of Analysis of Impact of the WoW Programme

	Simple Change Score		Multivariate Analysis of Covariance	Univariate Analysis of Covariance	
	Difference T0-T1	Difference T0-T2	T1 and T2	ANCOVA at T1	ANCOVA at T2
WIAT SWR	(-0.37) -0.05	(2.07) 0.21	0.38**	(-0.64) -0.09	(1.44) 0.18
YORK RA	(0.17) 0.02	(2.29) 0.21	0.20	(-0.31) -0.06	(1.02) 0.16
YORK RC	(0.34) 0.04	(0.66) 0.02	0.11	(-0.05) 0.00	(-0.52) -0.09
WIAT SPELL	(-1.31) -0.16	(0.44) 0.06	0.17	(-1.27) -0.20	(0.11) 0.00
BPVS	(-0.91) -0.12	(-0.56) -0.08	-0.14	(-1.09) -0.17	(-0.91) -0.13
Phonemic Awareness	(0.13) 0.02	(2.15) 0.35**	0.37**	(-0.43) -0.06	(1.89) 0.36**
Phonic Knowledge	(0.78) 0.18*	(0.23) 0.02	0.26	(0.63) 0.23*	(-0.03) 0.00
Enjoyment / Competence	(0.63) 0.20	(0.33) 0.12	0.33	(0.61) 0.24*	(.34) 0.21

Mean differences are in parentheses, followed by effect size statistic Cohen's d.

Covariates in MANCOVA are Time 0 scores

Covariates in ANCOVA are Time 0 scores, school, cohort, class year, gender, city

* Significant at the $p < .10$ level. ** Significant at the $p < .05$ level. *** Significant at the $p < .001$ level.

6.5 Research Question 2: Did Some Variables Modify the Impact of the Programme?

So far the data analysis has focused on the comparison of the control and intervention groups, and the purpose of the analysis has been to identify any significant differences between the two groups that can be attributed to the WoW programme. It is also important to investigate the experiences of various sub-groups, as it may be that one or other study condition was better suited to a particular sub-group. These may be moderator variables as they may have modified the impact of the programme.

6.5.1 Reading ability as a moderator variable

The children's reading ability level at Time 0 did modify the subsequent impact of the programme. Using children's scores on the screening tool, WIAT SWR, 'below average' reading skills were defined as Time 0 scores of more than one standard deviation below the population mean (standard score

<85; percentile rank <16), and the remainder (standard score ≥ 85 ; percentile rank ≥ 16) were categorised as 'average'¹⁴.

Reading ability level did modify the impact of the programme on WIAT SWR ($F(1, 207) = 4.25, p = .04$). The greatest gains were made by children in the intervention group who began with 'below average' reading levels. The gains made by children attending WoW starting at a 'below average' level (mean difference = 9.59) were greater than gains made by children with 'average' reading levels (mean difference = 1.25); and greater than the gains made by children in the control group with 'below average' reading levels (mean difference = 7.46) and 'average' reading levels (mean difference = 3.14).

The intervention group children also made the greatest gains in moving out of the 'below average' category (see Table 6.4). At the start of the programme, 75 per cent of the intervention children were reading at the 'below average' level; by Time 2 this had reduced to 44 per cent of the intervention group. In the control group, at Time 0, 60 per cent were reading at the 'below average' level and this had reduced to 48 per cent by Time 2. The difference between the two groups in gains made was statistically significant ($\phi = .22, p = .01$).

Table 6.4 Percentages at below average reading level on WIAT SWR at Time 0 and Time 2

Study Condition	Below Average Time 0	Below Average Time 2
Control	60% (n = 66)	48% (n = 51)
Intervention	75% (n = 89)	44% (n = 47)

Below average reading level is defined as Standard score <85 (Percentile rank <16)
 Figures represent percentages within study condition followed by total number in parentheses

6.5.2 Gender as a moderator variable

The results show that gender modified the impact of the programme. The interaction between gender and study condition had a significant effect on the gains made by children between Time 0 and Time 2 for WIAT SWR ($F(1, 207) = 3.29, p = .07$), WIAT Spelling ($F(1, 205) = 10.97, p = .00$), and Phonic Knowledge ($F(1, 205) = 3.42, p = .07$). Boys gained by more than girls in the intervention group for WIAT SWR (difference in gain scores = 4.93) and Phonic Knowledge (difference in gain scores = 2.41). On WIAT Spelling, girls gained by more in the control group (mean difference = 3.37) and boys gained by more in the intervention group (mean difference = 4.32).

¹⁴ It should be noted that this measure was standardised with a population of children in the UK. The population mean is also different from the mean score for children in this study sample. Within this sample, 155 were 'below average' and 74 were 'average.' The sample scores ranged from a minimum of 59 (percentile rank = 0) to a maximum of 97 (percentile rank = 42) and there was a mean of 80 (percentile rank = 9). Therefore, all the study children began with scores below the population mean, as the scores of 'average' children ranged from a low of 85 to a high of 97. The percentile ranks and standardised scores listed here fall between the thresholds for the study. It was an entry requirement that at Time 0 all participating children scored above the lower threshold of 18 months behind their age-appropriate reading level (1st class) or 24 months behind (2nd class), and below the upper threshold of 4 months behind on WIAT SWR.

Although not a statistically significant finding ($F(1, 203) = .15, p = .70$), the interaction between gender, study condition, and reading ability suggests that, on WIAT SWR, girls in the intervention group gained if they began with 'below average' reading levels (mean difference = 7.14) but they did not gain if they began with 'average' reading levels (mean difference = -1.37). Boys in the intervention group who started with 'below average' reading levels made the greatest gains (mean difference = 11.38).

6.5.3 Class year as a moderator variable

Class year also modified the impact of the programme, and the interaction was statistically significant for WIAT SWR ($F(1, 206) = 5.51, p = .02$) and approaching statistical significance for Phonemic Awareness ($\beta = .11, p = .07$). On six outcomes (WIAT SWR, York Reading Accuracy, York Reading Comprehension, WIAT Spelling, Phonemic Awareness, Phonic Knowledge), the data show that, in the intervention group, 1st class children gained more than 2nd class children, and the size of the difference between the two class years was greater than in the control group. That is, the intervention brought greater gains for younger children than older children, and the difference was greater than in the control group.

As the phonemic awareness measure is a criterion referenced test, we would expect children to score higher as they get older (in contrast to a standardised test where scores are weighted by age). While this happened in the control group it did not happen in the intervention group. In the control group, 2nd class children's scores were higher than 1st class children's scores; whereas in the intervention group, 1st class children's scores were higher than 2nd class children's scores. This suggests that 1st class children in the intervention group received a benefit that control children did not receive, and the gain made by 1st class intervention children was greater than the gain made by 2nd class intervention children.

The children's gender also influenced the interaction between class year and study condition. There was a significant interaction between study condition, class year, and gender on WIAT SWR ($p = .02$) and an interaction approaching statistical significance on Phonemic Awareness ($p = .09$). The analysis shows that boys made greater gains in the intervention group than the control group, and this was the case for 1st class and 2nd class children. In contrast, girls made greater gains in the intervention group than the control group in 1st class only, while in 2nd class girls made greater gains in the control group. (The interaction between study condition, class year, and cohort is discussed in the next subsection).

6.5.4 Cohort as a moderator variable

Whether or not the child was part of the first or second cohort of participants also modified the impact of the programme, for Phonemic Awareness ($F(1, 206) = 6.64, p = .01$) and Phonic Knowledge ($F(1, 219) = 2.87, p = .09$). Children gained more from participation in WoW if they were part of the second cohort. Children receiving WoW made similar gains in both cohorts. In contrast, children in the control group made greater gains if they were part of cohort 1 than if they were part of cohort 2 for both Phonemic Awareness (mean difference = 4.74, $p = .00$) and Phonic Knowledge (mean difference = 2.69, $p = .00$).

There was also an interaction between study condition, cohort, and the child's class year on the measure of Phonemic Awareness, ($F(7, 194) = 3.10, p < .001$), showing class year interacted with study condition only for cohort 1. For cohort 1, a statistically significant impact of the programme was observed only for the 1st class (mean difference = 1.41). By contrast, in cohort 2 a statistically significant impact of the programme was observed for both the 1st class (mean difference = 3.93) and the 2nd class (mean difference = 3.18). The data show that in cohort 2 the WoW programme benefitted children from both class years, while in cohort 1 the programme only benefitted 1st class children.

6.5.5 School as a moderator variable

Schools provided the research team with MICRA-T¹⁵ data collected over a five year period (the two years of RCT data collection and the preceding three years). The data show that children's reading ability scores had improved significantly over this period in the nine schools. The data also show there was no significant interaction between the school's average MICRA-T scores and the gains made by children in the two groups. Therefore, the impact of the programme was not modified significantly by the child's school. Although the data showed variation between schools in the intervention children's reading ability scores at Time 2, this variation was explained by differences in children's Time 0 scores rather than by the children's school.

6.5.6 City as a moderator variable

The child's city did not significantly modify the impact of the programme. Although Limerick children in the control group started with the highest scores (see Appendix 10), and although the data show variation between the two cities in the intervention children's reading ability at Time 2 on two measures, BPVS and Phonemic Awareness, this variation is explained by differences in scores at the start of the programme.

6.6 Research Question 3: Did Some Variables Predict Participants' Response to the Intervention?

This question focuses on the experiences of the intervention children only. It asks what factors or variables best predicted the success of the intervention. The results show that, in all instances, children's scores at the start of the programme were the single best predictor of outcomes for those children. However, other variables also predicted outcomes: the child's experience of the programme (as reported by the volunteer), school attendance, receipt of additional support services, WoW programme dosage, the children's enjoyment of reading, and the volunteers' perception of the children's reading ability.

¹⁵ The MICRA-T test of reading was developed in 1988 under the aegis of the Curriculum Development Unit, Mary Immaculate College, Limerick. It is one of the standardised tests used in primary schools in Ireland. It was standardised on a nationally representative sample of more than 10,000 pupils during the 2002-2003 school year. Data reported here is from Level 1 (for 1st class children).

Table 6.5 Results of regression analysis for predictors of response to intervention

	WIAT SWR	York RA	York RC	WIAT Spell	BPVS	Phonemic Awareness	Phonic Knowledge
Relationship	-.41**	-.26	.11	-.21	-.02	-.22	-.14
Experience	.55**	.41*	.01	.24	.08	.08	.15
Dosage	.07	.06	.17	.03	.03	.06	-.03
Attendance	-.07	-.14	-.30**	-.14	.03	.04	-.06
Additional Supports	-.04	.03	.21*	-.15	.14	-.03	.15
Enjoyment of Reading	.08	.07	.13	-.04	-.03	-.07	-.04
Time 0 scores	.39**	.40**	.52***	.46***	.71***	.48***	.49**

Figures represent standardised Beta values.

* Significant at the $p < .10$ level. ** Significant at the $p < .05$ level. *** Significant at the $p < .001$ level.

A multiple regression analysis assessed the importance of numerous variables in explaining the success of the programme (see Table 6.5). The child's experience of the programme (as reported by volunteers) was a statistically significant predictor of outcomes and children performed better if volunteers believed the children's experience was positive, on WIAT SWR ($\beta = .55$, $p = .01$) and York Reading Accuracy ($\beta = .41$, $p = .06$). School attendance and receipt of additional support services were also positively associated with outcomes on York Reading Comprehension. Children performed better if they had fewer days absent from school ($\beta = .30$, $p = .02$), and if they were in receipt of additional support services along with the WoW programme ($\beta = .21$, $p = .09$).

6.6.1 Relationship and experience as predictors of response to intervention

The initial results suggest that there was a positive association between the child's experience of the programme and outcomes, but also a negative association between the child's relationship with the volunteer and outcomes on WIAT SWR ($\beta = -.41$, $p = .05$). However, correlation analysis showed 'relationship' and 'experience' were very strongly associated ($r = .78$, $n = 111$, $p = .00$), and so the variable 'experience' may be changing the association between 'relationship' and children's scores.

When the children's relationship with the volunteers was analysed separately from their experience of the programme, there was no longer a negative association between 'relationship' and scores on WIAT SWR ($\beta = .02$, $p = .85$). Therefore, the apparent negative association between 'relationship' and outcomes was explained by the presence of a highly correlated variable measuring the child's 'experience.' Also, 'relationship' on its own had a very small and non-significant association with programme response. However, when 'relationship' was controlled for, as we saw, the child's

experience of the programme had a large and significant positive association with programme response.

