Early Screening for Potential Literacy Difficulties
and Intervening in Nursery/Reception

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Volume One
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My thanks go to the educational psychologists in Buckinghamshire and Oxfordshire who participated in collecting data on colour naming times and monitoring interventions in nurseries. I would also like to thank the staffs, parents and children of the nurseries who participated and took part in the interventions. The encouragement and continued interest in this project of my tutor, Dr. Sean Cameron, is much appreciated. Finally, thanks are due to my family for their understanding of my absences whilst this work was completed and written up.
ABSTRACT

Measures of children's naming times for several types of item have been consistently shown to correlate positively with literacy performance at an individual level. In this study, the time taken to name a standard array of colours was found to follow a normal distribution of scores even in children as young as 3 years 8 months. Children with high colour naming times measured against a colour-naming device in nursery were considered to be at risk for potential literacy difficulties. Forty-eight children with the highest colour naming times on the naming device were allocated to four matched groups. Interventions were run with each group in line with current research into possible causative factors for literacy difficulties, in particular; phonological awareness, distinctness of speech representations, phonological memory and a control group (who received as much one to one time as the intervention groups but did not follow a specified programme). All four groups were supported for these sessions by staff in nurseries and nursery classes. As the children were screened at a relatively early age (average 3 years 9 months), intervention on the various programmes took place over three terms.

At the beginning of the study all children were assessed on: vocabulary, ability, colour naming time, and exposure to print at home. Matching of the intervention groups was done on the basis of these measures. Measures of literacy performance were taken after...
one term in Reception classes. This was done for all children in the study and analysed on this basis as well as for children in the intervention conditions to see if any particular approach to support is indicated. Analysis of naming times at 3 years 8 months to 4 years 3 months and eventual literacy performance at 5 years to 5 years 6 months indicated that colour naming time is a suitable characteristic for the early identification of potential difficulties with early literacy development. Within the parameters of this study, analysis of the effects of the various interventions on later literacy performance indicated that there is a significant effect of intervening early. All interventions produced significant gains for all areas of literacy measured: words read, words spelled and sounds known. The 'phonological memory' intervention produced the most statistically significant gains in literacy measures, particularly the number of sounds known in Reception in the 'at risk' group.

The approach described here is thought to be effective because it influences the vocabulary base of young children who are at risk of literacy difficulties (c.f. Scarborough, 1991). It also increases exposure to print as suggested by Stein et al. (2002). The approach provides relevant experiences to develop the underlying systems on which literacy is built from a "top down" and "bottom up" perspective. Such findings appear to challenge some of the beliefs and advice on the teaching of literacy advanced by the Department for Education and Skills (DfES). Just as important in introducing a support approach into whole school practice is the collaborative approach between researcher, teachers and nursery support staff taken in this study.
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CHAPTER ONE
INTRODUCTION

Literacy skills are essential for successful functioning within our society. The importance of literacy to social functioning has increased over the last century and accumulating research evidence points to strong links between failure to read and adverse social outcomes, including higher likelihood of unemployment, poverty, illness and recourse to crime (c.f. Torgessen, 1994). Since literacy is a key life skill both successful and struggling readers merit a high level of research. All modern cultures and economies are increasingly knowledge based. Literature is a store of knowledge that cannot be directly experienced, thus access to it increases experience and knowledge available to the reader exponentially.

Conversely, where according to conventional views knowledge and wisdom fail, in prison populations, although other factors are clearly implicated exceptionally high rates of illiteracy are found. During research carried out into the Dyspel Project, which aims to raise the literacy skills of prisoners, Klein (2000) found 30 to 50 percent literacy difficulties in populations of offenders. A greater rate of literacy difficulties in these populations were found in accounts of their lives as pupils at school, where 56 per cent of prisoners had extra help for literacy but did not identify the help as useful. Additionally, 69 per cent of prisoners regularly truanted from school and 49 per cent had an increased incidence of reading difficulty in their families but this information was often not known whilst they were at school. In the same study 59 per cent of prisoners had misused substances and felt this was a consequence of life problems due to their lack of basic skills. Of the population of prisoners with literacy difficulties, 91 per cent were male. Dyspel has led to improvements in skill in 70 per cent of offenders and their re-offending rate dropped by 82 per cent.
As a response to the general need to increase literacy standards, remedial reading programmes are found in colleges, private industry, and community based centres. Although the importance of literacy has increased and the number of programmes has grown, much of our knowledge of the interaction between language and reading difficulties is not research based. Yet understanding the processes that underlie literacy and language is essential as such knowledge may not only identify factors which precipitate literacy difficulties, but also possible compensatory mechanisms. Early experience, approaches to teaching literacy, and current remediation therefore merit investigation.

Recent research into the heritability of reading (c.f. Stevenson, 2003) indicates that where difficulties in literacy learning are encountered there is often a strong genetic component. He claims that 60 per cent heritability can be attributed to genetic factors in the efficiency of the processes on which literacy is built. However, this is a gross accumulation of all of the biological influences on literacy and fails to take into account the differential effects of maturity on the systems involved. Maturity is brought about by change in the biological systems and although this process is biologically driven it can be held back by lack of experience. There has been little systematic investigation of the environmental influences on the biological systems involved in reading difficulties. Much research, (discussed later), points to a developmental sequence amongst the underlying sub-systems involved in literacy. These sub-systems are based in perception, language and other aspects of cognition (attention, memory), which are equally vulnerable to appropriate and sufficient experience to bring about development. Pennington and Lefty (2001) argue that because of the robust family and heritability influences on reading difficulties indicated in research, longitudinal studies of young children with family risk factors are possible and such studies could illuminate the
interaction between genetic and environmental risk factors. Answers to these questions have important public policy implications because of the high and increasing demand for literacy in the global economy. Hence, early identification and intervening with children at risk for literacy problems is an important goal for educators.

Two major environmental influences on literacy; exposure to print and rhyming skills, have been investigated in populations with strengths and weaknesses in literacy skill. Such studies have helped to outline the developmental path towards literacy. Literacy rests on several interconnected sub-systems that are all influenced by biology and experience. Some of these, such as sight and hearing have long been implicated in literacy development, others, such as attention, memory, and the influence of language acquisition are less well understood. Those sub-systems exerting a more physical constraint on literacy development such as sight and hearing, are often referred to as having a ‘bottom up’ influence on literacy development. Everyday experience is required to enable these sub-systems to develop to maturity. Language, attention and memory are often described as ‘top down’ influences affecting literacy development. They have a less immediately obvious influence on literacy development. The experiences required to mature each of these sub-systems and the contribution of the systems on literacy development is less obvious and less well researched, although the typical sequence of language development is better understood.

Research into the development and support needed for visually impaired, blind, hearing impaired and deaf people has enabled us to understand the influence of sight and hearing on literacy. Attention per se has only been researched with respect to the short-term memory deficit experienced by some people with literacy difficulties. Although language delays and difficulties are positively associated with literacy delays and
difficulties these have often been investigated from a speech/linguistic rather than an educational perspective.

Environmental influences have also been studied from the perspective of remedial programmes created to address literacy difficulties (c.f. Bradley & Bryant, 1983). More recently Hatcher et al. (2004) have pointed out that school-based programmes are based on what is understood about the sequence of development of sub-skills for literacy. What is relevant, but less well understood, are the strands of linguistic development important for the successful development of literacy. Two of these are now viewed as critically important: phonological development, which projects on to word decoding and the development of vocabulary and syntax which influences reading comprehension.

Language development starts very early in infancy when the child learns to categorise speech sounds according to the pattern typical in its first language. This leads to the analysis and use of new words. A precise phonological representation of words is needed in the development of phonological awareness (the ability to detect the phonemes making up words). Phonological awareness has been shown to be crucial for literacy in a plethora of studies, see especially Bradley and Bryant (1988), Byrne et al. (1991), Hatcher et al. (2004). Scarborough (1998) reported that higher levels of development of vocabulary and syntax are significantly positively correlated with better literacy development but these aspects of language to literature are less researched and understood. They have important implications for vocabulary exposure in different social environments and informal literacy socialisation.
Set against this background the studies described here use a very quick and easy marker, colour naming times, to identify children who are likely to have early literacy difficulties. Children as young as 3 years 8 months on entry to nursery can name standard sheets of colours to give an indicator of whether more support for the development of the sub skills on which literacy is based is needed. Once identified in this study the children’s development into literacy was supported via three different language-based interventions and a fourth group were paid an equal amount of attention but without following a specific language/literacy programme. The different interventions focused on speech, rhyme or phonological memory. The outcome effects of the interventions on the development of early literacy were measured at a later point. The theoretical links between language and literacy are set out in the following literature review and will also be explored in the discussion section.

For the sake of clarity, the Review of Literature that follows is divided into three sections to examine background literature in areas contributing to the pilot and main study described here. These are: literacy and literacy difficulties, screening and Baseline Assessment, and interventions to support the development of literacy.
CHAPTER TWO
LITERATURE REVIEW

2.A LITERACY AND LITERACY DIFFICULTIES

2.1 Introduction

While a considerable minority of children experience difficulties with literacy, not all of these can be described as specific learning difficulties/dyslexia. There is broad acceptance of the British Psychological Society’s (1999) definition of dyslexia (see below) but there is not yet a complete understanding of all of the possible underlying causes of literacy difficulties/dyslexia. Explanations of literacy difficulties have spanned several theoretical (and often conflicting) perspectives and have been investigated using many methods, not all of which complement each other.