6.6.2 School attendance as a predictor of response to intervention

The results show school attendance was a good predictor of programme impact on York Reading Comprehension. In contrast, school attendance was not a good predictor of scores in the intervention group on WIAT SWR, although it was a good predictor of scores on this measure among the control group. The WoW programme led to positive impacts in word recognition irrespective of the children's school attendance, but in the control group poor school attendance had a negative effect on outcomes (mean difference = 5.57, $p = .00$).

The programme also led to positive impacts on phonemic awareness irrespective of the children's school attendance. However, even greater programme impacts on this outcome were enjoyed by those with good school attendance. The difference between the control group and the intervention group was greater for those with fewer than 11 days absent from school (difference in gain scores = 3.52, $p = .03$) than for those with 11 days plus absent (difference in gain scores = 1.88, $p = .21$).

6.6.3 Programme dosage as a predictor of response to intervention

Programme dosage varied for the children who received the intervention. We have already seen that programme dosage predicted scores on York Reading Comprehension, where no programme impact was observed. This raises the possibility that the effects of the WoW programme may have been lessened by low dosage levels. A further analysis was conducted comparing the following three groups: intervention children with above median dosage, intervention children with below median dosage, and the control group.

There was a significant difference between the gains made (between Time 0 and Time 2) by the three groups for scores on York Reading Accuracy and Phonemic Awareness. On both measures, of the three groups the control children made the smallest gains. However, on York Reading Accuracy, the intervention children with above median dosage made greater gains than the intervention children with below median dosage (mean difference = 3.49, $p = .11$), while on phonemic awareness, there was no difference between those who received above median and below median dosage in the intervention group (mean difference = .02, $p = 1.00$). This suggests that dosage levels did play an important role in determining the impact of the programme on children's reading accuracy. In contrast, the programme led to positive impacts in children's phonemic awareness irrespective of the level of dosage.

6.6.4 Receipt of additional support services as a predictor of response to intervention

The receipt of additional support services for reading was a statistically significant predictor of outcomes among the intervention group on York Reading Comprehension. In addition, children in the intervention group who received additional supports (that is, along with WoW) gained by more than those who did not, on York Reading Comprehension (mean difference = 5.48, $p = .03$), BPVS (mean difference = 4.74, $p = .04$), Phonic Knowledge (mean difference = 2.43, $p = .07$), and York Reading Accuracy (mean difference = 3.87, $p = .12$).

The impact of additional supports in the intervention group was greater than the impact of additional supports in the control group on York Reading Accuracy (mean difference = 3.79), York Reading Comprehension (mean difference = 2.34), and BPVS (mean difference = 8.43). Therefore, additional supports worked best when received along with WoW. The one exception concerned scores for WIAT Spelling, where the impact of additional supports in the control group was greater than in the intervention group (mean difference = 6.46).

6.6.5 Enjoyment of reading in class as a predictor of response to intervention

The intervention children were more likely to 'really like' reading in class. There was also a positive correlation between enjoyment of reading in class at Time 1 and scores for reading comprehension at Time 2 ($\phi = .13$, $p = .09$) and scores for phonic knowledge at Time 1 ($\phi = .18$, $p = .03$). This suggests the more that children liked to read in class the better they were performing on these outcomes (and vice versa).

6.6.6 Volunteers' perception of change as a predictor of response to intervention

When volunteers were asked to rate the change in their child's reading ability, this also predicted scores on York Reading Accuracy ($\beta = .23$, $p = .06$). This suggests that volunteers were aware of the impact that the programme was having on their children and that this awareness was a predictor of the success of the programme.

6.7 Research Question 4: What was the Relationship between Programme Implementation and Outcomes for Children?

After explaining 'what' happened, i.e. what impacts the programme had, the further question to address is 'why' this happened. Process study findings have already been presented in Chapter 5. In this section, data from the process study on programme implementation were used to expand on and to find plausible reasons for findings from the outcomes study, and for this reason some of the process study data are presented below rather than in Chapter 5.

6.7.1 Intervention children gains on phonemic awareness, phonic knowledge, word recognition

The WoW programme was designed to bring about improvements in five areas: phonemic awareness, reading comprehension, reading fluency, vocabulary, and reading self-beliefs. In addition, data were collected on reading accuracy, spelling, and word recognition. Data from the outcomes study showed the impact of WoW in the areas of phonemic awareness, phonic knowledge, word recognition (single word reading), and enjoyment of reading, but not reading comprehension, spelling, and vocabulary. The intervention group made greater gains on reading accuracy but the findings were not statistically significant. The outcomes study findings also show that the greatest programme gains were observed for the second cohort of participants.

The process study has shown that programme design, volunteer training, and programme delivery were changed for the second cohort. Barnardos brought in changes to volunteer training with extra emphasis in the area of phonics. In order to ensure high quality, and rigorous training in this specialist field, training was delivered to Dublin volunteers by an international expert in phonics. Moreover, in programme delivery Barnardos dedicated one session per week to phonics, using the

Floppy Phonics material from the ORT. The remaining two weekly sessions covered the areas of comprehension, fluency, and vocabulary building. The Barnardos team recognised that phonics was a key building block for further reading, a conclusion that was also stressed in the pilot study for this evaluation. The team also believed that extra training in this area would bring benefits to volunteers in terms of increasing their confidence to deliver phonics sessions. Although changes were initiated half-way through the academic year of the first cohort, the full benefits of these changes were experienced by the second cohort, when the greatest gains were made on phonemic awareness and phonic knowledge. This may also explain the gains made by children on word recognition, as the measure of WIAT SWR for early readers is similar to a test of phonic knowledge.

6.7.2 Control children did well on comprehension and vocabulary

The findings from the outcomes study showed that at Time 2 (controlling for covariates) the control group did better than the intervention group on reading comprehension ($p = .56$, $d = -0.09$) and vocabulary ($p = .36$, $d = -0.13$), although the differences were not statistically significant. As the process study has shown, the programme was designed so that when children were removed from the classroom to receive WoW, teachers would not cover 'core subjects' with the remaining children. However, in interviews for the process study many teachers reported that they used this period for story reading by the teacher or library time. The implication is that many children in the control group were given exposure to reading opportunities that intervention children missed, in particular, activities that may have aided comprehension and vocabulary building.

6.7.3 Improvements in reading self-beliefs

The WoW programme was designed to bring about improvements in children's enjoyment and perceived competence as readers. The outcomes study findings showed that the intervention children made significant gains in reading self-beliefs. Teachers reported significant gains in the children's willingness to help other children with their reading; volunteers reported significant gains in children's self-esteem and willingness to read aloud and read independently; and reports from children themselves show that after receiving the programme the intervention group had a higher total score for enjoyment of reading and perceived competence and were also more likely to 'really like' reading in class than the control group; the difference was approaching statistical significance.

Data from the process study based on observations of the WoW sessions help explain this programme impact. Children's self-esteem improved after attending WoW sessions where volunteers gave encouragement and reassurance, with all of the children's efforts recognised and commended. Children liked to read in class, and were more willing to read aloud and independently, after attending WoW sessions where they enjoyed the opportunity to read aloud on a one-to-one basis with an interested, supportive, and encouraging adult. And the children were more likely to help fellow class mates to read after attending sessions where they themselves were helped to read on a one-to-one basis.

6.7.4 Intervention children who began with 'below average' reading skills made the greatest gains

The WoW programme was designed to bring about gains for children experiencing delays in their reading. The outcomes study has shown that reading ability was an important programme

moderator. The WoW programme led to greater gains for children with 'below average' reading levels (standard score < 85, WIAT SWR) than for children with 'average' reading levels. Furthermore, the gains made by the intervention group in moving out of the 'below average' category were significantly greater than the gains made by the control group in moving out of this category.

The process study has found that the WoW programme was popular among school personnel in part because of its target group: the 'middle' group of children experiencing delays in reading who did not need specialist reading interventions. The results support the view that children who are reading at a 'below average' level benefit from the programme and should be targeted by the programme. However, the programme also included children starting at an 'average' reading level, and the outcomes study data showed this group did not gain as much as the children reading at 'below average' levels. Data from the process study support the conclusion that the thresholds for participation at times were too broad. In interviews for the process study, some teachers queried the selection of specific children for the programme. They suggested that some of the children in the programme, given their ability level, did not seem to require this intervention.

6.7.5 Programme dosage

The outcomes study found that dosage was positively associated with programme impacts in the area of reading comprehension, and children in WoW who received above median dosage performed significantly better on York Reading Accuracy than those who received below median dosage. Although the planned dosage level was three sessions per week, implementation data show that dosage varied, that the median dosage was 1.81 sessions per week, and that dosage was higher in the second cohort. In cohort 1, 42 per cent of children received more than 1.8 sessions per week; in cohort 2, 55 per cent received more than 1.8 sessions per week (see Appendix 14 for cohort implementation data).

Process study data suggest a number of reasons why dosage was lower than planned. Lower dosage may have resulted from school closure, extra-curricular activities (e.g. outings, sports days), or volunteer absenteeism. Industrial action and severe weather led to school closures for the first cohort, where dosage was lower. Lower dosage was also a function of school willingness, as some did not want to release the children from the classroom for WoW more than twice a week. In addition, the majority of volunteers agreed to provide two days volunteering only, so a 'pairing' arrangement was put in place. In this way the child was always paired with the same second volunteer. However, even with the use of paired volunteers, dosage was lower than planned.

6.7.6 Children's experiences of the programme and relationships with volunteers

The children's experience of the programme was positively associated with programme impacts, whereas the children's relationship with the volunteers was not. The process study findings can help explain this difference between 'experience' and 'relationship' as predictors of outcomes. Initially the WoW programme was designed with the objective of creating a one-to-one relationship between a specific child and a specific volunteer. However, as many volunteers were not available to deliver three sessions per week, as noted above it was necessary to 'pair' children with more than one volunteer. In addition, the reading session itself was highly structured and focused around reading-related tasks, with little time for informal conversation. Volunteers and children at the start

of the programme completed an 'All About Me' exercise, detailing their likes and dislikes, and this was designed to build a relationship with the child. However, the content of the remaining sessions were influenced less by the child's interests and expressed wants and more by the appropriate material from the Oxford Reading Tree matched to the child's needs as identified by the battery of assessments carried out. The assessment data were used not only for the assessment of learning, but also to help with planning and target-setting throughout the year.

At the same time, the programme was designed to be an enjoyable experience for the children and to improve their reading ability. So as to ensure an optimum match between the child's need and the intervention, the material covered in the reading sessions always matched the child's assessed reading level. Furthermore, each session was also a one-to-one encounter, where the volunteer provided positive feedback and encouragement to the child. The data show that when the programme was successful in creating an enjoyable experience for the child it was also successful in improving the child's reading ability.

6.7.7 Gender differences in programme impacts and dosage

The outcomes study found that the child's gender modified the impact of the programme. In the intervention group, boys gained by more than girls on three measures, and the differences were statistically significant. Although not a statistically significant result, the interaction between gender, study condition, and reading ability suggests that, on WIAT SWR, girls in the intervention group gained if they began with 'below average' reading levels but they did not gain at all if they began with 'average' reading levels.

Implementation data on WoW dosage, school attendance, and progress made in the WoW sessions were analysed in an effort to explain the role played by gender as a moderator variable (see Appendix 16). First, the relationship between gender and the median number of WoW sessions per week was analysed. The results showed that in the intervention group boys received significantly more sessions per week than girls. When gender was correlated with the number of days absent from school the results showed that, for the total study sample, boys had a significantly better attendance record than girls. The results also show that within the control group boys had a better attendance record, and the difference was approaching statistical significance ($\phi = 2.95$, $p = .09$). Despite their lower school attendance levels, girls performed better than boys in the control group.

There was also a significant interaction between dosage, ability level, and gender. There was a significant difference in the 'below average' group between the dosage levels of boys and girls ($\phi = .45$, $p = .00$) as boys with 'below average' reading levels were significantly more likely to receive a higher dosage. This is important given that boys with 'below average' reading levels gained by most from the intervention.

6.7.8 Cohort differences

The outcomes study showed a significant interaction between study condition and cohort on phonemic awareness and phonic knowledge. The results show that WoW children in the second cohort enjoyed improvements in these areas similar to those enjoyed by children in the first cohort.

In contrast, the scores of control group children in the second cohort were significantly lower than the scores of control group children in the first cohort.

Was programme implementation different in the second cohort? We have already seen that in the second cohort priority was given to phonics. In the second cohort WoW dosage was higher than the first cohort although the difference was not significant ($\phi = .14$, $p = .15$) (see Appendix 14). However, as dosage did not predict scores on phonemic awareness and phonic knowledge, dosage level by itself does not explain improvements in phonemic awareness and phonic knowledge. A more plausible explanation is to be found in the changes to volunteer training and programme delivery in the area of phonics.

6.7.9 Class year differences

The outcomes study found a statistically significant interaction between class year and study condition on scores for Phonemic Awareness and WIAT SWR. The data showed that in the first cohort WoW led to gains in 1st class only but that in the second cohort the programme led to gains in both 1st class and 2nd class, which suggests that cohort had an effect on the interaction between class year and study condition. In addition, the data show that boys gained more from WoW in both 1st class and 2nd class, while girls experienced benefits from WoW only in 1st class, which suggests that gender had an impact on the interaction between class year and study condition.

Implementation data show WoW dosage was higher for 1st class children than 2nd class children, and the difference was statistically significant ($\phi = .23$, $p = .02$) (see Appendix 12). However, as already noted, dosage level did not predict scores on Phonemic Awareness and WIAT SWR. Further reasons for the observed interaction between class year and study condition are the importance of cohort (the interaction between class year and study condition disappeared in cohort 2 on phonemic awareness) and gender (boys gained in both 1st class and 2nd class and boys received a higher dosage than girls).

6.7.10 City by city differences

The child's city did not significantly modify the impact of the programme. Data from the process study show that there was no significant difference between the two cities on days absent from school (see Appendix 13). Dublin children received significantly fewer WoW sessions but made greater gains on Phonemic Awareness ($\phi = .41$, $p = .00$). This apparent anomaly can be explained by the fact that dosage did not predict scores on phonemic awareness, whereas it did predict scores on reading comprehension.

6.7.11 School by school differences

The outcomes study also found no interaction between school and study condition. However, there were significant differences between schools in absenteeism, WoW dosage, and Oxford Reading Tree increases (see Appendix 15). It is an interesting finding that despite significant differences in attendance, dosage, and ORT increases between schools, this did not significantly alter the way in which the programme impacted on participating children.

Table 6.8 Summary of Findings on Programme Impacts

Outcome	Impact of WoW	Moderator variables	Predictors of response to programme	Integration of findings: Process & Outcomes
Word recognition (SWR) Reading accuracy (RA)	Significant impact on WIAT SWR (d = 0.38) Gains on RA (d = 0.21) not statistically significant (p = .14)	'Below average' gain most (SWR) 'Below average' boys gain most (SWR) Boys gain more (SWR) 1 st class gain more (SWR)	Experience of WoW predicted SWR & RA Attendance predicted SWR in control only Greatest gains on RA made by children with high dosage Volunteers' view of change in reading ability predicted RA	Extra session per week (dedicated to phonics) Boys: higher dosage Below average boys: higher dosage Emphasis on 'experience' rather than 'relationship' 1 st class higher dosage
Phonemic awareness (PA) Phonic knowledge (PK)	Significant impact on PA (d = 0.37) Difference approaching statistical significance on PK (p = .09, d = 0.23)	Older children gain more in control only Cohort 1 gain by more in control only Boys gain more than girls from WoW (PK)	Neither attendance nor dosage predicted scores on PA Enjoyment of reading in class correlated with PK	Additional training of volunteers & one session per week dedicated to phonics
Reading comprehension (RC)	No impact observed on York RC (p = .56, d = -0.09)		Attendance, dosage, experience of programme, additional supports all predicted RC Enjoyment of reading correlated with	Classroom activities while WoW children withdrawn include reading by teacher & library time

Outcome	Impact of WoW	Moderator variables	Predictors of response to programme	Integration of findings: Process & Outcomes
			RC	Variation in dosage Low average dosage
Vocabulary (BPVS)	No impact observed on BPVS ($p = .36$, $d = -0.13$)		WoW children gain by more with additional supports	Classroom activities while WoW children withdrawn include reading by teacher & library time
Spelling	No impact observed	Boys gain more than girls in intervention		
Reading self-beliefs: Children, Teachers, Volunteers	Impacts on: Enjoyment & Competence ($p = .10$, $d = 0.24$) 'Willing to read aloud and independently' 'Helps other pupils with reading' 'Self esteem'			Reading aloud One-to-one sessions Verbal encouragement and praise Intervention matched to need

6.8 Chapter Summary

Key Findings on Programme Impact

The WoW programme led to statistically significant gains on WIAT SWR ($d = 0.38$, $p = .02$) and Phonemic Awareness ($d = 0.36$, $p = .01$), and gains approaching statistical significance on Phonic Knowledge ($d = 0.23$, $p = .09$) and the measure of enjoyment of reading and perceived competence ($d = 0.24$, $p = .10$).

Key Findings on Moderators

Intervention group children with 'below average' reading levels gained by more than children with 'average' reading levels. Intervention children also made the greatest gains in moving out of the 'below average' category. Boys performed significantly better than girls in the intervention group on WIAT SWR, WIAT Spelling, and Phonic Knowledge. Boys with 'below average' reading levels made greater gains in the intervention group than the control group. On Phonemic Awareness and Phonic Knowledge, WoW children in the second cohort enjoyed significant gains. Children in 1st class made greater gains than children in 2nd class on WIAT SWR and Phonemic Awareness.

Key findings on Predictors of Response to Intervention

Children's experience of the programme (as reported by volunteers) was a good predictor of programme outcomes but the children's relationship with their volunteers (as reported by volunteers) was not. Programme dosage, school attendance, and receipt of additional supports were good predictors of reading comprehension, where no programme impact was observed. Children benefited from the programme even when their school attendance was not good (WIAT SWR), and their dosage levels were not high (Phonemic Awareness). Children in WoW with above median dosage performed significantly better on York Reading Accuracy than children with below median dosage.

Key findings on Integration of Process Study and Outcomes Study

The positive programme impact on WIAT SWR and Phonemic Awareness may be explained by the volunteer training and extra session per week dedicated to phonics. The use of paired volunteers may explain why the children's experience of the programme, and not the children's relationship with their volunteers, predicted outcomes. The programme impacts in children's self-beliefs may be explained by the support and encouragement from volunteers, the opportunity to read aloud, and the one-to-one support received. The lack of impact on comprehension and vocabulary may be explained by activities that occurred in the classroom when children were withdrawn to receive WoW, as well as the lower than required dosage level.

Chapter 7 Discussion

In this chapter the findings from the evaluation of the WoW programme are discussed. Section 7.1 explores the impacts of the programme and section 7.2 discusses who benefitted most from WoW. Section 7.3 explores the reasons why the programme succeeded where it did and then in the final section we discuss how successful programme implementation contributed to positive outcomes for children.

7.1 What Were the Impacts of the WoW Programme?

The RCT design is said to offer the best way to answer questions about ‘what works’ (Ritter and Maynard, 2008; GSR, 2007; Shadish *et al.*, 2002, Rossi *et al.*, 2004). For WoW to have ‘worked’ the data must show the WoW programme along with regular classroom teaching had a greater impact than regular classroom teaching on its own. The outcomes of interest were reading comprehension, word recognition, reading accuracy, vocabulary, phonemic awareness and phonic knowledge, and children’s reading self-beliefs, in particular their enjoyment of reading and perceived competence. The study hypothesis was that participation in WoW led to significant gains in programme outcomes.

The programme led to significant improvements in children’s phonemic awareness and single word reading (word recognition) and gains approaching statistical significance in phonic knowledge. The WoW programme also led to significant improvements in self-esteem and willingness to read aloud and read independently (as reported by volunteers), willingness to help others read in class (as reported by teachers), and gains approaching statistical significance in enjoyment of reading and perceived competence (as reported by children themselves). WoW also led to gains on reading accuracy but the differences were not statistically significant.

Experience Corps was influential in the development of the WoW programme by Barnardos, and the results from the evaluations of both programmes can be compared now. First, on tests of reading ability, the WoW programme saw significant gains on both single word reading and phonemic awareness whereas *Experience Corps* led to significant gains on reading comprehension. Second, the effect sizes in the WoW study (between 0.36 and 0.38) were greater than in the *Experiences Corps* study (between 0.10 and 0.16) [All effect sizes are presented as Cohen’s *d*]. Third, children in *Experience Corps* made significant gains on passage reading comprehension, but children in WoW did not do significantly better than control children on this skill.

One important question is whether effects produced by an intervention are ‘maintained after it ceases’ (Hatcher *et al.*, 2006: 824). In the case of WoW, over the course of the programme, improvements were observed on two outcomes, reading self-beliefs (as reported by children, teachers, and volunteers) and phonic knowledge. The intervention group had a significantly better rate of improvement across all three time points on a further two outcomes (word recognition, phonemic awareness) and a significant difference at the follow up measure on phonemic awareness. Between Time 1 and Time 2, the intervention group children’s scores increased at a faster rate than the children in the control group on WIAT SWR and Phonemic Awareness (both statistically significant) and York Reading Accuracy (not statistically significant). This suggests that gains were

made first in phonic knowledge and reading self-beliefs (between Time 0 and Time 1) and then a delayed impact was observed on word recognition and phonemic awareness (between Time 1 and Time 2). These findings point to the benefit of multiple post-tests. They can help 'specify the delay' in the causal impact, if there is a delay, and also 'the degree of persistence of the causal impact' (Shadish *et al.*, 2002: 198).

The WoW programme led to successful outcomes for children in the basic skills needed for the further development of their reading ability. The intervention group experienced gains in phonic knowledge and phonemic awareness, as well as word recognition. The evidence suggests that phonemic awareness and phonic knowledge are strong predictors of word recognition (Hatcher and Hulme, 1999; Høien, *et al.*, 1995; Hulme, *et al.*, 2002; Muter, *et al.*, 1994; Nation & Hulme, 1997). Attention to such sub-skills is important because it is argued that, as phonemic awareness, decoding, and sight word reading are 'foundational skills' for struggling beginner readers, improvements in these areas are necessary before improvements will be noticeable in reading fluency (Pullen *et al.*, 2004: 33). There is also evidence to suggest that interventions that included phonemic skills training with phonics teaching and consistently targeted reading-related operations (such as phoneme segmenting and blending) were characteristics of the most effective interventions for reading and spelling (Ehri, *et al.*, 2001).

According to the Simple View of Reading, word recognition and reading comprehension are two different but interrelated skills. While phonological processing best predicts word recognition, language comprehension (i.e. vocabulary) best predicts reading comprehension (Stuart *et al.*, 2008: 62). The WoW programme led to improvements in phonic knowledge, phonemic awareness, and word recognition, but it did not lead to gains in vocabulary or reading comprehension. Other volunteer programmes also did not lead to significant gains in comprehension, for example *Start Making a Reader Today* (Baker *et al.*, 2000: 507) and the 21 RCTs included in a recent meta-analysis (Ritter *et al.*, 2009: 19). However, the data show that children in the WoW programme would perhaps have performed better on reading comprehension had they received a higher dosage. This suggests that success in this area may be a matter of programme implementation rather than programme design.

7.2 Who Benefited Most from Participation in WoW?

Other studies have found that volunteer reading programmes have been successful in reducing the number of 1st grade children below the 15th percentile (Vellutino *et al.*, 1998, in Pullen *et al.*, 2004: 22) and below the 30th percentile (Pullen *et al.*, 2004: 32; see Burns *et al.*, 2004). The findings from the evaluation of WoW show that children in the intervention group made significantly greater gains in moving out of the 'below average' range (i.e. reading below a standard score of 85 [$<16^{\text{th}}$ percentile] on WIAT SWR) when compared with the control group. There was also a significant interaction between study condition and ability level on WIAT SWR. The 'below average' intervention group made greater gains than the 'average' intervention group, and also greater gains than the 'below average' and 'average' children in the control group.

A reading programme must be targeted at the appropriate population, as its difficulty level should be 'carefully matched to that of the learner' (Hatcher *et al.*, 2006: 820; see Hatcher *et al.*, 2004; Ehri *et al.*, 2001, in Savage *et al.*, 2003: 212). The findings show the WoW programme's success with children experiencing delays in their reading but who did not need formal reading support. This final qualification is crucial. The findings of research studies on volunteering programmes to improve literacy show that students who required special educational supports did not benefit as much from participation in the programme as children with a lower level of need (Morrow-Howell *et al.*, 2009b; see Brooks, 2002: 16), and targeting children who had had some success in learning to read increases the effectiveness of a programme (Ehri *et al.*, 2007). One implication of the findings from the evaluation of WoW is that the upper threshold for participation in the programme should be lowered, while the lower threshold should be retained. Children were included whose scores were as high as the 42nd percentile, and those who benefited most were below the 16th percentile, although they were not eligible for formal reading supports.