There is a substantial body of research into the remediation of literacy difficulties and while each investigation or series of investigations may seem to have a clear rationale and outcomes that seek to inform the debate or attempt to resolve practical problems, causation studies do not generate automatic solutions. Similarly, remedial programmes may not be clearly linked to or may even ignore research findings. Rutter (1998) attempts to explain the complexity of this area by suggesting that professionals working in the field did not start with a clear organising concept to bring together understanding of the area and then name the concept, instead when dyslexia/literacy difficulties have been identified in children attempts are made to match these with possible underlying causes. Much debate has centred on the definition of dyslexia with clear guidance being given by the British Psychological Society. "Dyslexia is evident when accurate and fluent word reading and or spelling develops very incompletely or with great difficulty". (British Psychological Society, 1999, p. 18).
This definition of dyslexia, put forward by a working party of the Division of Educational and Child Psychology of the British Psychological Society cuts through some of the confusion noted above and aids both identification and investigation by forming a useful functional description of dyslexia. The definition focuses on literacy learning at the word level and implies that the problem is severe and persistent despite appropriate learning opportunities: there are no exclusionary criteria. Indeed, the working party adopted the view that the research into dyslexia intended to seek causes, whereas the area of specific difficulties has adopted a functional view, examining what people can do. The definition was timely, and working from this base, psychologists and educational researchers have attempted to move towards unifying frameworks for the understanding of literacy development and literacy difficulties. The definition has helped to increase awareness of the need for research into remediation as well as causation. However, there is still a long way to go in understanding the causes and remediation of literacy difficulties as they appear to be complex, difficult to investigate and interactive. The area is complex because it involves various biological and psychological aspects of development that are affected by experience. Currently there is no one explanation that fits all of the information gleaned from research over many years. Factors identified as important in literacy development are language development and experience (Blachman 1997, Wolfe 1991), exposure to print (Lundeberg 2002), and method of instruction (Hatcher 1997, 2004; Solity 2000). This literature review will focus on two aspects of literacy development, phonology and naming skills, and outline several others before describing remediation studies.

Phonological development is clearly an important factor in literacy development (see Snowling 2000 for a review). During the last twenty years there has been much research into phonological aspects of literacy and the contribution of language experiences and
development has been overlooked, particularly naming skills, which have been shown to be a strong predictor of later literacy functioning by Denckla and Rudel (1976), Blachman (1984), Wolfe (1991), Kirby et al. (2001). Clearly, there are interrelationships between phonology and naming skills and this thesis suggests that ‘naming’ may be another necessary skill for literacy learning. The research described in the current study investigates the importance of naming skills to the early stages of reading acquisition. Discussion of the interventions carried out for this study also illuminates the importance of language development in the processes concerned with literacy.

2.2 Models of Literacy Development
All children need help in developing the same skills to develop literacy. Different children need different amount and types of help to improve their skills. Stanovich (1991) demonstrated that the difficulties characterising unexpected failure in achieving literacy have similarities regardless of the ‘ability’ of children. Stanovich (op.cit.) found that participants with literacy difficulties who were matched for ability showed weaknesses in phonological segmentation skills suggesting that these skills were causative of the literacy difficulties. Using various measures to identify the weaknesses in sub-systems required for literacy, several studies have produced this finding, (see Pumfrey & Reason, 1991, for a review). Stanovich et al. (1984) matched good and poor readers for IQ and found differences in phonological skills between the groups. ‘Ability’, as measured by standardised measures of intelligence has been found to correlate significantly with literacy performance by others and accounts for a significant amount of variability in literacy performance in many studies (see Coltheart, 1987, for a review). If difficulties in any of the sub-systems on which it rests ‘ability’ not IQ is thought to contribute by enabling alternative compensatory strategies to develop.
Significant differences in working memory and naming automaticity were found between good and poor readers by Bowers *et al.* (1998). Many other researchers have used different measures of phonology to investigate their effect on literacy performance. It is important to understand how the various performance measures used by different researchers fit together. Such a model would not only help to understand how the various processes and systems involved in literacy fit together but also how they vary over time during the development of literacy. To explain the processes held to interrelate in literacy, several researchers have produced useful stage or phase descriptions of its development. All of these sequences are compatible. Adapted from the various stage-models is a diagram below that allows comparison between models.

Table 1.

*Comparison of stage models of literacy development*

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<th>Model</th>
<th>3 – 5 years</th>
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<th>7 – 9 years</th>
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<tr>
<td>Frith (1985)</td>
<td>Logographic</td>
<td>Alphabetic</td>
<td>Orthographic</td>
</tr>
<tr>
<td>Goswami (1994)</td>
<td>Rhyme/Onset/rime</td>
<td>Fluency</td>
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<tr>
<td></td>
<td>Analogy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ehri (1997)</td>
<td>Pre-alphabetic</td>
<td>Partial and</td>
<td>Consolidated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>full alphabetic</td>
<td>alphabetic</td>
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All of the factors suggested by the above models are both interactionist (acknowledging the influence of experience on the child's reading performance) and developmental (viewing literacy as a facility that develops over time). Each of the broad phases in the above models can be described in more detail particularly by the literacy behaviours...
2.3 Reading as a complex process

According to Frith, reading and spelling develop out of step with each other but are at the same time interdependent in their development. Logographic, alphabetic and orthographic strategies in turn exert an influence on learning. These three strategies are very different from each other and each requires different forms of underlying mental representation. Logographic or sight word reading is taken to be the earliest phase, this is when children perceive words as wholes through personally memorable and visually distinct features, a good example being the distinctly shaped 'M' in the McDonald's logo. Indeed, McGee et al. (1998) were forced to abandon a study when they identified 5000 three year olds who knew that capital 'M' stood for 'hamburgers' or 'McDonald's' but could not name the letter or give the sound that it made! Secondly, the alphabetic stage of print processing emerges as letters of the alphabet are learned by their visual shape and name or sound. At this phase the beginnings and ends of words recognised in reading and writing are 'semi-phonetic' as sound to symbol associations are learned. Several researchers, (for example, Bradley, 1989; Hatcher et al., 1994; Solity, 2000), have produced evidence that this is the phase where sight-to-sound correspondence should be taught explicitly to improve literacy outcomes for children.

The final or orthographic phase of reading has been defined as "the process of reading sight words by setting up connections in memory between the entire sequence of letters in spellings and phonemic constituents in the word as they are pronounced" (Ehri, 1997, p.166).
Figure 1. Interactive Processes in Literacy Development. (Frith, 1985).

READ

L

LOGOGRAPHIC STAGE
Word recognition and writing on basis of salient graphic features

O

ORTHOGRAPHIC STAGE
The child grasps the nature of English word formation and can read & spell at the level of the skilled literate person

WRITE

L

L

ALPHABETIC STAGE
Reading and writing are based on letter - sound & sound - letter relationships.

L

A

Scribble

A

O

O
By the orthographic phase the reader can short circuit the letter-by-letter phonological conversion by processing strings or chunks of letters, which correspond to phonemes. Letter sequence to sound chunk matching becomes increasingly accurate and this is reflected in spelling performance. Next, combinations of two letters that might give the same sounds are memorised and finally any exceptions to spelling rules are mastered. Fluency is achieved when this sight-to-sound decoding becomes instantaneous. Clearly then, any inability to perceive, match, store, retrieve or integrate any element in this model would lead to 'odd effects' or failure in the literacy process.

The acquisition of reading skills is complex and not fully understood. Much research has focused on the alphabetic stage of literacy development, specifically phonological development. For example, Bradley and Bryant (1983) demonstrated that when more work is done on children's phonological skills their literacy outcomes improve whilst Stanovich (1988) demonstrated that struggling readers have poor phonological skills. The ability to reflect on the sound structure of words at the phonemic level is critical to the development of the alphabetic principle that allows children to decode (read) words, especially those that are novel. Where the conversion from logo-graphic symbol recognition to alphabetic coding (sight to sound) fails, it produces difficulties in literacy and is held to be due to a failure to establish, distinguish between, or convert sounds to representations of the phonemes. Weaknesses in the phonological processing components contributing to literacy difficulties have been identified in all the special populations studied. It is now accepted that underlying many types of literacy difficulties are phonological processing difficulties. Snowling (1994) has described dyslexia as a core phonological deficit.

There is evidence suggesting that the development of literacy is no different in typical
populations and those that have difficulties. Seymour (1998) suggests two populations of children with literacy difficulties: those with delays in the overall reading process as a result of affected sub-systems for literacy and those where a sub-system is unable to function well and compensatory mechanisms can not be found or learned to support it. For example, if phonology is affected, literacy will be overly reliant on logographic processes and alphabetic elements are likely to become confused. This has given rise to much debate about whether all literacy difficulties should be treated as one group or whether sub-groups with auditory or visual processing difficulties should be identified to enable more specific research on treatment for them. However, according to Stanovich (1991) individuals with different levels of phonological skill may also vary greatly in their level of print exposure. He contends that while low print exposure might not have very dire consequences for a reader with high level of phonological coding skills (when such a reader does open a book, phonological coding enables the reading process irrespective of the inadequately developed orthographic skills), the situation is probably different for a reader with depressed phonological skills. Stanovich et al. (1998), Sylva et al. (1999), and Hatcher et al. (1994 and 2004) have all advanced the interactionist position that without efficiently functioning phonological coding processes, a system designed for compensatory processing would actually draw more on orthographic knowledge. If orthographic knowledge is lacking this may be in part due to inadequate exposure to print.

Ellis (1984) describes these two areas of influence in the development of literacy is the notion of a ‘dual route’ or ‘double deficit’ in information processing causing the difficulties seen in people who have literacy problems. One area of weakness is held to be phonological awareness or ‘sublexical processing’ and the other is in the area of word retrieval/access or ‘lexical processing’. However, analysis of the relative
prevalence of these sub-types varies according to the researcher and the methodology used for analysis, see Lovett et al. (1994). Controversy has arisen over whether there are different types of severe literacy difficulty or whether the double deficit it linked by a mediating mechanism such as working memory. The different patterns of association between weaknesses and literacy performance might also be a reflection of lack of experience of reading as previously discussed. Literature on other factors contributing to literacy will reviewed before the role of naming skills in literacy.

2.4 Investigations into the underlying causes of literacy difficulties

Investigation of the literacy process has proceeded at every level and into every process represented on Frith’s model of the development of literacy (see Figure 1). Details of relevant research are discussed from a ‘bottom up’ and ‘top down’ perspective and then underlying mechanisms that could be postulated in linking top-down and bottom-up explanations are discussed before screening and Baseline Assessment and the research studies that attempt to intervene to alleviate such difficulties.

2.4.a: ‘Bottom up’ explanations [Physical Systems]

i) Eye Movements

Several studies, see Brooks (2002) for a review, have noted the association between eye movement difficulties and severe literacy difficulties but there is very mixed reporting of the incidence of these within the population of people experiencing such difficulties. The most commonly reported difficulties are with stable vergeance and saccadic eye movements. Stable vergeance is attained when one eye is dominant and both eyes work together overall. Stable vergeance is held to be important because it is linked to magnocellular functioning, which is the brain control mechanism for detection of visual field changes. For reading this is the detection of shapes representing print on a page as the eyes sweep over them. Stable vergeance develops in line with reading skills but
figures from Stein et al. (2000) suggest only 20 per cent of children referred to orthoptic clinics show evidence of unstable vergance and a reading deficit. Another form of eye movements are the saccadic movements or lateral ‘shudder’ of the eyes, which is very slight but creates the visual field change required in order to detect print. Significant differences have been found in the variability of responses of saccadic eye movements of dyslexics and controls. Fisher and Hartnegg (2000) reported that 3 to 8 weeks of training for children with eye movement difficulties raised their performance in line with controls but there is no systematic research on whether this improves the literacy outcomes of children with literacy difficulties.

ii) Phonological Awareness explanations [Speech perception]

A large body of research has highlighted the importance of phonological skill in literacy. Competent phonological analysis, characterised by the ability to switch attention from meaning to an analysis of the acoustic characteristics of words has been demonstrated from a number of research paradigms requiring word/sound identification and or manipulation. Proficiency on such tasks can reliably discriminate good from poor readers (Stanovich, 1988) and can be used for predictive purposes in pre-schools (Bradley & Bryant, 1983). Talcott et al. (2000) have suggested that phonological representations in memory are held to be a result of either mechanisms responsible for higher-level linguistic functions, such as the perception of speech segments, or from more basic auditory processes such as those engaged in following acoustic modulation in speech.

Since measures of phonological awareness are strongly intercorrelated, this suggests a common factor, (c.f. Yopp, 1988). Reported correlations in Yopp’s studies are impressive and research which appears to show that the training of phonological
awareness skills (auditory categorisation) can raise literacy attainments add more weight to the case for phonology as a causal factor in literacy performance (see Bradley, 1985). However, there are also studies where gains in phonological awareness and processing skills do not produce faster or more accurate recognition of words (for example, Korhonen, 1995; Kirby et al., 2001). Solity (2000) and Hatcher et al. (2004) have shown that the key difference producing gains in other areas of literacy through phonological skills training is the inclusion of appropriate visual cueing or visual processing components (compared to teaching phonological tasks alone).

The addition of visual cues gives an extra route for the recognition, understanding or accessing of what is to be learned. For example, Olson et al. (1997) conducted a sophisticated experiment comparing the effects of two interventions with children with identified literacy difficulties. One group received small group support in the form of the provision of unknown syllables or words while they were reading. The other group received instruction and computer support for an equivalent amount of time but the instruction was on phoneme awareness and decoding using an auditory discrimination programme. Both groups made gains in word recognition but despite the increase in phonological awareness and decoding in the group in which these had been targeted, word recognition gains were not significant for either group. This study may be contrasted with Bradley’s (1985) original work on simultaneous oral spelling where children were helped to work out each word using plastic script letters and then wrote and practised the words, that is, said each word out loud and wrote it down twice. Bradley and Bryant’s (1983) training study demonstrated the superior effect on later reading of sound classification training when accompanied by plastic letters, compared to sound training alone. The explicit association of phonemes with letters may provide a more distinctive and accessible representation of sound and letter name knowledge as it
becomes a structure for sound representations. What seems to be the issue here is the matching of sound segments to their visual representations. This will be influenced not only by identification of sounds and the efficiency of the matching process but also by other processes that are more heavily influenced by visual systems such as recognising and remembering the shapes representing the sounds. It will also be influenced by language capacities, giving a verbal label to a visual representation. Both of these latter capacities are evidenced in and have been tested by the use of naming speed measures (which are discussed later).

Research showing that intervention using programmes to enhance phonological awareness skills are successful with the majority of individuals abound, for example Bradley and Bryant (1985), Bradley (1989), Hatcher et al. (1994 and 1997), Yopp (1988), Solity (2000). Similarly several programmes exist for developing phonological awareness in children from entry to Kindergarten onwards, for example Lundberg (1988), Burn and Fielding-Barnsley (1991), Adams et al. (1998). These programmes consist of activities targeting phonological skills such as: initial and final sound activities, phonemic segmentation, listening, rhyming, identifying sentences and words, manipulating syllables.

All of these programmes have been demonstrated to have a positive effect on phonological analysis skills and later literacy performance. Foorman et al. (1997) have also demonstrated that such a curriculum could enhance the phonological awareness skills of language-deprived children over controls during the Kindergarten year. A specific programme exists in this country that targets phonological awareness skills in nursery, ‘Learning to Read with Nursery Rhymes’ by Wilson (1995). In the main study described later a group of matched subjects with high colour naming times received this
programme of training for phonological awareness using the nursery rhyme programme and the effect of this on later literacy measures was compared with the effect of other interventions.

iii) Orthographic Sensitivity [Visual processing]

In an analysis conducted by Stanovich (1991) a high correlation between measures of orthographic skill and reading ability remains after accounting for the large amount of statistical co-variance with phonological ability and after removing variance attributable to individual differences in print exposure. However, according to Ehri (1992) orthographic and phonological processes rarely operate separately because difficulties in detecting visual changes hinder the ability to extract information about letter position when analysing print visually. Interestingly, sequential visual processing, which has a time component, was found by Cestuck and Coltheart (1999) to be positively correlated with non-word reading, which itself is a sensitive measure of phonological skill. These authors use their evidence to argue that phonological processing affects orthographic processing but is not sufficient to enable the identification of words both processes being necessary and neither being sufficient alone. It is possible therefore that non-word reading taps into the sound/sight matching process and rests on adequate phonological processing.

In an experiment to test sensitivity to changes in auditory and visual stimuli among 32 ten year olds without identified literacy difficulties Talcott et al. (2000) found strong correlations between ability to detect auditory and visual changes and literacy performances. In their study, orthographic skill co-varied with coherent motion detection, which is taken to be a measure of visual magnocellular function. The magnocellular network of cells in the retina and visual cortex is important in visual
search and accurate letter position encoding and is thus important in reading. Individuals who cannot fixate or show stable vergence are at risk for literacy difficulties and visual problems that will need to be addressed as early as possible. Talcott et al. (op.cit.) found that sensitivity to changes in visual stimuli accounted for 78 per cent of the variance in reading skill and 63 per cent in spelling skill whilst the phonological sensitivity test only accounted for 5 per cent of the remaining variance in reading and 7 per cent of the remaining variance in spelling. In this study orthographic and phonological abilities represented 10 per cent of what was going on in skilled literacy but the authors note these may be more important in early literacy development. However, they stress that cognitive abilities and experience are the most important factors in the process of becoming literate. Estimates of the contribution of orthographic processing to reading vary between 10 to 78 per cent (Talcott et al., 2000): and 7 to 20 per cent (Goswami, 2002).

Subjects in the Talcott et al. (op. cit.) experiment who showed low sensitivity to detecting audiological information (small changes in frequencies at 2 Hz and 240 Hz) had poorer literacy skills. Segmentation of words into their constituent phonemes is required to match them with their written representations for phoneme to grapheme translation. Phonological analysis draws on auditory representations of the sounds that each letter stands for. These phonetic changes are signalled by changes in sound frequency and amplitude, which are processed by the auditory system. The researchers conclude that highly accurate processing of temporal change by the auditory system is therefore likely to be important for successful development of phonological skills. They explain their findings as follows:
Detection of the slower modulations in speech are necessary for speech perception and therefore for the development of phonological skill. These results are consistent with other findings that show that poor readers have a developmental delay in acquiring sensitivity to the rhythm in speech and that the effects of speech perception on reading are likely to be mediated by phonological awareness. (Talcott et al., 2000, p.256).

iv) Distinctness of phonological representations [Speech representations]

Talcott et al. (2000) noted that phonological analysis draws on the auditory representations of sound represented orthographically by letters. If the representations recorded in the auditory system are remembered as indistinct it is inevitable that difficulties in transfer between the two will follow. Several survey studies have pointed out that children with severe difficulties with literacy also have specific difficulty with phonological processing, for example, Rack et al. (1992), Segal (1993). These specific problems persist in adult dyslexics as noted by Lefly and Pennington (1991). A study by Elbro et al. (1998) directly tests the influence of distinct or indistinct language on the development of literacy. In this study the children of dyslexic parents (a high risk group for the development of literacy difficulties) were compared with children of parents without literacy difficulties. A battery of measures was administered at 6 years. These included a measure for the phonemic distinctness of words spoken by the children and this was compared with literacy performances two years later. Measures used to compare the at-risk and not-at-risk groups were: linguistic awareness and various measures of the manipulation of sounds within words; language abilities including: phoneme discrimination, phonological short-term memory, articulatory accuracy and deficiency and phonological representations. Other measures taken included: picture naming accuracy and speed, phonological distinctness, basic cognitive abilities,
receptive vocabulary, non-verbal intelligence, family background.

In the Elbro et al. study (op. cit.) a phonological distinctness test was added to measures that had been used before in similar studies. The test was designed to illicit children's most distinct pronunciation of single words. Puppets were used and the children told that the puppets had speech difficulties. The children were asked to teach the puppet the most distinct pronunciation of target words. The target words to be pronounced were also cued by pictures. The experimenter showed each picture to the child and mispronounced the label for the picture on behalf of the puppet. The child was then asked to teach the puppet the correct pronunciation by pronouncing the word as clearly and precisely as possible. Having spoken to the puppet each child was asked to say the word again. The experimenter then pronounced the word as the child had done and asked if this was correct, if not, the child was given a third attempt to teach the puppet. There were 9 target words (e.g. 'crocodile', 'ambulance'), all within the active vocabulary of 6 year olds and all with more than one conventional pronunciation. Three scores were obtained for each word; accuracy, distinctness and proximity to the written form. In analysing all results using a regression model, three measures were found to contribute independently and statistically significantly to a prediction of severe literacy difficulties later. They were; letter naming and phonemic awareness from the test battery and distinctness of phonological representations produced in speech, that is, 'less distinct' scores in expressive language at pre-test produced lower literacy scores later.