Boys gained by more than girls from participation in the WoW programme. It has been argued that boys may benefit more from one-to-one supports because boys may be more affected by parenting stress than girls and also one-to-one volunteer support may help counteract challenges faced at home (Ladd 1996, in Rimm-Kaufman, *et al.*, 1999: 149). However, ability level also helped explain the different experiences of boys and girls in the intervention group, although the findings were not statistically significant. In particular, girls with 'average' reading levels made smaller gains in the intervention group than in the control group. In contrast, boys with 'below average' reading levels in the intervention group made the greatest gains. This relates again to the question of the target population for WoW. The findings suggest that the programme most benefited boys and children (both boys and girls) reading at 'below average' levels. It suggests that those already at a higher level of reading (i.e. in the 'average' range) and girls in particular at this level did not benefit as much from WoW. The classroom environment may be more suited to girls reading at 'average' levels, if, as other studies have shown, girls already tend to have more positive attitudes to reading, they tend to read more, and they tend to attain higher standards in reading achievement (Logan and Johnston, 2009; see Sainsbury and Schagen, 2004: 378).

Other studies have shown that the most efficient and effective methods to address reading difficulties begin with 'early prevention and intervention' (Pullen *et al.*, 2004: 21). The WoW programme also led to greater gains among 1st class children than among 2nd class children. In particular, the programme was successful in bringing 1st class children up to the same level of proficiency in phonemic awareness and phonic knowledge as children in 2nd class. Although it should be noted that this finding applied to one cohort only and to girls and not to boys, this would suggest that children gain more from WoW the earlier their participation begins, and it suggests the importance of targeting younger readers.

7.3 What Worked Well?

What factors explain why the programme was a success in some areas and also why the programme did not succeed in other areas? The programme was successful in improving children's phonemic

awareness. The data also show that participation in the programme by itself was the best predictor of positive outcomes in this skill. That is, programme participation led to improvements independently of the dosage level, the children's school attendance, the children's experience of the programme, and the receipt of additional supports. On WIAT SWR, school attendance did not significantly influence the success of the programme. In the intervention group, children with poor school attendance did not do significantly worse than children with good school attendance, while, in contrast, in the control group children with poor school attendance did worse and the difference was approaching statistical significance. Further, programme success on WIAT SWR was predicted by the child's experience of the programme (as reported by the volunteer) but not the child's relationship with the volunteer (as reported by the volunteer). In contrast, in the *Experience Corps* programme, there was a positive and significant association between the quality of the tutoring relationship and gains made by students (Morrow-Howell, 2009b: 17).

The WoW programme was not successful in the area of reading comprehension. However, the data show that school attendance, WoW dosage, and receipt of additional supports all predicted children's reading comprehension, and also that enjoyment of reading in class was correlated with outcomes in this area. The programme may have been more successful in the area of reading comprehension if programme dosage was higher, if school attendance was better, if children received other supports along with WoW, and if children came to enjoy reading in class. Similarly, in the evaluation of *Experience Corps*, it was found that dosage predicted outcomes and greater gains were made by children with the recommended dosage (Morrow-Howell, 2009b: 15-16).

The WoW programme was designed for children experiencing delays in reading but who did not have diagnosed general or specific learning disabilities, or behavioural difficulties, and who were not in the Reading Recovery programme or receiving supplementary teaching in English with a Learning Support teacher. However, some of the children in WoW also received other additional support services in the area of reading and literacy, as did some in the control group, although not the formal supports listed above. The data showed WoW led to greater gains than the control condition, but also WoW worked well in combination with other supports. This issue is of interest because of the debate over whether children should be taken out of the classroom for support services. The results from the control group showed that the children who were 'withdrawn' to receive some form of additional reading support service other than WoW did not get the same gains as children in the intervention group (except on scores for spelling), although there is insufficient information on what those supports were to draw any definite conclusions about which supports other than WoW are or are not effective. The positive results for WoW suggest that it is the programme that matters rather than being 'withdrawn' as such.

The WoW programme led to gains approaching statistical significance for enjoyment of reading in class (as reported by children) and statistically significant gains in children's self-esteem and willingness to read aloud and independently (as reported by volunteers) and willingness to help other children read in class (as reported by teachers). Self-beliefs can be important as they contribute in their own right to reading achievement, and in this study enjoyment of reading in class was correlated with success in reading comprehension and phonic knowledge. Other studies have

identified a reciprocal causal relation between self-beliefs and reading achievement, as positive links were found between prior academic self-concept and subsequent school achievement and between prior achievement and subsequent self-concept (Marsh and O'Mara, 2008). More specifically, other studies have observed the 'general tendency for higher achievement to be related to more positive attitudes' (Sainsbury and Schagen, 2004: 385). Some reading programmes combine self-esteem counselling with reading interventions (Brooks, 2002: 13). In contrast, the WoW programme logic model posited that improvements in self-esteem may be generated as a result of participation in the programme and as a result of improvements in reading ability.

7.4 What was the Relationship between Programme Implementation and Outcomes for Children?

The process study has shown that programme implementation was successful, and the evaluation of programme outcomes has shown what impact the WoW programme had on participating children. A further question concerns 'how' the successful implementation of the programme contributed to positive outcomes for children.

7.4.1 How did successful programme utilisation contribute to positive outcomes for children?

The first stage in the successful implementation of the WoW programme was introducing and implementing the programme in the school settings. The WoW programme was of special interest to schools who were expected, under the DEIS initiative, to bring about improvements in literacy and numeracy. The WoW programme also provided the type of approach recommended in the NESF report on Child Literacy and Social Inclusion (2009): a combination of targeted literacy support and strong links with the community in addressing educational disadvantage. In the participating schools, children's reading ability scores increased across the five years for which MICRA-T data were available. Therefore, there is evidence that the greater emphasis placed on literacy in schools in disadvantaged areas had paid off in terms of improvements in reading ability scores more generally. Also, in a school environment where all children's scores for reading ability were improving, participation in WoW led to greater gains than regular classroom teaching on its own.

As we have seen, greater impacts have been observed when volunteer reading programmes are targeted at children experiencing delays in reading but who do not need formal reading supports (Morrow-Howell *et al.*, 2009b). The targeted nature of the programme was a further reason why WoW was welcomed in schools. School personnel held the view that providing supports through WoW to children experiencing delays in reading but with a lower level of need filled a gap in meeting the needs of all school children. However, the findings from the outcomes study have shown that the greatest benefits were experienced by children with 'below average' reading, which was one sub-group within the targeted population. The outcomes study also showed that boys with 'below average' reading levels benefited more than girls with 'below average' reading levels, and more than girls with 'average' reading levels. Implementation data also show that boys with 'below average' reading levels received a significantly higher WoW dosage than girls with 'below average' reading levels.

Schools opted to pilot the programme also in part because of the Barnardos commitment that the WoW programme would not be a disruption to the school setting. The WoW sessions were scheduled in order that intervention children would not miss 'core subjects,' but also so that control children did not miss out on reading related activities. The process study showed that children who left the classroom to receive WoW sometimes missed classroom activities that may have been beneficial for reading comprehension and vocabulary. The outcomes study also showed that the control group performed better in these areas, although the differences were not statistically significant.

7.4.2 How did successful programme organisation contribute to positive outcomes for children?

School personnel believed that WoW was a good fit with, or complement to, the style of teaching and learning employed in the classroom. Recent research on volunteering programmes to support reading suggests that students at-risk of reading difficulties can benefit from tutoring programs that 'complement' reading instruction in the classroom (Ehri *et al.*, 2007; Vadasy *et al.*, 2008; Gattis *et al.*, 2010). The complementary nature of WoW can be seen in the use of the ORT, which is also used in classrooms, but also its emphasis on phonics and this has paid off in terms of reading outcomes. As a further complement to the classroom, WoW provided an opportunity for children to read one-to-one with an older adult, to get support and encouragement, and to learn to enjoy and build self-belief around reading. Once again, the data show the programme was successful in terms of improving children's reading self-beliefs.

The role of the project leader was a crucial factor in the successful organisation of WoW. Wasik (1998) identified the following characteristics of a successful tutoring program: a designated coordinator who knows about reading and reading instruction; the presence of structure in the tutoring sessions; and the provision of ongoing training to the tutors. As was the case with *Experience Corps* (Gattis *et al.*, 2010), due to the work of the project leaders, the ongoing organisation of the programme required little input from the school principals or class teachers. In the WoW programme, the project leaders' knowledge of literacy development, awareness of the educational system, and the support and assurance received by the volunteers through their ongoing training were all crucial to its successful organisation.

Research on volunteering generally highlights how difficult retention is, with over one-third of American volunteers not donating their time for a second period (Eisner, *et al.*, 2009). In contrast, there was a very low attrition rate in the WoW programme, resulting in a highly experienced and motivated group of volunteers. Research has shown that one reason why volunteers stay with an organisation is that they obtain the benefit of perceiving themselves to be assisting a mission-driven organisation reach its goals (Safrit and Lopez, 2001; Konwerski and Nashman, 2008). Volunteers experience greater benefits from positive participation than simply from involvement alone (Konwerski and Nashman, 2008). The data have also shown that WoW volunteers could tell when their children's reading had improved and also their perception of their child's experience was a key predictor of the child's success in the programme. This would suggest that volunteers were receiving positive feedback concerning their contribution to both the child's experience of the sessions and also the child's improved reading ability.

7.4.3 How did successful programme fidelity contribute to positive outcomes for children?

Fidelity to programme design is clearly related to program outcomes (Rhine *et al.*, 2006; Broderick and Carroll, 2008; Webster-Stratton, 2004). Having high programme delivery fidelity has been shown to predict significant improvements in parents' and children's behaviours across a number of different evidence-based practices (Broderick and Carroll, 2008; Eames *et al.*, 2009).

The service design process undertaken by Barnardos was extremely thorough and resulted in a well-thought out and systematic reading support programme. Implementing the programme in line with the model across nine schools and with a diverse group of volunteers was a challenge for the project leaders particularly. The success of ensuring consistency in programme delivery can be seen from the outcomes data: there was no significant difference in the impact of the programme in the different schools.

In the main, the WoW model was applied as mandated. Criteria for inclusion in the programme were clearly communicated by the WoW team to the classroom teachers and a rigid policy was adhered to with regard to potential children meeting the thresholds. The content of the reading sessions was highly reflective of the intended design. Volunteers used their manuals as required and applied the learning accrued in their training sessions, and the reading records indicated the children's progression through the Oxford Reading Tree reading material. One area where the programme was not meeting the expected standard was in relation to the number of sessions children received, which were lower than required. Further, children nominated to WoW were also nominated by classroom teachers to receive additional support services, which was contrary to the selection criteria.

Manuals, training, and supervision are all key to enhancing fidelity (Dane and Schneider, 1998; Webster-Stratton, 2004; Fixson *et al.*, 2005). Training and supervision increases preparedness and comfort levels (Webster Stratton, 2004; Fixson *et al.*, 2005) along with 'high-fidelity practitioner behaviour' (Fixson *et al.*, 2005: 28). Specifically with regard to older volunteers, the significance of organisational supports in contributing to their role performance and positive benefits has been extensively documented (Tang *et al.*, 2010; Morrow-Howell *et al.*, 2003; Morrow-Howell *et al.*, 2009a). Other research strongly supports the hypothesis that children will gain by much more from a programme with trained as opposed to untrained tutors (Elbaum *et al.*, 2000, in Pullen *et al.*, 2004: 24). The volunteers reported very high satisfaction levels with the supports received from Barnardos at all stages of their involvement. Issues associated with delivering the programme were addressed through the regular contact between the project leaders and the volunteers and through the more formal supervised sessions. Changes were introduced to the WoW programme for the second cohort of children. These included changes to volunteer training as well as to the delivery of the programme, as one session per week was to be dedicated to phonics. What amounted to a change in the WoW manual also explained some of the benefits observed in the intervention group. In addition, the changes required volunteer competence in and comfort with the delivery of more sophisticated and complex material in the reading sessions. The outcomes for children show that the second cohort enjoyed significant gains on phonic knowledge and phonemic awareness, and this

strongly suggests that the faith shown in volunteer competence, along with the efforts put in to retrain volunteers, were justified.