Elbro's study found a small but significant 'new' effect of the distinctness of sound representations on later literacy. The number of children in the study is not large (91) but this is accounted for in the statistics calculated and strong effects are still found for letter naming, phonemic awareness and distinctness of phonological representations as
predictors of later literacy difficulties. The study can be criticised because the children of dyslexic and non-dyslexic parents were pre-tested under wholly different circumstances, one group at home and the other at school. Post-testing occurred two years later for both groups and despite many variables being measured there could have been other intervening variables affecting the literacy outcomes produced as this was not a control study.

The authors comment that their results should be interpreted with some caution as those children deemed dyslexic were designated very early at 7 years and no other factor was used to assign to group other than parental difficulties with literacy. (However, as Scarborough 1998 notes, many studies have shown that early 'diagnosis' almost always persists into adulthood.) Finally, the results of Elbro's study have never been replicated elsewhere. The original study was conducted in Danish which is as phonetically and orthographically complex as is the English language. Given the above criticisms, if a larger study were possible and the findings replicated it would add weight of evidence that the distinctness of phonological representations may have a part to play in setting the foundations for the phoneme to grapheme translation required for literacy. Elbro et al. (1998) explain the effects of early levels of distinctness of phonological representations as follows:

"an indistinct representation may serve its purpose in everyday communication perfectly well, but may be very hard to segment into phonemes and use as the basis of further manipulations", p.53.

This phenomenon may lead to the sort of patterns seen in individuals with literacy difficulties. Of particular concern is that a behaviour that loads significantly on to
literacy performance at 6 years of age, that is, variations in distinctness of speech leading to representations which are unhelpful to phoneme identification, manipulation and grapheme matching, do not usually come to the attention of speech therapists or other adults to be remedied.

In a longitudinal study of children at risk for literacy difficulties, Scarborough (1991) noted that many children who go on to develop severe literacy difficulties make a high number of pronunciation errors of consonants at 30 months compared to controls. Elbro et al. (1994) reported that people with persistent literacy difficulties make more confusions between similar sounding words on receptive vocabulary tasks than do normally reading individuals, even after differences in word knowledge, educational level, and amount of reading are taken into account.

The distinctness of phonological representations is of direct relevance to literacy development as orthography is mapped onto phonological representations during its development. According to Rack et al. (1994) the automatic extraction of grapheme/phoneme correspondences above the level of single letters may be directly dependent on the quality of phonological representations. Thus, an intervention based on distinctness of language representations was created for one group of children who had high colour naming times in this study.

v) A Critique of ‘Bottom Up’ Research Studies

The studies set out in the preceding section have identified difficulties with processing the orthographic features of print. Such difficulties may be due to faulty visual processing or to imprecise matching of sounds to orthographic units, that is, because of mis- or inappropriate learning or precise timing mechanism effects. (For example, ‘H’ is
Traditional studies in this area involve controlled investigations comparing subjects with literacy difficulties and matched age (or ability equivalent) subjects without difficulties. Tests of reading pseudo words (taken to have a loading on phonological processing, e.g. 'wug'), and exception words (which have regular phonics but are rare so are taken to have a smaller loading on phonological processes, e.g. 'lent'), are administered and results compared. Data analysis demonstrates a high level of variance attributable to phonological processing in the groups with literacy difficulties and a reduced level of variance attributable to other processes, see Coltheart (1987), Castles and Coltheart (1993), Torgesen et al. (1991).

Critics of such studies have noted that errors could occur and may have an effect on the interpretation of results due to: artefacts of the measures chosen, statistical analysis used to demonstrate relative contributions of different aspects of processing, and the interpretation of the likely causes of the poor functioning in the processing adding to the variance. Taking each criticism in turn:

- Concerns about stimuli chosen in studies centre on debate that pseudo words are assumed to have a higher phonological processing component than exception words. An inability to read either type may be due to inadequate phoneme to grapheme or matching processes. This may occur as a result of delayed or faulty processing, but it may also be caused by insufficient exposure to print thus contaminating the results obtained.

- As above, individuals who are matched on their level of phonological skill may vary greatly in their level of print exposure. Low print exposure may not have much effect on a beginning reader with high levels of phonological skills as these will support the matching process. However, pupils with poor
phonological skills will have to compensate by orthographic analysis. Limited print exposure means that this analysis will be compromised. In short, pupils with poor phonological skill will also fail to develop orthographic skill, a process that Stanovich (1986) described as 'the Mathew effect' (where those who have get more and those with less gain less).

- There are concerns about the groupings subjects are assigned to in these studies. Stanovich et al. (1997) pointed out that the criteria by which the subjects with literacy difficulties are assigned to different groups in studies actually produces various sub types of processing difficulties. This means that the various effects found which lead to an analysis of differences in processing types can be deliberately created by the research design.

2.4.b 'Top down' explanations [Cognitive processes including language]

i) Language studies

An area of research that informs theorising, remediation and the possible prevention of literacy difficulties is that of speech and language development. A large amount of this research is summarised in Blachman (1997). Investigations that have focussed on the relationship between speech and reading have provided critical insight into the factors influencing early reading ability. Language difficulties obviously represent a difference from the norm of language development (even if the norm is difficult to describe because of the considerable diversity in the rate of which children acquire language). Since there is no general agreement on the criteria that define a language difficulty, estimates of numbers of children with difficulties vary with the criteria used. Burden et al. (1996) gave an estimate of seven per cent for children with language difficulties in a population survey of all children at 36 months of age in Cambridgeshire.
of language-based skills in all aspects of the literacy process seems well established, (see Lundeberg, 2002). Scarborough (1991) showed from a retrospective analysis that at 30 months, children who went on to have severe literacy difficulties had a vocabulary base equivalent to those who did not experience difficulties later but they used a restricted range of syntactic devices and made more speech production errors. By 36 months and by an even greater delay at 42 months their vocabulary development lagged behind controls and syntactic difficulties persisted.

Over many years two areas of enquiry into literacy difficulties from a language development perspective have been pursued. One is concerned with linguistic processing and phonological awareness, the other is concerned with word retrieval as evidence by naming tests. Both language analysis skills and rapid naming ability are related to early reading success, (see Wolf et al., 2000, for a review).

**ii) Phonological awareness from a language perspective**

Phonological awareness is an awareness of the phonological segments in speech and is defined by Snowling (1980) as "the ability to reflect explicitly on the sound structure of spoken words", p. 725. These segments are more or less represented in an alphabetic orthography. The results of a large body of research based on the theoretical framework of the need to convert phonemes into orthographic representations for reading has produced evidence that;

- Children who lack phonological awareness are likely to become poor readers, (Bradley & Bryant, 1983);
- Instruction that enhances phonological awareness has a facilitating effect on beginning reading and spelling and is particularly effective when combined with
instruction that connects the phonological segments to letters, (Byrne & Fielding-Barnsley (1991), Hatcher (1997);

- Instruction that emphasises the alphabetic code promotes accuracy and fluency of word identification skill that are essential to becoming a proficient reader, (Stanovich, 1986; Vellutino et al. 1991; Hatcher (1997 and 2004).

Despite the established role of phonological awareness in literacy, important gaps in knowledge remain, especially:

- the efficiency of tasks to intervene to develop phonological awareness.
- what reading practices follow directly and build on phonological awareness.
- what other phonological factors play a role in literacy, for example, establishing, differentiating and retrieving phonological information.

iii) Vocabulary

Literacy is essentially a language-based activity and language development begins a long time before children utter their first words. According to Kuhl (1993) infants develop mental maps for the speech sounds in their mother tongue. Equipped with these sounds, one of the major dispositions in childhood is to learn to understand and used new words. Humans have a passive vocabulary of about fifty thousand words by the time they leave school. The task seems enormous but fortunately all languages are segmented into a limited set of phonetic categories (the phonic units varying from between 20 to 40 depending on the language). The large number of words to be learned is made up from combinations of phonetic units that follow a set of rules for each language. For example, onset and rime units are a basic rule in making up words in phonetic languages.
Vocabulary development has been studied longitudinally in ‘normal populations’ and those experiencing or anticipating difficulties, for example, the children of dyslexic parents. Locke (1997) studied the language development of infants where at least one parent suffered from dyslexia as these children are known from transgenerational studies to be at high risk of developing similar difficulties, (Borstrom & Elbro (1998) showed that 40 per cent of children with dyslexic parents showed similar difficulties). In the Locke study (op.cit.), comparison of non-risk infants with infants at risk found an early pattern of babbling in the ‘risk’ group that was not as rich as controls. This indicated a less elaborate phonic segment system. Scarborough (1998) studied a similar risk group and confirmed that vocabulary development was slower amongst children at risk for the severest literacy problems. Elbro et al. (1996) demonstrated that ‘at-risk’ children had significantly lowered precise phonological representations of words compared to those deemed to be not at risk.

iv) Linguistic Environment

Other environmental factors which might prevent the use of speech segments apart from risk because of parental history are: untreated middle ear problems, passive smoking, neglect, poor caring and poor medical treatment. On identifying pronounced differences in vocabulary amongst three-year-old pre-schoolers in an area of the United States, Hart and Risley (1995), closely analysed the linguistic environment of the children though regular home visits and carefully recorded parent to child communication from 8 months to 36 months. They sampled the number of words children were exposed to and found that family differences were dramatic. Children of parents with higher education had been exposed to about thirty million words up to the age of three years whereas for children of parents on social welfare average exposure was about ten million words. The quality of language directed to children in different homes varied hugely too. Their
conclusion was that whatever the genetic influences on language development it is also hugely influenced by social and environmental factors.

As previously discussed, the influence of adequate phonological awareness and skill on later literacy performance is one of the most robust findings in developmental cognitive psychology. Fortunately it has been shown that even where it has proved impossible to influence the home environment or where a child is identified with weak phonological skills on entry to pre-school it is possible to develop phonological skills to a sufficiently high level to meet the demands involved at the next stage of literacy development even outside the context of formal reading. For example, Lundeberg et al. (1988) and Adams et al. (1998) have both developed programmes of daily games and exercises in groups which include: listening, rhymes, play with sentences and words, discovering initial sounds and carrying out segmentation of words into phonemes. These programmes have very specific effects on phonological skills and Lundeberg (op. cit.) demonstrated that a trained group out-performed a controlled group on reading and spelling measures for the following four years until the age of 7 years.

One central argument of this review has been that although phonological awareness is a critical pre-requisite for the acquisition of word recognition skills, it is not the only one. Phonological awareness alone will not bring about the automatic recognition of print required to enable fluent reading. Other factors come into play in developing automatic reading, for example, visual and semantic processing are both required. All of these types of processing require practise to develop and mature. If there is any phonological weakness it will primarily affect the beginning stage of reading acquisition and the effects may become cumulative. There are difficulties in predicting and interpreting the pattern any particular weakness would lead to in literacy since different components on
which literacy is based seem to have their impact at different stages and in different areas of literacy. Another source of complexity is that various sub-systems involved influence each other reciprocally. This pattern of complexity in literacy development not only makes it hard to interpret research findings and theorise about the influence of any particular component on the whole process, it also makes it difficult to design interventions, especially those aimed at prevention.

v) Naming Speed

A study by Pennington and Lefly (2001) illustrates some of the important mitigating influences on literacy development and provides some markers for the developmental sequence involved in language to literacy development. They reported on a three-year longitudinal study comparing children at high risk for literacy difficulties who did and did not develop such difficulties. Every six months, Pennington and Lefly took measurements of language, ability, phonological and literacy performances from the summer before children entered Kindergarten until the end of second grade, between 5 and 7 years of age. From their analysis the writers argue that since reading has not existed for much of human evolution and despite phonological awareness being the main predictor of later literacy at five years, a broader processing difficulty may exist in younger children.

A longitudinal study of this nature allows variations in factors attaining significance over time to show through. In this study language and phonology measures were more closely related to literacy performances at 5 years and 5 years 6 months than beyond this age, ($p < .001$). A significant pair-wise group effect found in analysis was that high risk children who go on to develop literacy delays scored significantly lower than other children on speech perception measures at 5 years 6 months. Naming speed measures
stayed high for all at-risk children throughout the study, with those for children who developed literacy delays remaining the highest. Children in the high-risk group who did eventually have literacy delays were significantly higher on implicit phonological measures, such as naming speed, than those who did not develop delays. Finally, another discriminator between those who did develop literacy delays and those who did not was the number of items recalled on a verbal measure of short-term memory at all ages. Thus, memory, language and phonology were all implicated in literacy development. When compared to eventual literacy outcomes, changes in predictors for literacy could be tracked over time.

For all the children in this study who went on to develop literacy difficulties (whether at risk to or not) there was a clear pattern of phonological awareness as the strongest predictor of literacy outcome at age 5 years, and this shifted to letter-name knowledge as the key predictor of literacy difficulties by 5 years 6 months. This is consistent with other findings, for example Yopp (1988). If we return to Frith's (1985) diagram, (Figure 1), of the broad developmental stages in literacy this finding is consistent with the transition from logographic to alphabetic coding and also other research indicating that the alphabetic code needs to be taught specifically, see Baddeley (1986), Hatcher (1997). These stages in literacy development are also, to some extent, dependent on orthographic processing as suggested by Stanovich (1991) and Stein et al. (2000). That is, visual symbol recognition and matching are important as well as naming the orthograph.

Kirby (2001) has demonstrated that the relationship of naming speed to reading comprehension is through its shared variance with both accuracy and speed of word recognition. Blachman (1984) noted than speed of colour naming in Kindergarten is
correlated with how many letter names a child learns that year. Those children who named letters more automatically at 6 years of age also learned more words and recognised those words more quickly than poor readers recognise the few they knew. Kirby believes that serial naming speed provides an early simpler approximation of the reading process. However, the processes involved in naming are complex. It is a complex ensemble of attentional, perceptual, conceptual, memory, phonological, semantic, and motoric sub-processes that places heavy emphasis on precise timing requirements with each component and across all components. However, as Wolf et al. (2000) have shown naming speed is less affected by reading experience than other measures of phonology and orthography.

Figure 2, overleaf, illustrates the complexity of naming visual representations and the extent of the processing speed requirements (PSRs) required for each of the processes in naming what is seen. The whole process involves attention, perception, cognition (concepts), memory, lexical access, and articulation. Additional components that may influence the integration of visual and representational information are affective factors and input from other senses. Thus visual information is translated into articulated names. The complexity of the processes involved in naming make it a different cognitive task than phonology but phonological codes have to be accessed to be able to 'name' letters/words.
Figure 2. Processes involved in Naming - from perception to articulation. (Wolf et al. 2000).

Key: *PSR = Processing Speed Requirement
Despite the reliable findings and measurement of slow naming speed in people with severe literacy difficulties, this finding has not been integrated into explanations of literacy acquisition. Indeed, Wolf et al. (2000) described this area as "... speculation, evolving knowledge, and an intense need for further study", p.401.

One purpose of Figure 2 is to give a visual heuristic for understanding the complexity of the requirements underlying naming speed. It suggests that access to the phonological code in naming is important but that phonological processes are only one subset of the many processes involved. Normally the whole process of naming of a visually presented item takes 500 millisecs. This illustrates the processing speed requirements of each individual sub-process in 'average' functioning. Thus naming is a different cognitive task from phonology but seems to be related to it. Recognition of visually presented stimuli comes first, that is, cognition is required first and then the phonological code to enable the name of the stimulus to be accessed follows. This view of the phoneme/orthographic matching process which is required in becoming literate and needs to be carried out within a time frame has given rise to the notion that literacy difficulties could be caused by faults in the precise timing of sub-processes required and this will be affected if any of the systems are underdeveloped.

vi) Precise Timing Mechanism

Slow naming speed is implicated in failure to learn to recognise words quickly. Stanovich (1988) suggests that the processes responsible for learning sight words involve the automatic, non-intentional induction of orthographic patterns from print. Thus anything that disrupts this automatic process, such as a fault in coding or timing of any of the components described above, will produce less than perfect functioning. This rapid and automatic matching of orthographs to phonemes requires precise timing.
Wolf (1991), has called this the Precise Timing Mechanism and suggested it can be measured by naming speed, which precedes the phonological processing that is necessary for full literacy. Figure 2 shows all of the processes involved in the production of letter sounds, words and their time requirements.

Effects of slower and less precisely timed letter recognition may be direct or indirect. Even skilled readers must process the letters in a word and thus slow encoding will affect reading speed. This is not a feature of poor phonology as several researchers have noted intact phonology coupled with low reading speed/accuracy, for example, Ehri (1991), Bowers and Wolf (1998), Treiman (1997). If noise in the system is caused by imprecise co-ordination of visual and phonological information it might mean that more exposure to either is needed to construct the appropriate representation, yet as already suggested, poor readers are less likely to attempt to read. Thus the effects of slow naming speed on literacy could be primary or secondary with primary effects due to inefficient processes co-ordinating phonological and orthographic representations together and preventing one becoming a reference for the other. Secondary effects would be on opportunity (exposure) and practise in establishing the basic codes and thus on the completeness and quality of the representations made.

vii) Auditory memory and the phonological loop

Language disordered children have significant difficulties with immediate auditory memory and have a very reduced immediate memory span, Gathercole and Baddeley (1996). The researchers explain that such individuals cannot establish phonological representations because the store in memory is too small to allow a full impression to be formed and remediation is by repetition of the stimulus. In their study the difficulties seen in language-disordered children could not be explained as a consequence of
general verbal ability, speed of articulation or reading. Although according to Johnston et al. (1987) a poor auditory memory span is associated with lowered reading ability in people with reading difficulties a poor immediate auditory memory is not a sufficient feature to distinguish between poor reader/dyslexics and equal ability younger readers (Johnston, 1982). However, the measure commonly use for immediate memory span is reciting number sequences and this does not distinguish between various phonological aspects of memory. The common effects found in subjects with limited immediate auditory memory is explained by the considerable amount of shared variance between phonological memory and vocabulary growth noted by Gathercole and Baddeley (1996) who postulate a shared underlying mechanism that seems to have a greater effect when children are younger. It seems that speech, phonology and vocabulary must be closely linked by aspects of short-term or working memory, particularly in the early stages of literacy development.

Baddeley (1986) explains the links between vocabulary, speech and phonology as a component of working memory and describes them as ‘the phonological loop’. The phonological loop is responsible for the storage, analysis and building of phonological representations from language leading to both incremental phonological abilities and also a working model of the syntax of the mother tongue and vocabulary. Scarborough (1991) reported that at 30 months children who went on to have severe literacy difficulties showed significantly more speech production errors and had a restricted range of syntactic devices compared to controls. By 36 months their vocabulary was also affected and remained so. Gathercole et al. (1997) showed that after phonological memory variance is removed the biggest indicator for new word learning is current vocabulary. These researchers suggest that the phonological loop is responsible for vocabulary learning as a result of its sensitivity to phonological characteristics.
There is considerable evidence to suggest the role of phonological awareness and naming speed in literacy but also considerable uncertainty as to whether they are part of a common storage mechanism during language acquisition. However, in a previous study, Legg (2000) showed that colour naming alone was a sufficient predictor of eventual literacy difficulties at 7 years 6 months.

viii) A Critique of 'Top Down' Research Studies

The importance of language-based skills in all aspects of the literacy process is well established (see Lundeberg, 2002), but critics of the studies set down in this section have noted that errors could occur or results may be misinterpreted due to: reliance on correlation analyses in interpreting results; research on 'abnormal' populations; retrospective analyses leading to distortions in data; inference drawn about causation from remediation studies; lack of precision in results and interpretations because the progress of 'at risk' groups studied is not tracked or accounted for; models used to explain results are new or speculative and there is as yet insufficient research to validate suggestions to take the field forward. Taking each of these criticisms in turn:

- Many of the studies cited here use statistical analyses based on a correlation of measures taken at the outset of the study and outcome measures after intervention or over time, for example, Pennington and Lefly (2001). This may be the appropriate analysis to use but correlation does not imply causation and thus it is difficult to decide which aspects of underlying cognitive processes or environmental or other factors are contributing to literacy (and this affects decisions on how to intervene);

- Much research into underlying cognitive processes or the contribution of linguistic processes to literacy is carried out on populations showing difficulties
and inference is then made about 'normal development', for example, see especially Gathercole and Baddeley (1996). Whilst this may be valuable in part it may also lead to a restricted view of influences on literacy. Some of the research is even done retrospectively on data collected and this may raise questions about accuracy of data used, (see Scarborough 1991);

- Inference is drawn from remediation studies and used to imply causation of literacy development and difficulties, as for example, in Hatcher (1994) and (1997);

- There may be false results and interpretations drawn from these results due to lack of tracking and adjustments made to data on account of those children identified who do not go on to develop a difficulty with literacy and similarly those not identified who do, (c.f. Pennington and Lefly, 2001);

- Models to explain findings are new or speculative and as yet there are few similar studies to validate these findings or the models suggested, as for example, the model suggested by Wolf et al. (2000).