Programme dosage was associated with better outcomes for reading comprehension and reading accuracy, but dosage was lower than the required three sessions per week. This was explained in part by school closures but also by limited availability of some volunteers and the unwillingness of some schools to support three sessions per week. The programme could have benefited from the operation of a 'substitute' system of stand-in volunteers so as to keep dosage high in the event of volunteer absenteeism, but this would have involved significant extra administrative work and resources. The unwillingness of some schools to allow the delivery of three sessions per week is also important, given that the findings have shown that success in some areas required a higher dosage.

7.4.4 What was the relationship between the experience of the programme and positive outcomes for children?

The positive experience of WoW for participating children, volunteers, and schools was highlighted by all participants in the process study. All involved described very favourably the children's experience of the reading sessions and their relationship with their volunteers. Again, this mirrors the findings from the *Experience Corps* evaluation, that the volunteers perceived the programme had a positive impact on students, and their overall relationships with students were good (Morrow-Howell *et al.*, 2009b). Research has shown that older adults can offer some of the stability, caring, and consistency which are essential to learning, as well as the richness of their experience and presence as role models in the school setting (Fried *et al.*, 1997). However, the outcomes study has shown that it is the child's 'experience' of the programme rather than their 'relationship' with any one volunteer that predicts outcomes for those children. What is important in terms of outcomes is the child's positive experience of one-to-one sessions (as perceived by the volunteer) albeit with a small number of different volunteers.

After participating in the programme children were also more willing to read aloud and to read independently, and had improved self-esteem and confidence. As achievement-related self-beliefs interact with reading performance at a very early stage it has important implications for children who experience initial difficulty in learning to read (Chapman *et al.*, 2000). This link is important because achievement-related self-beliefs are thought to influence achievement through their effect on motivation (*ibid*). The outcomes study has shown that children in WoW gained more than the control group children both in terms of reading ability but also in terms of reading self-beliefs, and that enjoyment of reading in class was positively associated with both phonic knowledge and reading comprehension. Given that there is much evidence that children's attitudes towards, and feelings about, school activities have an important impact upon their success (Francis, 1997), maximizing the young child's sense of self-efficacy, and ensuring positive relationships with adults are likely to be particularly important factors in their early school years (Elliott *et al.*, 2000).

7.5 Chapter Summary

What were the impacts of WoW?

Gains were made first in phonic knowledge and reading self-beliefs and then a delayed impact in word recognition and phonemic awareness. Gains were made in reading self-beliefs even though the WoW programme did not include self-esteem counselling (Brooks, 2002). Gains were made in basic skills needed for the further development of their reading ability, in line with the Simple View of Reading (Stuart *et al.*, 2008). Children in WoW may have performed better on reading comprehension had they received a higher dosage.

Who gained the most?

The children to gain most from WoW were children reading at a 'below average' level but not in need of formal reading supports (Elbaum *et al.*, 2000). Boys gained more than girls, and boys reading at a 'below average' level also gained most from the one-to-one reading programme (Rimm-Kaufman, *et al.*, 1999). Younger children gained more from WoW, suggesting the efficacy of earlier intervention for children at risk of reading failure (Pullen *et al.*, 2004).

What worked well and what did not?

The child's experience of the programme, rather than relationship their with their volunteer, predicted programme success, which contrasts with findings from the evaluation of *Experience Corps* (Morrow-Howell, 2009b). The WoW sessions led to greater enjoyment of reading, and other studies have identified a reciprocal causal relation between self-beliefs and reading achievement (Marsh and O'Mara, 2008).

What was the relationship between programme implementation and outcomes?

The targeted nature of the programme was a key appeal to school personnel, but the programme did not benefit all those targeted (Ehri *et al.*, 2007; Vadasy *et al.*, 2008; Gattis *et al.*, 2010). The centrality of the project leader to the success of WoW supports Wasik's (1998) conclusions regarding the importance expert coordination, support, and volunteer training. Meaningful participation was a key motivator for volunteers, and WoW volunteers could tell when their children's reading had improved and also their perception of their child's experience was a key predictor of the child's success in the programme. Changes to volunteer training and programme delivery led to more positive outcomes for children and vindicated the confidence in volunteers to deliver more complex material.

Chapter 8 Conclusions

This concluding chapter provides a summary of the main programme impacts, and then draws out the implications of the findings for both practice and policy.

8.1 Summary of Main Programme Impacts

The evaluation of WoW combined a randomised controlled trial and a study of programme implementation. The findings have shown where the programme was successful, and also where the programme did not lead to improved outcomes, what variables modified the impact of the programme, and the variables that predicted programme success. In addition, findings on programme implementation (utilisation, organisation, fidelity, and experience) were analysed in order to explain how the successful implementation of the programme contributed to positive outcomes for children.

8.1.2 Word recognition

The programme had a statistically significant impact on children's word recognition (WIAT SWR), when data from Time 1 and Time 2 are combined ($d = 0.38$). The greatest gains were made by children with 'below average' reading levels (i.e. children reading at or below the 16th percentile on WIAT SWR at Time 0), and intervention children made significantly greater gains in moving out of the 'below average' group than children in the control group. Boys gained more from the programme than girls. Boys with 'below average' reading levels gained by the most, but also they received a significantly higher dosage than girls with 'below average' scores. In addition, children in 1st class gained by more than children in 2nd class. School attendance did not predict scores on WIAT SWR in the intervention group, although it did in the control group, indicating the success of the programme even where school attendance was not good. The children's experience of WoW, as perceived by the volunteers, predicted the success of the programme.

The target group for the programme were children experiencing delays in reading but who were not eligible for formal reading interventions, and such targeting was one reason why school personnel were receptive to the programme initially. However, the programme benefitted some of those experiencing delays more than others (i.e. it benefitted those reading at 'below average' levels more than those at 'average' levels). In addition, although against study protocol, some children in the intervention group and the control group received further support services for reading. The data suggest that WoW was even more beneficial when children were also in receipt of other supports.

8.1.3 Phonemic awareness

The programme also had a significant impact on scores for phonemic awareness ($d = 0.37$) and an impact approaching statistical significance on scores for phonic knowledge ($d = 0.23$). The programme led to the greatest gains among 1st class children and among the second cohort of children. Neither school attendance nor programme dosage predicted scores on phonemic awareness, indicating that it was programme participation and not the dosage level that led to success and also that the programme was successful even when school attendance was not good. The success of the programme in this area was explained in part by the changes made for the second cohort of children to volunteer training, comprising a greater focus on phonics, and to programme

delivery, which included the dedication of one session per week to phonics. The change in programme design and delivery also required greater competence and confidence on the part of volunteers in the delivery of more complex material and in turn greater support from project leaders.

8.1.4 Children's reading self-beliefs

The programme also had an impact on enjoyment of and perceived competence in reading and schoolwork ($d = 0.24$, $p = .10$). Children were more likely to enjoy reading and to feel competent about their reading and schoolwork if they received the WoW programme, and the difference was approaching statistical significance. Children who received WoW also enjoyed improvements in self-esteem (as perceived by volunteers) and were more likely to read aloud and read independently (as perceived by volunteers) and to help other children with reading in class (as perceived by classroom teachers).

Data on programme implementation suggest plausible reasons for the observed gains in reading self-beliefs. The WoW programme gave children an opportunity to read aloud and to do so in one-to-one sessions, and volunteers gave positive reinforcement and praise for their reading efforts. Volunteers were not only highly trained but were also receiving positive feedback concerning their contribution to both the children's experiences of the sessions and the children's improved reading ability. The children's experiences of the WoW sessions and their enjoyment of reading were also positively associated with outcomes. This has important implications, as the literature suggests that improvements in self-beliefs will have long-term beneficial consequences, and that children's attitudes towards, and feelings about, school activities have an important impact upon their success.

8.1.5 Reading accuracy

On scores for reading accuracy, intervention group children made greater gains than control group children, although the differences were not statistically significant ($p = .14$, mean difference = 3.69, $d = .21$). Children in WoW with good school attendance also performed significantly better than children in WoW with poor school attendance. This suggests the programme may have been more successful in the area of reading accuracy with better school attendance. When volunteers were asked to rate the change in their child's reading ability, this also predicted scores on York Reading Accuracy ($\beta = .23$, $p = .06$). This suggests that volunteers were aware of the impact that the programme was having on their children and that this awareness was a predictor of the success of the programme.

8.1.6 Reading comprehension and Vocabulary

Children in the intervention group performed less well than children in the control group on scores for vocabulary ($p = .36$, $d = -0.13$) and reading comprehension ($p = .56$, $d = -0.09$), although the differences were not statistically significant. The data show that school attendance, WoW dosage, the child's experience of the programme, and receipt of additional supports all predicted scores for reading comprehension. This indicates that the programme may have been more successful on this outcome with higher programme dosage. In addition, children who received additional support services plus WoW performed better on vocabulary than those who received WoW only and performed better than those in the control group who received additional supports.

Despite efforts to organise delivery of the programme to ensure the intervention group did not miss core subjects, the control group may have benefited from classroom activities in areas of comprehension and vocabulary including reading by the class teacher and library time, while intervention children were withdrawn to receive WoW.

8.2 Implications for Practice and Policy

What are the implications of these findings for practice and policy? The purpose of this study was to contribute to evidence-based practice and policy in the area of volunteer reading programmes. The study design for this mixed methods evaluation provides the 'gold standard' of evidence. The randomised controlled trial design allows inferences to be drawn concerning causation, while the process study provides evidence around programme implementation and its contribution to programme impacts.

A further but related issue is the generalisability of findings. The findings are generalisable to other programmes with a similar target population in similar socio-economic environments. Answering this question is relevant especially for decisions regarding the future roll-out of WoW. The programme was provided free of charge to the schools, and the use of volunteers minimised costs to Barnardos, nonetheless funding was required to ensure effective implementation and for any future roll-out.

8.2.1 Practice implications

The findings from this study have important implications for practice:

- Positive outcomes for children require successful implementation of the WoW programme. Volunteers must be highly trained and receive continuous support. There must be a good working relationship between programme providers and school personnel. Fidelity to the model and preventing variation in programme delivery must be ensured through ongoing training and support measures
- Benefits to children's reading ability and reading self-beliefs require a positive programme experience for the children, based on one-to-one reading sessions with supportive older readers and an intervention matched to the children's needs
- To achieve improvements in children's reading ability the programme should continue to prioritise one of the three weekly sessions to phonics, as these are building blocks for further reading, including word recognition and reading fluency. Volunteer training in this technical area of education and support from project leaders is necessary for success in this area
- Higher programme dosage should lead to better reading outcomes in some areas, in particular reading comprehension and reading accuracy
- Participation in the programme by itself will lead to positive outcomes for children in phonemic awareness and word recognition regardless of the child's dosage and even when school attendance is poor
- The programme should be targeted at children starting at 'below average' reading levels (< 16th percentile on WIAT SWR)
- The programme should not be targeted at girls starting with 'average' reading levels

- The programme should give priority to targeting younger readers (1st class) although gains can also be made by 2nd class children

8.2.2 Policy implications

Given that there has been a major strategic focus on tackling the issue of declining literacy in Ireland, and in particular its persistence in disadvantaged areas, the findings from this study also have important implications for policy.

- Good practice requires tackling educational disadvantage through targeted interventions, using structured programmes, and with strong links with the community
- A volunteer-based reading programme can ensure positive outcomes for children's reading ability and their reading self-beliefs
- Volunteer programmes that lead to modest gains are highly efficient given that they minimise costs, although substantial organisational resources are needed for the successful implementation of the programme
- NGOs can play an important role in helping ensure positive outcomes for children experiencing delays in reading. As this study has shown, positive collaboration is possible between an NGO and schools, although this requires considerable experience, expertise, and financial commitment
- WoW is an out-of-class programme that worked, and therefore it shows the benefits that can be achieved by combining out-of-class programmes with classroom teaching. The issue is not whether or not to withdraw children from class to receive supports but the design and delivery of the support in question
- It is important that programmes are targeted at the correct group, in this instance children reading at 'below average' levels, and furthermore ensure an optimum match between the children's needs and the intervention
- The priority given to literacy in recent years has led to gains, as can be seen by the increases on MICRA-T scores over a five year period across all schools. However, children can make even greater gains by participating in a well-implemented volunteer support programme

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Appendices

Appendix 1: Use of Time 2 data from two time points

The Time 2 data were collected at two different time points. For 1st class control children, Time 2 data were collected in September (12 months after Time 0); for the remainder of the students (1st class intervention, 2nd class control, 2nd class intervention), Time 2 data were collected the following January (16 months after Time 0). A statistically significant impact of the intervention was observed at Time 2 on Phonemic Awareness. However, this impact of the programme could have been due to when the Time 2 data were collected from the 1st class control children. That is, did the decision to collect follow-up data on 1st class control children at 12 months rather than 16 months underestimate the gains made by the 1st class control group and, as a consequence, is the observed programme impact explained by the time at which data were collected?