Despite the above criticisms of research into top-down (or language-based) explanations of literacy development and difficulties, there is overwhelming consensus in the field that phonological awareness skills are important and that naming speed measures are associated with word identification and reading comprehension.

2.5 Postulated connection between top down and bottom up explanations of literacy processes

Several studies, discussed in this review point to the persistence of a naming deficit over time for children who experience literacy difficulties, even if surface difficulties resolve, for example, Korhonen (1995), Solity (2000). Denckla and Rudel (1976) noted
that naming speed difficulties can be identified as early as 3 years 9 months. Even at this early developmental stage, Blachman (1984) has shown that colour naming speed measures are significantly correlated with five of six reading measures at 8 years. (Naming of objects is significantly correlated with three of the six reading measures at 8 years).

Longitudinal studies that have tracked children's literacy performance for up to six years share the same predictive finding between naming speed measures in pre-school and later literacy performance. More importantly, these investigations have demonstrated that naming speed correlates to the language based or semantic aspects of literacy sub-systems. In a six year study, Kirby et al. (2002) tracked 79 children from Kindergarten (five years old in Canada) to the end of Grade 5 (11 years). These pupils were pre-tested on: phonological awareness, blending onset and rimes, blending phonemes, phoneme elisions, sound isolation, colour and picture naming, figure memory from the Das-Naglieri cognitive assessment system, spatial/verbal relations from the same battery and letter knowledge. In later grades they also measured: word attack, word identification, passage and reading comprehension. Factor analysis showed results that were consistent for decoding, reading comprehension and spelling. At each age level, the phonological awareness and naming speed factor scores added significantly to the overall variance.

The effect of phonological awareness on later literacy was greatest in Kindergarten and Grade One, declining after this. Naming speed, on the other hand, was weaker (though still significant except for word attack) in Kindergarten and Grade 1, but had a much stronger effect in later grades. The authors suggest this might be due to an increased reliance on orthographic processing with age or that kindergarten phonological
awareness becomes less valid as an index of later phonological processing. Kirby and colleagues showed that Kindergarten phonological awareness and naming speed were able to predict subsequent reading development well and even though they correlated moderately, they made independent contributions to the various literacy measures. Phonological awareness had most impact in earlier grades and naming speed prediction increased in later grades. Previous literacy performance had an effect, but not as strong as the influences of phonological awareness and naming speed measures at the outset. These results were consistent with other studies where the changing statistical influence of phonological awareness and naming speeds over time has been interpreted as indicative of changes from phonological, through alphabetic to semantic coding used during the course of literacy development.

Kirby et al. (op.cit.) also analysed their data according to strengths and weaknesses in the principal influences on the literacy development, phonological awareness and naming speed. This gave them four groups: both areas affected (the double deficit group, denoted by DD); phonological awareness only affected (PAD); naming speed only affected (NSD); phonological awareness and naming speed intact or normally achieving (NA). When sorted into these four groups, it was possible to track subject’s literacy performance over the course of the six years of the study. The outcomes were as would be predicted with NA group achieving well and DD group achieving poorly. PAD children did poorly at first but then their performance rose to the level of NA children. The NSD children did poorly throughout. NSD and DD children were barely distinguishable, showing literacy delays of two years. The authors concluded that:
"the effects of naming speed is more intriguing. Individual difference in it prior to formal reading instruction are still moderately associated with reading success five years later, in spite of controlling for general ability and letter knowledge. Our result suggests that there is more to the naming speed effect than exposure to print". p.5.

Kirby et al. (op.cit.) consider that naming speed is more a measure of automaticity or semantic skill and should be added to early screening devices to help identify children whose literacy difficulties may go beyond phonological weaknesses, that is, they need more support to achieve phoneme to grapheme matching or to build the compensatory language base to use semantic processing.

This completes the review of relevant research into the sub skills on which literacy is built. The literature on screening and Baseline Assessment is reviewed next as these are the most likely procedures to which colour naming times could be added, if proven to be a useful identifier of children at risk for literacy difficulties. (This is explored in the pilot study described later.)
2.6 Background

Successive governments in the 1970’s and 1980’s moved towards greater accountability and scrutiny across Education. In particular, the Education Reform Act (1988) brought in the National Curriculum with its highly structured approach to the delivery of the curriculum and assessment procedures at regular points. Such assessment data were (ostensibly) to provide progress data to enable parents to make informed choices about schools and to allow teachers to use the information to plan for children, thus raising standards. However, such data and follow-up assessment results can also be used to compare the progress of pupils at similar schools, and to calculate the ‘Value Added’ by a particular school. The final component of the raft of assessment points to be put into place was to ‘baseline’ children’s skills at school entry.

In 1996 the Schools Curriculum and Assessment Authority (SCAA) together with the DfEE published ‘Desirable Outcomes’, a curriculum framework to guide provision of experiences for young children that lead towards the Early Learning Goals (ELGs). ELGs are loosely defined levels of attainment to be achieved by the end of the Foundation Stage of education, at that time taken to be at statutory school entry. By 1998 there was a perceived need for ‘baseline’ assessment to be made ‘quantitative’ so that comparison could be made between this and assessment results at seven years, thus making not only pupil progress measures possible, but also comparison between achievement made by pupils at similar schools.

The suggested approach to ‘base-lining’ seemed quite different to the ‘assessment’ methods at school-entry in operation at that time. These were largely a mix of formative assessment for teaching and evaluation purposes and screening procedures to identify
pupils with special educational needs (set up largely as a result of the 1981 Education Act). Screening procedures are common in the Health Service as there is a belief that as many aspects of medical therapies are unsatisfactory, earlier diagnosis may make therapy more efficient. The research into screening devices in Education does not necessarily lead to this view since most are fraught with measurement problems and long-term follow up studies after use are rare (see Lindsay 1985). Lindsay and Wedell (1982) examined a large number of screening devices and concluded that many were lacking evaluation data despite having been in use for several years at that point. They point out that even for ‘The Infant Rating’ scale (Lindsay 1981), which it is claimed improves on predictions of difficulty in the child population, some 50 per cent of children passing this screening device later failed a standardised reading test. Some of the other screening-tests reviewed fared worse than this, and these authors suggest that all screening devices should quote the percentage of children who fail the device but who perform at or above expected levels on later criterion measures (false positives) and that this should be compared with the non-identification of those who later turn out to have problems (false negatives).

2.7 Technical Characteristics

Lindsay (1995) noted that the technical inadequacies of screening instruments can be compounded by the use of correlation analyses to examine the relationship between screening measures and later performance because those who do well or badly on screening devices tend to give high significant correlations whilst those on the borderline of ‘at risk’ show low non-significant correlations and have more fluctuating developmental status compared to their peers. This may lower the predictability of later difficulties. He adds that whilst this may not be an issue across a single intake of pupils, it may be across all provision within the geography of a local authority as it does not
give any basis on which to plan resources to meet support needs. Lindsay and Lewis (2003) also note reported instances of schools artificially lowering their baseline scores to attract funding and increase their value-added scores!

Despite protest from early years practitioners and researchers, SCAA (now renamed the Qualifications and Curriculum Authority), recommended criteria and procedures for the accreditation of baseline assessment schemes. These are known as The National Framework for Baseline Assessment (1997c), and set out the core areas to be assessed. They do not specify developmental sequences of skills, criteria for awarding points, the total scoring system, weighting or details of core or other areas to be assessed. The National Framework is not an assessment system that would allow comparisons between schools or across local authorities. While this may be a technical weakness, it does have the advantage of preserving locally agreed means of profiling and planning for individual children. In fact, it may amount to a refocusing of purpose away from the potential measurement of value-added and back to the identification of need. When Lindsay, Lewis and Phillips (2000) conducted a survey of the use and perceptions of Baseline Assessment they found that there were concerns over training for administration of the Baseline, the use of the data collected, validity and reliability, lack of parent involvement, confused purpose and low sensitivity to SEN. However, in general, schools, LEA’s and parents valued the Framework for Baseline Assessment even if Lindsay and Wedell (1992) and Lindsay (1995) criticisms concerning the technical inadequacies of school-entry measurements remain.

2.8 Research into Baseline Assessment and correlation with literacy performance.
A few attempts have been made to examine the correlation of specific baseline assessment schemes with later literacy outcomes and one study has examined the
consistency of assessment of writing as a particular aspect of literacy across 42 schemes. Tymms (1999) examined the Pre-School Indicators of Performance Scheme (PIPS) and found that it showed a correlation of $r = .7$ with later literacy and numeracy outcomes. The predictors for later literacy used in this scheme are: number of letters, rhyming, repeating words and shape matching for children near to school entry. This accounts for 30/40 per cent of the variance in later performance. Lindsay and Desforges (1999) also looked at specific schemes including ‘The Infant Index’ and ‘Baseline Plus’ (a later version of The Infant Index), on which research has provided good technical data. These researchers compared measures on these devices against performance at the end of Key Stage One for a large sample of children and use as early measures of literacy development: ratings of enjoyment of books, knowing how books work, recognition of individual letters/words in a familiar context, reading from a simple storybook, writing and spelling. Lindsay and Desforges found similar correlations between these schemes and later literacy performances as those reported in the Tymms study (op.cit.). Lindsay (2001) concludes that:

" - - there is a lack of comparability between schemes with respect to their emphasis on language and literacy compared to other areas of development, and much variability between schemes with respect to the three areas of literacy development", p.13.