Class year modified the impact of the programme. There was a statistically significant programme impact on the Phonemic Awareness measure ($\beta = .16$, $p = .01$) and the WIAT SWR measure ($\beta = .16$, $p = .00$) among only the 1st class children. The analyses have also shown that cohort modified the impact of the programme, as greater gains were made among the second group of children to receive the intervention. Further analyses indicated that the impact of class year was explained in part by cohort. This was considered pertinent as the same data collection procedure was used for both cohorts and, if the data collection procedure accounted for the observed programme impact, this should have been true for both cohorts.

The results of an ANCOVA analysis of scores on phonemic awareness that controlled for scores on the dependent variable from Time 0 (i.e. before the intervention began) indicated that the interaction between study condition, cohort, and class was statistically significant, $F(7, 194) = 3.10$, $p < .001$, and that class year interacted with study condition only for cohort 1. For cohort 1, a statistically significant impact of the programme was observed only for the 1st class (mean difference = 1.41). By contrast, in cohort 2 a statistically significant impact of the programme was observed for both the 1st class (mean difference = 3.93) and the 2nd class (mean difference = 3.18).

The difference between intervention and control groups among 2nd class children in the second cohort approached conventional levels of statistical significance, $F(1,35) = 3.78$, $p = .06$. The effect size was $d = 0.66$, which is slightly larger than a moderate effect size as defined by Cohen (1988). Parallel analyses were conducted using data for the 1st class students in cohort 2. The results were very similar. The difference between the treatment and control groups was statistically significant, $F(1,64) = 6.20$, $p = .02$. The effect size was $d = 0.62$, which is very similar to that found for the 2nd class children. The difference in the statistical significance of the results for the 1st and 2nd class students is explained by the smaller sample size of 2nd class cohort 2 children ($n = 38$) versus the 1st class cohort 2 children ($n = 67$).

In addition, there was a significant interaction between study condition, class year, and gender on WIAT SWR ($p = .01$) and an interaction approaching statistical significance on phonemic awareness ($p = .09$). The analysis shows that boys made greater gains in the intervention group than the control

group, and this was the case for 1st class and 2nd class children. In contrast, girls made greater gains in the intervention group than the control group only in 1st class, while in 2nd class girls made greater gains in the control group.

The data for all measures are presented in the table below.

Time	Group Class	WIAT SWR	York RA	York RC	WIAT Spell	BPVS	PA	PK
Time 0	1 st Cont.	82.43	89.76	99.35	81.69	96.88	30.78	25.44
	1 st Inter.	79.67	86.96	95.98	82.53	95.25	29.90	25.82
	2 nd Cont.	79.38	89.55	97.81	82.14	92.91	34.95	29.43
	2 nd Inter.	78.13	89.63	98.48	81.98	93.40	33.28	29.20
	Total	80.06	88.90	97.86	82.09	94.80	31.96	27.22
Time 1	1 st Cont.	86.78	95.28	101.96	89.03	97.16	36.46	30.07
	1 st Inter.	83.73	95.33	101.89	89.02	95.16	35.23	31.20
	2 nd Cont.	87.96	92.43	100.71	86.26	92.84	37.50	31.93
	2 nd Inter.	86.20	91.15	98.68	84.73	91.62	36.61	32.46
	Total	86.04	93.67	100.92	87.52	94.45	36.36	31.31
Time 2	1 st Cont.	85.67	94.08	103.38	85.51	96.49	37.03	30.73
	1 st Inter.	87.02	94.98	102.76	86.73	95.57	39.08	31.23
	2 nd Cont.	88.42	90.89	100.98	84.63	92.18	38.91	32.30
	2 nd Inter.	85.52	90.59	98.86	83.95	90.20	38.04	32.07
	Total	86.61	92.78	101.65	85.34	93.94	38.24	31.50

Appendix 2: Study power

An important methodological issue in an RCT concerns the statistical power of the study. Will the study have sufficient power to show that the WoW programme has led to improvements in children's reading and the extent of those improvements? In attempting to answer this question a null hypothesis is stated, namely that WoW had no positive effects on children's reading. Having sufficient statistical power ensures that we do not fail to reject the null hypothesis when it should in fact be rejected (known as Type II error): i.e. that we do not fail to reject the claim that the programme has had no effect when there is good reason to reject that claim.

Statistical power (β) is not independent of four other parameters of statistical inference: the significance criterion (α), sample size (n), effect size (ES) and the type of statistical significance test used (Rossi *et al.*, 2004: 310; see Cohen, 1988: 4).

The first of these, the significance criterion (α), is the standard of proof that the phenomenon exists. It is also called Type I error, as it is the rate of rejecting the true null hypothesis. If the significance criterion (α) is set at .05, the conventional level of significance, this means accepting a 5 per cent chance of wrongly rejecting the null hypothesis: i.e. in five times out of a hundred such a finding could be obtained but it would be as a result of chance rather than a true reflection of the situation; alternatively, in five times out of a hundred we could be mistaken in concluding that the programme has had a positive impact for the intervention group. However, findings that have p-values of below 0.10 will also be discussed as they are 'approaching significance.'

The effect size in this study represents the impact of the WoW programme on those in receipt of the programme when compared with the progress made by children in the control group. It is necessary to represent the effect size in standardised form and to do this the "standardised mean difference" is used. It describes the size of the effect in standard deviations, and indicates how large the effect is "relative to the range of scores found between the lowest and the highest ones in the study" (Rossi *et al.*, 2004:304). For instance, an effect size of 0.5 entails the mean score for the intervention group is half a standard deviation greater than the mean score for the control group.

Turning to the statistical test, the use of covariance analysis is central to this study. The pre-programme measure of the outcome variable (the mean scores of the children before the programme began) are used as a control variable because they are highly correlated with the outcome variable (mean scores after the programme has been received). If so much of the outcome variable can be explained by the covariance of pre-programme and post-programme scores, this increases the power of the study to determine the effect of the programme on the outcome scores.

Finally, the lower the power and sample size, the more difficult it is to detect small effects that are statistically significant (Rossi *et al.*, 2004: 312). As has been noted already, by conducting a covariance analysis, the statistical power of the analysis can be increased significantly. Prior to commencing data collection, the research team were confident that with a participant sample of 300 it would be possible to identify small effects using analysis of covariance. The sample size for year 1

of the study was 113 and the sample size for year 2 of the study was 116, making a total sample size of 229.

Appendix 3: Process study data collection

Participants	Method	Year	Number Sampled	Number Participated	Response Rate %
Barnardos staff	Face-to face Interview	1	10	10	100
		2	3	3	100
		3	5	5	100
School Principals	Face-to face Interview	1	4	4	100
		2	4	3 ¹⁶	75
		3	8	8	100
Class Teachers	Telephone Interview	1	11	4	36
		2	n/a	n/a	n/a
		3	31	16	52
Volunteers	Postal Questionnaire	1	23	21	91
		2	89	67	75
		3	84	80	95
Volunteers	Focus Group	1	23	12	52
		2	40	22	55
		3	84	44	52
Children	Face-to face Interview	1	55	13	23
		2	n/a	n/a	n/a
		3	29	26	90
Children	Observation	1	55	7	13
		2	n/a	n/a	n/a
		3	29	24	83
Parents	Interview	1	55	7	13

¹⁶ One school principal chose not to participate as he/she had decided at that point to discontinue with WoW as of the end of the 2010 school year. The Barnardos team informed the CFRC research team that this decision was due to small class numbers in the school and an adequate supply of whole school literacy supports.

Appendix 4: Outcomes study data collection

Participants	Method	Time point	Year (RCT cohort)	Number Sampled	Number Participated	Response Rate %
Study Children	Standardised, criterion- referenced, and Likert scales	Pre- programme	2 (cohort 1)	113	113	100
			3 (cohort 2)	116	116	100
		Post- programme	2 (cohort 1)	113	113	100
			3 (cohort 2)	116	114	98
		Follow-up	2 (cohort 1)	113	113	100
			3 (cohort 2)	116	99	85
Teachers	Survey	Pre- programme	2 (cohort 1)	29	28	97
			3 (cohort 2)	31	29	94
		Post- programme	2 (cohort 1)	29	24	83
			3 (cohort 2)	31	28	90

Appendix 5: Phonemic awareness and phonic knowledge measure

Procedures and instructions given for the phonemic awareness, phonological recoding and phonic knowledge measures were as follows:

Initial phoneme matching

A target word was spoken and the child was required to indicate, from a set of three pictures, the item whose name began with the same phoneme as the target word. Corrective feedback was given on two practice items, followed by four test items with no further feedback.

Final phoneme matching

A target word was spoken and the child was required to indicate, from a set of three pictures, the item whose name ended with the same phoneme as last phoneme of the target word. Corrective feedback was given on two practice items, followed by four test items with no further feedback.

Initial phoneme identification

Children were shown pictures which were named for them. They were then asked to give the first sound of the name. Only children who attempted all items continued on to the final phoneme identification and the phoneme segmentation tasks.

Final phoneme identification

Children were again shown pictures which were named for them. They were then asked to give the last sound of the name. Corrective feedback was given on two practice items, followed by six test items with no further feedback. The task was discontinued after three consecutive failures.

Phoneme blending real words

Children were required to blend syllables or phonemes into a word. Practice with corrective feedback was given first on two syllable blending items (e.g. mon-day), followed by two onset-rime blending items (e.g. m-ake), followed by two phoneme blending items (e.g. b-e-d). There were 12 test items, three testing syllable blending, and nine testing phoneme blending. The task was discontinued after three consecutive failures. Only children who attempted all items continued on to the phoneme blending – non-words task.

Phoneme segmentation

Children were required to segment monosyllabic words consisting of from two to five phonemes into their constituent phonemes. Corrective feedback was given on five practice items, followed by 12 test items with no further feedback.

Phoneme blending non-words

Children were required to blend phonemes into a non-word pronunciation. Four phoneme blending practice items were given with corrective feedback, followed by ten test items from two to five phonemes in length, with no further feedback.

Phonological recoding

For the first ten items, children were each shown a drawing of a monster, and given the following instructions: “Look at this little monster. He’s a special sort of monster – can you read this (point to non-word ‘ud’) and tell me what sort of a monster he is?” Once the illustrated items had been successfully tackled, the child was asked to read the remaining 20 non-illustrated items. When the child failed five consecutive items, the test was discontinued.

Phonic knowledge

Children were shown a card, with 40 graphemes, in total and they were shown one line at a time with five graphemes. The tester pointed to each grapheme in turn and asked the child to give the sound of that grapheme. One point was given when the children provided the correct sound for each letter and testing was stopped when it was clear the child did not know any more.

Appendix 6: Statistical tests

A number of different statistical tests were used to investigate the data. Different tests are appropriate depending on the type of data (nominal, ordinal, continuous) and the question being asked in the analysis.

Two tests were used for data that was categorical rather than continuous. The **chi-square test for independence** is appropriate to explore the relationship between two categories, for example study condition (control or intervention) and scores (in categories). The test compares the observed frequencies or proportions of cases that occur in the two categories with the values that would be expected if there was no association between the two variables being measured. The test for difference is represented as a phi value. A phi value of 0.0 indicates no association and a value of 1.0 indicates perfect association.

An **independent-samples t-test** makes possible a comparison of the mean scores of two different groups, for example study condition (control or intervention) on a continuous variable, for instance, scores on WIAT SWR. The test produces estimates of effect sizes, which represent the difference in mean scores on the continuous variable between the two groups. When using t-tests, effect sizes are represented as Cohen's d scores.

A **paired-samples t-test** also compares the mean scores on a continuous variable, but this time instead of comparing the mean scores of two different scores, it compares the mean scores of the same group at two different points in time. This is used when measuring the gain in scores made by a group (for example, the intervention group) between the pre-programme test and the post-programme test.

An **analysis of variance (ANOVA)** is used when comparing the mean scores of two or more groups. Once again there is a continuous dependent variable and this time the independent variable can have a number of levels. The test compares the variance (variability in scores) between the different groups (believed to be due to the independent variable) with the variability within each group (believed to be due to chance). It calculates an F ratio: a large F ratio indicates there is more variability between the groups (caused by the independent variable) than there is within each group (caused by chance).

An **analysis of covariance (ANCOVA)** allows the differences at Time 1 or Time 2 between the two groups (control and intervention) to be analysed while controlling for the effects of an additional variable or 'covariate' (scores at Time 0). ANCOVA first removes the variation in the post-programme scores that are due to the pre-programme scores, and produces estimates of post-programme scores (known as 'estimated marginal means'). It then performs the normal analysis of variance on the adjusted scores. As the influence of the additional variable (Time 0 scores) has been removed this can increase the power of the analysis of the effect of study condition on Time 1 scores.

While ANOVA tests whether mean differences on a single dependent variable are likely to have occurred by chance, a **multivariate analysis of variance (MANOVA)** is used when there is more than

one dependent variable. It compares the groups to see if the mean differences on the combined dependent variables are likely to have occurred by chance. Under certain conditions, it may reveal differences not shown in separate ANOVAs, as it may occasionally be more powerful than separate ANOVAs. A MANCOVA is the multivariate extension of ANCOVA, as it asks if there are statistically significant differences among groups after adjusting the newly created dependent variable for differences on one or more covariates. MANOVA is also an alternative to repeated-measures ANOVA, as it views data collected at different time points on a measure simply as separate dependent variables.

A **simple effects analysis** looks at the effect of one independent variable at individual levels of the other independent variable. It is a comparison of condition means to determine if differences between means for one level of an independent variable are the same as differences at the other level(s) of the independent variable. For example, are differences in mean scores for girls between the control group and the intervention group at Time 2 on WIAT SWR the same as for boys?

Multiple regression analysis explores the relationship between one continuous dependent variable and a number of independent variables or predictors. The results indicate which variable in a set of variables is the best predictor of the continuous dependent variables, for instance children's scores at Time 1. The results indicate how much of the variance in the dependent variable is due to the predictor variable (the R square value), the standard deviation change in the dependent variable caused by any unit change in the independent variable and the direction of the change (the standardised beta value), and whether the results are statistically significant (the p value).

Appendix 7: Outcomes data and results of data analysis

Mean Scores at Time 0, Time 1, and Time 2 for Control and Intervention study conditions

	Time	Control			Intervention		
		N	M	SD	N	M	SD
WIAT SWR	T0	111	81.05	9.556	118	79.14	7.929
	T1	111	87.11	10.972	115	84.93	10.134
	T2	105	86.65	11.632	107	86.81	10.884

YORK RA	T0	100	89.41	8.471	112	88.05	9.121
	T1	111	92.99	9.176	115	92.50	8.695
	T2	105	91.21	9.463	107	92.14	8.848

YORK RC	T0	100	98.35	8.611	108	97.09	8.865
	T1	110	100.39	8.631	115	99.32	8.668
	T2	105	100.93	8.74	107	100.33	7.753

YORK RR	T0	39	79.92	8.533	29	81.79	9.488
	T1	96	88.21	11.157	105	87.41	13.109
	T2	91	88.46	11.962	100	89.34	13.037

WIAT Spell	T0	100	82.20	9.171	116	82.16	8.526
	T1	109	87.91	7.483	113	86.74	7.893
	T2	105	84.91	7.963	107	85.28	7.824

BPVS	T0	111	95.51	10.347	118	94.60	9.765
	T1	107	95.04	9.396	114	93.52	9.473
	T2	105	95.08	9.923	107	93.61	10.755

Phonemic Awareness Tasks 1-5	T0	110	32.53	9.161	118	31.16	8.565
	T1	110	36.52	7.828	115	35.56	8.590
	T2	105	37.63	6.810	107	38.77	6.516

Phonic Knowledge	T0	110	27.24	4.816	117	27.26	4.955
	T1	110	30.79	4.337	116	31.62	4.872
	T2	105	31.32	4.943	107	31.57	4.042

Unadjusted mean scores are calculated from standard scores (WIAT, YORK, BPVS) and total correct scores (Phonemic Awareness (from a total of 48), Phonic Knowledge (from a total of 40))

Results of repeated measures MANCOVA

Measure	Main effect of study condition	Time	Control: Estimated mean (standard error)	Intervention: Estimated mean (standard error)	Interaction effect
WIAT SWR	F (2, 206) = 3.789, p = .024; Wilks' Lambda = .965; Cohen's d = .381**	Time 1	86.597 (.783)	85.484 (.779)	F (1, 207) = 1.009, p = .316, Cohen's d = .142
		Time 2	85.996 (.913)	87.212 (.909)	F (1, 207) = .886, p = .348, Cohen's d = .127
York Reading Accuracy	F (2, 189) = .998, p = .371; Wilks' Lambda = .990; Cohen's d = .201	Time 1	93.697 (.745)	93.645 (.722)	F (1, 190) = .003, p = .960, Cohen's d = .000
		Time 2	92.204 (.767)	93.318 (.743)	F (1, 190) = 1.084, p = .299, Cohen's d = .155
York Reading Comprehension	F (2, 187) = .997, p = .789; Wilks' Lambda = .997; Cohen's d = .110	Time 1	101.067 (.739)	100.772 (.724)	F (1, 188) = .081, p = .776, Cohen's d = .000
		Time 2	101.982 (.681)	101.323 (.667)	F (1, 188) = .476, p = .491, Cohen's d = .110
York Reading Rate	F (2, 57) = .510, p = .603; Wilks' Lambda = .983; Cohen's d = .263	Time 1	92.169 (1.261)	94.190 (1.534)	F (1, 58) = 1.034, p = .313, Cohen's d = .263
		Time 2	93.695 (1.293)	95.131 (1.574)	F (1, 58) = .497, p = .484, Cohen's d = .180
WIAT Spelling	F (2, 199) = .681, p = .507; Wilks' Lambda = .993; Cohen's d = .170	Time 1	87.895 (.660)	87.036 (.660)	F (1, 200) = .847, p = .358, Cohen's d = .127
		Time 2	85.102 (.628)	85.183 (.628)	F (1, 200) = .008, p = .927, Cohen's d = .000

Measure	Main effect of study condition	Time	Control: Estimated mean (standard error)	Intervention: Estimated mean (standard error)	Interaction effect
BPVS	F (2, 202) = .556, p = .574; Wilks' Lambda = .995; Cohen's d = .141	Time 1	94.933 (.694)	93.989 (.677)	F (1, 203) = .947, p = .332, Cohen's d = .141
		Time 2	94.401 (.743)	93.496 (.725)	F (1, 203) = .760, p = .384, Cohen's d = .127

Phonemic Awareness	F (2, 203) = 3.527, p = .031; Wilks' Lambda = .967; Cohen's d = .370**	Time 1	36.530 (.655)	36.365 (.648)	F (1, 204) = .032, p = .858, Cohen's d = .000.
		Time 2	37.483 (.540)	39.241 (.535)	F (1, 204) = 5.328, p = .022, Cohen's d = .320**

Phonic Knowledge	F (2, 203) = 1.778, p = .172; Wilks' Lambda = .983; Cohen's d = .263	Time 1	30.920 (.371)	31.766 (.364)	F (1, 204) = 2.655, p = .105, Cohen's d = .230
		Time 2	31.653 (.360)	31.588 (.353)	F (1, 204) = .016, p = .898, Cohen's d = .000

* Significant at the $p < .10$ level. ** Significant at the $p < .05$ level. *** Significant at the $p < .001$ level. Standard deviations are in square brackets.

Results of ANCOVA comparing mean scores at Time 1

Estimated mean scores and effect sizes at Time 1

Measure	Study Condition	N	T2 Estimated Marginal Means	Difference Test		
				p	F	Effect Size: Cohen's d
WIAT SWR	0	111	86.348	.503	.451	.090
	1	115	85.664			
York RA	0	100	93.805	.746	.106	.063
	1	109	93.491			
York RC	0	100	100.760	.878	.024	.000
	1	106	100.613			
WIAT Spell	0	108	88.017	.139	2.210	.201
	1	112	86.751			
BPVS	0	107	94.814	.234	1.423	.168
	1	114	93.727			
Phonemic Awareness	0	109	36.324	.629	.234	.063
	1	115	35.893			
Phonic Knowledge	0	109	30.871	.090*	2.908	.230
	1	115	31.696			

Mean scores adjusted for Time 0 scores, city, gender, cohort, school, class year. * Significant at the $p < .10$ level. ** Significant at the $p < .05$ level. *** Significant at the $p < .001$ level. Standard deviations are in square brackets.

Results of ANCOVA comparing mean scores at Time 2

Estimated mean scores and effect sizes at Time 2

Measure	Study Condition	N	T2 Estimated Marginal Means	Difference Test		
				p	F	Effect Size: Cohen's d
WIAT SWR	0	105	85.905	.195	1.688	.180
	1	107	87.542			
York RA	0	94	92.156	.307	1.049	.155
	1	101	93.172			
York RC	0	94	101.913	.556	.347	.090
	1	98	101.398			
WIAT Spell	0	104	84.983	.898	.016	.000
	1	104	85.094			
BPVS	0	105	94.792	.362	.835	.127
	1	107	93.886			
Phonemic Awareness	0	104	37.450	.012	6.358	.358
	1	106	39.341			
Phonic Knowledge	0	103	31.632	.952	.004	.000
	1	106	31.603			

Mean scores adjusted for Time 0 scores, city, gender, cohort, school, class year. * Significant at the $p < .10$ level. ** Significant at the $p < .05$ level. *** Significant at the $p < .001$ level. Standard deviations are in square brackets.

Appendix 8: Movement out of the below average range

		Time 0		Time 1		Time 2		Effect size T0 – T2	
		<85	85+	<85	85+	<85	85+	phi	P
WIAT	Control	59.5%	40.5%	42.3%	57.7%	48.6%	51.4%	.220**	.006
SWR	Intervention	75.4%	24.6%	53%	47%	43.9%	56.1%		
York	Control	33%	67%	22.5%	77.5%	23.8%	76.2%	.113	.290
RA	Intervention	37.5%	62.5%	22.6%	77.4%	26.2%	73.8%		
York	Control	6%	94%	8.2%	91.8%	5.7%	94.3%	.030	.920
RC	Intervention	6.5%	93.5%	7.8%	92.2%	6.5%	93.5%		
York	Control	71.8%	28.2%	39.6%	60.4%	39.6%	60.4%	.047	.712
RR	Intervention	58.6%	41.4%	42.9%	57.1%	42%	58%		
WIAT	Control	58.2%	41.8%	38.5%	61.5%	53.3%	46.7%	.053	.748
Spell	Intervention	66.4%	33.6%	52.2%	47.8%	57.5%	42.5%		
BPVS	Control	11.7%	88.3%	14%	86%	15.2%	84.8%	.129	.171
	Intervention	16.1%	83.9%	18.4%	81.6%	26.2%	73.8%		

* Significant at the $p < .10$ level. ** Significant at the $p < .05$ level. *** Significant at the $p < .001$ level. Standard deviations are in square brackets.