Lindsay and Desforges (op.cit.) also provided a useful analysis of factors that influenced the ‘baseline’ for the schemes examined in their study. These were that ethnicity and home language had an influence on baseline scores and females were rated as more advanced on the predictors of literacy. They also suspected that pre-school experience had an effect on the baseline, but as the research was carried out in a city where the policy was to develop pre-school provision in areas of highest social deprivation this
had the effect of counter-balancing effects shown. These researchers again warn about
the dangers of using correlations to judge the predictive validity of a screening device
because children who are borderline for risk often have more variable developmental
status and this affects the correlation. It also means these measurements may not be the
best to use for funding-decisions unless the effects persist over time. They also suggest
that gender bias in measurement instruments could be addressed by providing separate
norms for boys and girls and that teachers should be made aware of the different
patterns of development of various groups of children.

Finally, Lindsay, Lewis and Martineau (2004) compared 91 baseline assessment
schemes on the areas the schemes assess and the weightings given to each area within
the screen. They also compared the schemes at the item-level on items for ‘writing’.
The weightings given to literacy in these schemes varied from 24 to 75 per cent with a
mean emphasis of 48 per cent. Comparisons at the item level revealed inconsistencies
across schemes in what was rated and the sequences of skills used to gains points. Many
of the schemes focussed on the child being able to write its name (which is often
achieved before school entry and is usually targeted within the ‘baseline’ period at
school). They also found low inter-rater reliabilities for the assessment of writing across
the baseline assessment schemes considered and note that this raises concerns about
inter-rater reliabilities for the current development of Baseline Assessment into the
Foundation Stage Profile (FSP). Low reliabilities here, together with poor technical
construction of the ‘tests’ will compound the inadequacies of any aggregation of data
for individual children over time, or whole classes, schools or local authorities and this
will affect outcomes and decisions about resources for support.
2.9 Why screen?

Lindsay and Weddell (1982) conclude that there are many problems in the identification of difficulties using screening instruments (and this is the same position for baseline assessment schemes and the FSP) and the general approach may in any case be unsound as screening views the child at one point in time and the environment (provision) around the child may improve (or be deliberately improved through intervention) to enable children to compensate for earlier difficulties. Screening procedures should be followed up by further diagnostic assessment of the individuals identified as ‘at risk’. Lindsay and Wedell (op.cit.) recommend that for children ultimately shown to be in need of intervention, support should be planned according to a series of learning objectives and that these should be properly monitored and will then tell the teacher if the child is progressing or if re-planning the teaching sequence and activities are needed.

Baseline Assessment at the beginning of Reception has now given way to use of the FSP at the end of Year One. The intention is that this ‘assessment’ is for ‘formative’ use although the skills evidenced at the end of the Foundation Stage can form a summative assessment. It will not get round the technical inadequacies of many baseline assessment schemes, if these continue to be used.

Blatchford and Cline (1992) noted the purposes of school entry screening:

- as a basis for measuring future progress
- to get a picture of a group at intake
- to get a profile of new entrants
- to identify children who may have difficulties.

Blatchford and Cline (op.cit.) also suggested areas against which assessment schemes at
school entry might be evaluated; these were: theoretical integrity, practical efficiency, equity and accountability. Lindsay and Wolfendale (1999) have also provided a list of purposes for Baseline Assessment in nine areas to take account of national developments in this area, (see Table 2).

Table 2

*Purposes of Baseline Assessment, (Lindsay & Wolfendale, 1999)*

<table>
<thead>
<tr>
<th>Child focus</th>
<th>School focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early identification of pupils with SEN</td>
<td>Resource planning</td>
</tr>
<tr>
<td>Early identification of pupil’s SEN</td>
<td>Budget determination</td>
</tr>
<tr>
<td>Monitoring progress of all pupils</td>
<td>Value-added analysis</td>
</tr>
<tr>
<td>Identification of targets and learning strategies for individuals</td>
<td>School improvement</td>
</tr>
<tr>
<td></td>
<td>Performance management</td>
</tr>
</tbody>
</table>

Lindsay and Wolfendale’s (1999) list of purposes for Baseline Assessment data adds a ‘school focus’ dimension to the ‘child focus’ purposes of screening devices described by Blatchford and Cline (1992). Thus the two frameworks for the use and comparison of assessment or screening devices at entry to education are not mutually exclusive. However, it is difficult to calculate value-added scores on the basis of the FSP, because the technical inadequacies pointed out by Lindsay (1995).

Given such recognised ‘inadequacies’ of screening, of which baseline assessment and
the subsequently developed FSP are examples, why consider the use of a colour-naming procedure to attempt to identify those children in need of support to develop literacy in the pilot study described here? The reasons set out by Lindsay and Wedell, (1982), are to identify, with caution, and take preventive rather than remedial action via a researched intervention to compensate for and to encourage the 'variable developmental status' of those young children who are speculatively 'at risk' for later literacy difficulties. For very early literacy, what educators also need to know is, should the learning objectives be based in pre-literacy experiences for example, becoming familiar with books and text, or should they be based in developing the child's language, or both? Interventions are discussed in the next sections of the Literature Review.

2.C INTERVENTION STUDIES

2.10 Introduction

Research studies have shown that increasing children's phonological awareness, such as, segmentation skills at the syllable level or improving letter/sound knowledge, will produce gains in literacy performance whatever the age of the children with literacy difficulties (for example, Bradley and Bryant, 1983; Hatcher et al., 2004). Various studies take a differing emphasis on developing various sub-systems that contribute to literacy: phonology, orthography, semantics or a combination of some or all of these. Many studies use literacy teaching strategies, which are based on traditional methods and include new research findings as they are reported, usually findings on phonological aspects of literacy. Unfortunately, with one notable exception, there is also evidence of a time-lag between research into cognitive factors contributing to literacy and reports of new approaches to literacy support in classrooms. Most remedial programmes still emphasise the hugely important phonological skills but pay very little heed to the 1990's research into naming speed, orthography, reading comprehension and the
contribution of language processes to literacy. The notable exception is the work of Wolf et al. (2000) and this will be reviewed later.

2.11 Phonological analysis

One classroom-based study by Byrne and Fielding-Barnsley (1991) demonstrated that on entry to Kindergarten, children learn sounds faster if they are taught to identify phonemes by name (identity) rather than just phonemic analysis skills, (segmentation and blending). At follow-up a year later these same children (matched for verbal ability with a control group) had made significantly more progress in decoding skills than others. Numerous other studies (reviewed in the phonological awareness section) have demonstrated similar effects of raising phonological skills on decoding. However, given the recognised sequence of sub-skills suggested for literacy development within the model presented by Frith (1985), (see Figure 1), emphasis on phonological skills will not be enough. Children have to make the transition into the alphabetic stage of literacy development and there is evidence from several studies, for example, Byrne and Fielding-Barnsley (1991), Hatcher (1994 and 1997), Solity (2000), Kirby (2002), that this stage needs specific support to give phonic representations alphabetic names.

For normally developing readers the alphabetic stage is generally achieved by the end of Year One and may be more difficult to establish later. In a longitudinal observation study of literacy development Juel (1994) noticed that poor readers at nine years had entered Year One with limited phonological awareness and over the subsequent four years their slowness in learning letter sound correspondence and decoding persisted. Juel concluded that the ability to decode at five to six years was an essential early reading skill. This information has also lead to the successful inclusion of reading programmes alongside phonological instruction for five to six year olds in several
successful outcome studies, (Hatcher et al. 1994 and 1997; Vellutino et al. 1996). Although it is more difficult to establish literacy skills later, Lovett et al. (1994) reported that with older children experiencing severe literacy delays including decoding practise alongside phonological awareness training facilitates reading acquisition.

With even younger children, like pre-schoolers and four to five year olds, phonological awareness training has often included instruction in connecting phonological segments to letters (Bradley & Bryant, 1983; Byrne & Fielding Barnsley, 1991). This approach was not formalised by the researchers in these studies as it was not the goal of the studies and seems to have been considered developmentally inappropriate. However, pre-school teachers choose many methods for formalising the link between phonological activities and decoding through instruction about letters and recognition games, as advice of this type is not specifically laid down in the Foundation Stage.

Blachman et al. (1997) describe a specific approach to building on phonological awareness to develop an alphabetic code in Kindergarten (age five to six years). In this study the treatment and control children attended different schools to avoid contamination of controls with treatment activities. There were no significant differences between treatment and control children except in receptive vocabulary and number of sounds named (which were both lower in the treatment group). From February to May of the Kindergarten year, the treatment group received three times weekly 15 to 20 minute sessions on phonological awareness (saying names of and moving discs representing sounds in words, grouping words with shared sounds, learning the sounds and letter names of eight letters). At the end of this phase, the treatment group were well ahead of controls on letter names, sound knowledge, reading phonetically regular words and pseudo words and in their developmental spelling. From May of Kindergarten throughout year one the treatment groups were given reading
instruction in groups of up to nine based on their performance in Kindergarten, that is, reading instruction replaced the regular reading programme. They received 30 minutes a day on a five-step reading programme that continued to reinforce phoneme awareness and emphasise the alphabetic code. The five steps were as follows:

1. Sound to symbol associations, that is, moving a disc to the letter(s) for a sound as the sound is said;
2. Phoneme segmentation and blending skills, for example, ‘c’ and ‘at’ becomes ‘cat’;
3. Automatic word recognition, for example, ‘the’, ‘and’, ‘on’;
4. Reading connected text, for example, ‘The cat sat on the wall’;
5. Short writing to dictation of four to six words and a sentence, for example: ‘the’; ‘dog’, ‘eats’; ‘meat’ and ‘The dog eats meat’.

Control group children received 30 minutes a day on reading/writing and a phonics/spelling programme and all instruction was carried out by the children’s regular classroom teachers and teaching assistants who had been trained on the approaches. The treatment group outperformed the control group on all measures by the end of Year One with alphabetic teaching showing more effect on reading and spelling over time, thus indicating that it requires sustained teaching over time to establish the alphabetic code. At follow up a year later reading performances were equal with the treatment group reading more real and phonetically regular words. The treatment group had worse spelling performances by this stage. Thus the performance of the vulnerable group had been enhanced for a two-year period by the inclusion of alphabetic strategies into their literacy programmes for a year. What is also important about this study is that the children’s regular classroom staff carried out instruction. However, Sylva et al. (1999) found similar effects in this country in a control study with disadvantaged children.
where the use of story books, good quality text and importance given to expressive, fluent reading at a high level of accuracy improved outcomes. Of course, not all disadvantaged children would necessarily have potential literacy difficulties. Hatcher et al. (2004) have repeated Blachman’s (1997) findings in America, that is, for children at risk of reading delay at four to five years, additional training in phoneme awareness and linking phonemes with letters is beneficial to word reading and accuracy.