Appendix 9: Interaction of gender, ability, and study condition

Gender by Ability, WIAT SWR Gain Scores T0-T2

Group	T0 Ability	Gender	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
control	Below average	Male	7.559	1.613	4.379	10.739
		Female	7.333	1.810	3.765	10.902
	Average	Male	4.056	2.217	-.315	8.426
		Female	2.500	1.844	-1.137	6.137
intervention	Below average	Male	11.375	1.357	8.699	14.051
		Female	7.143	1.590	4.009	10.277
	Average	Male	6.500	3.325	-.056	13.056
		Female	-1.375	2.351	-6.011	3.261

Gender by Ability, YORK RA Gain Scores T0-T2

Group	T0 Ability	Gender	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
control	Below average	Male	7.765	1.887	4.042	11.487
		Female	5.308	2.158	1.051	9.564
	Average	Male	2.615	1.526	-.394	5.625
		Female	.184	1.262	-2.305	2.674
intervention	Below average	Male	11.625	1.588	8.492	14.758
		Female	6.308	2.158	2.051	10.564
	Average	Male	5.231	1.526	2.221	8.241
		Female	-.421	1.262	-2.911	2.069

Gender by Ability, YORK RC Gain Scores T0-T2

Group	T0 Ability	Gender	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
control	Below average	Male	12.667	4.704	3.386	21.948
		Female	15.500	5.761	4.133	26.867
	Average	Male	5.350	1.288	2.808	7.892
		Female	1.286	1.164	-1.011	3.582
intervention	Below average	Male	11.667	4.704	2.386	20.948
		Female	14.000	4.074	5.962	22.038
	Average	Male	4.957	1.201	2.586	7.327
		Female	1.356	1.215	-1.041	3.752

Gender by Ability, WIAT Spell Gain Scores T0-T2

Group	T0 Ability	Gender	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
control	Below average	Male	3.812	1.357	1.137	6.488
		Female	9.107	1.450	6.247	11.967
	Average	Male	-3.368	1.761	-6.840	.103
		Female	-.640	1.535	-3.666	2.386
intervention	Below average	Male	6.195	1.199	3.832	8.558
		Female	4.069	1.425	1.259	6.879
	Average	Male	3.071	2.051	-.973	7.116
		Female	-3.048	1.675	-6.350	.255

Gender by Ability, BPVS Gain Scores T0-T2

Group	T0 Ability	Gender	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
control	Below average	Male	4.000	3.530	-2.959	10.959
		Female	5.250	2.790	-.252	10.752
	Average	Male	-.574	1.151	-2.844	1.695
		Female	-2.000	1.177	-4.320	.320
intervention	Below average	Male	1.375	2.790	-4.127	6.877
		Female	-2.286	2.983	-8.167	3.596
	Average	Male	-.229	1.139	-2.475	2.017
		Female	-2.455	1.190	-4.801	-.109

Appendix 10: City by study condition

City by study condition BPVS

Condition	City	T0 M(SD)	T1 M(SD)	T2 M(SD)
0	D	93.31 (8.782)	92.47 (8.320)	91.84 (8.39)
	L	98.20 (11.562)	98.19 (9.762)	98.64 (10.33)
1	D	94.91 (8.449)	92.27 (7.656)	93.21 (10.82)
	L	94.21 (10.789)	95.12 (11.266)	94.08 (10.77)

City by study condition Phonemic Awareness

Condition	City	T0 M(SD)	T1 M(SD)	T2 M(SD)
0	D	30.68 (10.031)	35.77 (8.780)	36.31 (7.38)
	L	34.74 (7.507)	37.80 (5.969)	39.34 (5.49)
1	D	30.36 (9.089)	34.42 (9.485)	38.93 (5.76)
	L	32.17 (7.821)	37.04 (7.085)	39.14 (6.23)

Appendix 11: School attendance as a predictor variable

Absenteeism by Study Condition (simple effects analysis) Gain Scores T0-T2 WIAT SWR

Group	Absent School (Median)	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
control	<= 11	8.480	1.379	5.761	11.199
	12+	2.907	1.327	.291	5.524
intervention	<= 11	7.881	1.270	5.378	10.384
	12+	7.521	1.408	4.746	10.296

Absenteeism by Study Condition (simple effects analysis) Gain Scores T0-T2 York RA

Group	Absent School (Median)	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
control	<= 11	3.522	1.271	1.015	6.029
	12+	2.170	1.257	-.310	4.651
intervention	<= 11	5.161	1.152	2.888	7.433
	12+	4.267	1.285	1.732	6.802

Absenteeism by Study Condition (simple effects analysis) Gain Scores T0-T2 York RC

Group	Absent School (Median)	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
control	<= 11	3.255	1.250	.789	5.722
	12+	3.978	1.264	1.485	6.471
intervention	<= 11	5.345	1.156	3.065	7.625
	12+	2.000	1.307	-.579	4.579

Absenteeism by Study Condition (simple effects analysis) Gain Scores T0-T2 WIAT Spell

Group	Absent School (Median)	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
control	<= 11	4.380	1.209	1.997	6.763
	12+	1.358	1.174	-.956	3.673
intervention	<= 11	4.052	1.122	1.839	6.264
	12+	2.468	1.247	.010	4.926

Absenteeism by Study Condition (simple effects analysis) Gain Scores T0-T2 BPVS

Group	Absent School (Median)	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
control	<= 11	1.420	1.119	-.786	3.626
	12+	-2.352	1.077	-4.475	-.229
intervention	<= 11	-.763	1.030	-2.793	1.268
	12+	-1.646	1.142	-3.897	.606

Absenteeism by Study Condition (simple effects analysis) Gain Scores T0-T2 Phonemic Awareness

Group	Absent School (Median)	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
control	<= 11	4.540	1.098	2.376	6.704
	12+	5.264	1.066	3.163	7.366
intervention	<= 11	8.068	1.010	6.076	10.060
	12+	7.146	1.120	4.937	9.354

Absenteeism by Study Condition (simple effects analysis) Gain Scores T0-T2 Phonic Knowledge

Group	Absent School (Median)	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
control	<= 11	4.360	.679	3.022	5.698
	12+	4.170	.659	2.870	5.469
intervention	<= 11	4.797	.625	3.565	6.028
	12+	3.745	.700	2.365	5.125

Appendix 12: Class year implementation data

Class Year X (1) ORT increases (intervention) (2) WoW dosage (intervention) (3) Absenteeism (intervention & control)

Class Year	ORT Increase		Dosage: Sessions per week		Absenteeism	
	<=2	3+	<= 1.8	1.81 +	<= 11	12 +
1	40 (62.5%)	24 (37.5%)	26 (41.3%)	37 (58.7%)	68 (52.3%)	62 (47.7%)
2	24 (52.2%)	22 (47.8%)	31 (64.6%)	17 (35.4%)	50 (51%)	48 (49%)

Appendix 13: City by city implementation data

Weekly dosage (median) X City

	<= 1.8 sessions p.w.	1.81 + sessions p.w.	phi	p
Dublin	42 (70%)	18 (30%)	.405	.000
Limerick	15 (29%)	36 (71%)		

Days absent (median) X City

	<= 11 days absent	12 + days absent	phi	P
Dublin	66 (52%)	60 (48%)	.014	.833
Limerick	52 (51%)	50 (49%)		

Increases on ORT (median) X City

	<= 2	3 +	phi	P
Dublin	23 (38%)	38 (62%)	.463	.000
Limerick	41 (84%)	8 (16%)		

Appendix 14: Cohort implementation data

Cohort X (1) ORT increase (intervention) (2) Dosage (intervention) (3) Absenteeism (total sample)

Cohort	ORT Increases		Dosage: Sessions per week		Absenteeism	
	<=2	3+	<= 1.8	1.81 +	<= 11	12 +
1	27 (50%)	27 (50%)	32 (58.2%)	23 (41.8%)	58 (51.3%)	55 (48.7%)
2	37 (66.1%)	19 (33.9%)	25 (44.6%)	31 (55.4%)	60 (52.2%)	55 (47.8%)

Appendix 15: School implementation data

School	ORT Increases		Sessions per week		Absenteeism	
	<=2	3+	<= 1.8	1.81 +	<= 11	12 +
1	5 (21.7%)	18 (78.3%)	19 (82.6%)	4 (17.4%)	32 (65.3%)	17 (34.7%)
2	8 (50%)	8 (50%)	6 (37.5%)	10 (62.5%)	16 (47.1%)	18 (52.9%)
3	5 (41.7%)	7 (58.3%)	12 (100%)	0	14 (63.6%)	8 (36.4%)
4	5 (50%)	5 (50%)	5 (55.6%)	4 (44.4%)	4 (19%)	17 (81%)
5	2 (100%)	0	2 (100%)	0	1 (33.3%)	2 (66.7%)
6	8 (88.9%)	1 (11.1%)	4 (44.5%)	5 (55.6%)	11 (68.8%)	5 (31.2%)
7	10 (83.3%)	2 (16.7%)	2 (16.7%)	10 (83.3%)	6 (25%)	16 (75%)
8	16 (94.1%)	1 (5.9%)	1 (5.3%)	18 (94.7%)	26 (63.4%)	15 (36.6%)
9	5 (55.6%)	4 (44.4%)	6 (66.7%)	3 (33.3%)	8 (44.4%)	10 (55.6%)

There was a statistically significant difference between schools in absenteeism ($\phi = .337$, $p = .001$). There was more high than low absenteeism in schools 2, 4, 7, and 9. The differences on ORT increases and WoW sessions per week were significant but the percentage of empty cells violated the assumptions of the test. There were more low than high levels of ORT increases in schools 5, 6, 7, 8, and 9; and in schools 2 and 4 there were equal numbers of low and high levels of ORT increase. There were more low than high average numbers of WoW sessions per week in schools 1, 2, 4, 5, and 9.

Appendix 16: Gender implementation data

Gender by average sessions per week (Median): intervention only

			Average sessions p.w. (Median)		Total	Chi-Square test
			<= 1.80	1.81+		
Gender	Male	Count	19	36	55	phi = .333 p = .000
		% within	34.5%	65.5%	100.0	
		Gender			%	
Female	Female	Count	38	18	56	
		% within	67.9%	32.1%	100.0	
		Gender			%	

Gender by days absent from school (Median): total sample

			Absent School (Median)		Total	Chi-Square test
			<= 11	12+		
Gender	Male	Count	66	49	115	phi = .114 p = .086
		% within	57.4%	42.6%	100.0	
		Gender			%	
Female	Female	Count	52	61	113	
		% within	46.0%	54.0%	100.0	
		Gender			%	

Gender by ORT increase (Median): intervention only

			ORT Increase (Median)		Total	Chi-Square test
			<= 2	3+		
Gender	Male	Count	32	23	55	phi = .000 p = 1.00
		% within	58.2%	41.8%	100.0	
		Gender			%	
Female	Female	Count	32	23	55	
		% within	58.2%	41.8%	100.0	
		Gender			%	

Study Condition by Gender by School Absence (Median)

Group				Gender		Total
				Male	Female	
Control	Absent School (Median)	<=	Count	32	23	55
		11	% of Total	29.1%	20.9%	50.0%
	12+	Count	23	32	55	
		% of Total	20.9%	29.1%	50.0%	
Intervention	Absent School (Median)	<=	Count	34	29	63
		11	% of Total	28.8%	24.6%	53.4%
	12+	Count	26	29	55	
		% of Total	22.0%	24.6%	46.6%	

Gender by Ability by Dosage

TO_WIAT_SWR_85			Average sessions per week (Binned)		Total
			<= 1.80	1.81+	
Below average Time 0 (WIAT SWR)	Male	Count	14	32	46
		% within Gender	30.4%	69.6%	100.0%
Above average Time 0 (WIAT SWR)	Female	Count	28	9	37
		% within Gender	75.7%	24.3%	100.0%
Average/ Above average Time 0 (WIAT SWR)	Male	Count	5	4	9
		% within Gender	55.6%	44.4%	100.0%
	Female	Count	10	9	19
		% within Gender	52.6%	47.4%	100.0%

Appendix 17: Child protection protocol

All research assistants employed on the WoW evaluation must adhere to the CFRC child protection policy.

If a child protection concern arises, it will be dealt with in a manner consistent with the child protection policies of the three organisations involved, the CFRC, Barnardos, and the school in question.

If a concern is to be reported to the HSE, the organisation best placed to progress the reporting procedure should do so and should inform the designated persons in the other organisations in writing or verbally of the action they have taken. The organisation best placed to progress the reporting procedure is the organisation with the closest relationship with the child/ family in question.

In line with their obligations under Children First, each organisation reserves the right to proceed as they deem appropriate if they are not satisfied at this point with the handling of a child protection concern by the reporting organisation.

Procedure for dealing with a child protection concern

1. If an RA has a child protection concern in the first instance the nature of the concern and the communication of the concern to the designated person in the CFRC should be recorded on the Child Protection and Welfare Record Sheet (see below).
2. The RA must communicate the child protection concern to the designated person within the CFRC (Fergal Landy, or in his absence John Canavan) first by phone and then in writing.
3. The designated person in the CFRC will communicate this concern to the designated person within Barnardos (Maura McMahon in Dublin or Debbie Oxley in Limerick), first by phone and then in writing. If the designated person cannot be contacted then Kerri Smith (Assistant Director) and then Suzanne Connolly (Director) should be contacted.
4. The child protection policies of Barnardos and the school in question will then be followed as appropriate.
5. The CFRC designated person will inform Allyn Fives and Noreen Kearns.
6. A written record must be kept in the CFRC of the outcome of the reporting procedure, based on information received from Barnardos.