Solity (2000) conducted a series of studies comparing outcome as a result of traditional pre-National Literacy Strategy literacy teaching with an approach called the Early Reading Research and then Early Reading Research later with the National Literacy Strategy. In phase one schools teaching literacy by traditional methods formed the control group for the Early Reading Research schools but in phase two, comparing the Early Reading Research with the National Literacy Strategy (NLS), no control schools were used. However, by comparison with the National Literacy Strategy Solity added the following components:

- more frequent practice of teaching/learning literacy;
- more emphasis on a sight vocabulary;
- more listening to children read;
- regular assessments;
- feedback on progress to the child.

In Solity’s research, the NLS and the Early Reading Research produced better progress in literacy skills compared to traditional methods of literacy teaching. The Early Reading Research children showed high reading attainments. High achievers from the Early Reading Research schools made less progress overall than similar children in the NLS schools, but they started from a higher point and performed at higher level.
anyway. However, in all schools in these studies, even in the Early Reading Research schools low achievers did not reach the same levels of fluency in reading as peers and did not apply their skills in a wide range of contexts successfully (despite making more progress and achieving performances beyond their chronological age). This latter finding is in line with other research into improving phonological skills in literacy, viz. that intervention improves decoding but not fluency (see Korhonen, 1995).

2.12 Phonological memory

In classroom based research into supporting literacy difficulties emphasis has been put on enhancing support for phonological analysis alongside general literacy teaching, (c.f. Hatcher 1994, Hatcher et al. 1997 and 2004). In the Early Reading Research, Solity et al. (2000) also placed emphasis on orthographic and alphabetic processes as well as phonological skills. These researchers also used short stories and shared reading in the early stages of the teaching of literacy. The results are conclusively positive for the inclusion of varied orthographic/alphabetic material to allow children to transfer phonological analysis skill into the written domain. This is the only school based study where such attempts have been made even though the lack of adequate controls at the later stage of the study can be criticised.

As noted earlier Wolf et al. (2000) attempted to address the fluency difficulties encountered by people who have or have had literacy difficulties. This research was not carried out in schools but because of its relevance to the main study, described later, it is set out here. Wolf et al. (op.cit.) highlighted concerns that although intervention addressing phonological skill improves reading accuracy and decoding skills, it does little to improve fluency and comprehension and comprehension is the real aim of reading. Wolf et al. (op. cit.) created a laboratory intervention to attempt to address
these issues. This intervention is named the Retrieval, Automaticity, Vocabulary Elaboration, Orthography, Reading Intervention, (RAVE-O), and as suggested by the name, it addresses: word identification, word attack, comprehension, visual recognition, auditory recognition, semantic development and lexical retrieval. Additions to the usual types of materials used in remedial literacy programmes in RAVE-O are: orthographic pattern cards, ‘image cards’ which have pictorial representations of at least two definitions of core words, word webs to investigate associations if words have more than one meaning, ‘minute stories’ which are illustrated and help in building comprehension, ‘mystery words’ used in pairs where a partner gives the definition and rhyme clues until the word is guessed, and ‘tickets’ which have quick orthographic or semantic activities to be used at the ends of the sessions. The researchers stressed that their aims were to increase emphasis on orthographic strategies, semantic facilitation and lexical retrieval by comparison with other approaches. The RAVE-O programme was designed to supplement, reinforce and extend literacy programmes that stressed phonological decoding and is intended to run for a minimum eight weeks.

Wolf et al. (op.cit.) completed one intervention study using RAVE-O in which 17 severely impaired readers were matched for reading age with 31 average readers at age 13 years. The controls had significantly better naming speeds and measures of vocabulary depth but the same receptive vocabulary. Pre and post intervention comparison indicated significant gains in word retrieval accuracy, vocabulary depth and naming speed. These researchers have reportedly improved and redesigned the programme for primary pupils, but there is as yet no published evaluation of this version.

There is a paucity of classroom-based studies on intervention to support children with
literacy difficulties. Troia (1999) reviewed 39 experimental studies where phonological awareness skills were taught to children, only 12 involved classroom based interventions. However, despite the multiple factors impinging on complex classrooms (as compared to laboratory research) the same profiles of difficulties are reported in both types of study, namely that decoding may improve as a result of intervention, but fluency does not.

### 2.13 Experience with print before school/nursery

Many studies have pointed to the influence of experience with print – both reading and being read to at home. Lundeberg (2002) claims that the influence of the home environment on language learning and literacy development is beyond doubt. A recent review of all UK based intervention schemes for literacy support undertaken by the University of Sheffield on behalf of the DfES underscores this point, (see Brooks 2002 for a review). Brooks (op.cit.) analysed examples of all types of traditional approaches to literacy support, using ratio gains in skills and the effect sizes in children’s literacy performances. Comparing all the approaches on this basis (taking on board that it is more difficult to involve parents in research on literacy when the outcome measures are seen years later in school), the largest effect size of 35 studies cited was for a family literacy support approach used in Hampshire. In the current study parents were asked to rate the amount of reading at home.

### 2.14 Summary

This completes this section of the literature review literacy development and difficulties.

To recap, the main points in this literature review are:

- Frith (1985) has provided a stage diagram of literacy development which illustrates
the complexity of the processes involved and implies that relevant experiences are needed for arrival at each stage;

- Phonology is a very important factor in literacy as without adequate phonological analysis the sound units of which words are comprised cannot be separated out and matched to appropriate orthographs. Automatic decoding relies on this process of matching phonemes to orthographs. Both phonological skills and orthography are dependent on experience;

- Phonology is not the only factor indicating later literacy performance, naming speed has been found to correlate with literacy development from earlier than phonological measures;

- There is an inter-relationship between phonology and naming skill which is mediated through the development of vocabulary and syntax in young children;

- It is suggested that the ‘phonological loop’ which is part of working memory is the linking mechanism between naming skill and phonology;

- It may be possible to intervene with children who are vulnerable for literacy difficulties to improve literacy outcomes and compare interventions that promote phonological awareness through the phonological loop.

The pilot study is presented next and aims to answer the first research question set out below. The main study is described after this and aims to answer the second research question. The research questions are:

1. Can children who are at risk for literacy difficulties be identified using a colour naming screen at entry to an educational setting, in the ‘Nursery’ year?

2. What type of early intervention provides appropriate support leading to improvements in literacy development that can be measured later?
CHAPTER THREE

PILOT STUDY

3.1 Introduction

The accepted order of development of literacy skills is phonology, alphabetic skill, and with exposure to print automaticity of transfer between phonological and alphabetic codes leading to the orthographic stage. Vocabulary development is known to be slow in children who will develop severe difficulties with literacy (c.f. Scarborough, 1991), and although this can be measured per se its contribution to literacy will be to suppress compensatory semantic processing and lower comprehension, as found by Kirby et al. (2001). These researchers suggest that naming measures are an earlier, simpler approximation of the reading process. However, Snowling (2000) has suggested that they indicate the phoneme to grapheme matching process and thus marry phonological to orthographic processing. Comprehension of what is ‘read’ is difficult to measure by standardised tests during the early stages of literacy development. Tests of word recognition can be used as early literacy indicators. ‘Naming’ tests are traditionally taken as a measure of orthographic functioning, but the demonstration of their early associations, especially with phonological loop functioning, and their persistence over time suggests that they are equally a measure of linguistic processes that affect literacy.

To examine the first research question a pilot study was conducted which ran in two phases. The main objective of the pilot study was to create and trial a developmentally appropriate screening device based on the rapid naming of colours for children at an average age of 4 years 9 months in phase one then at 3 years 9 months in phase two. In 1984, Blachman demonstrated that the rapid naming of colours at age five to six years is related to a wide range of literacy measures at the same age and also later on. The colour naming screen used in the pilot study should be able to identify soon after entry
to school or nursery during the Foundation Stage those children who will need more
support to develop early literacy. Since screening devices differ in the under or over
identification of individuals on the characteristics being screened, a measure of the
sensitivity and specificity of the screen created was examined to judge its effectiveness.

Legg (2000) described a project carried out in a shire county in which 152 children at
average age 4 years 9 months were tested with a colour naming time test and their
literacy performances measured two years later at the end of Key Stage One. This
project found a strong positive correlation between colour naming time and literacy
performance two years later. This study formed phase one of the pilot study to the main
study described later. For phase two of the pilot study, the use of the same colour-
naming device for younger children entering nursery schools and classes was carried out
to see if this was equally useful in predicting literacy difficulties.

3.2 Pilot Study – phase one (Colour naming screen at average age 4 years 9 months)

a) Method

In phase one of the pilot study, data was collected in fourteen schools on 165 children in
spring 1996, and due to attrition, 152 of the same children at the beginning of the
autumn term 1998.

Schools were not specially selected for this research but formed a sample based on the
time available to five psychologists working in one local team. Schools varied in terms
of their catchment areas and the size of the intake of children aged 4 years and 9 months
varied between 4 and 13 children. It was considered ethically appropriate to conduct a
study by means of using a sample of schools and children entering these school as the
schools were a representative of the schools in the shire county (both rural and urban)
and the children of all children entering school in the county at that time, including: the proportion of boys and girls, range of age of at entry, ethnicity*; English as a second language and children from vulnerable groups. As the schools chosen were representative of all schools in the county it was not considered unethical to exclude other schools as although their inclusion would have increased the reliability and validity of findings they were not actually missing out on resources which might benefit children. [* The ethnicity of the pupils in the schools used almost exactly matched the ethnic mix of the general population of Xshire, that is, 98 per cent white, 1.5 per cent Asian, 0.4 per cent African/Caribbean heritage, and 0.5 per cent ‘other’. Of the 152 children taking part in phase one of the pilot study, 147 were ‘white’, 2 were Asian, 1 was German, 1 Norwegian and 1 Chinese. None of the children in the first phase of the pilot study were of African/Caribbean heritage - which is the departure from the ethnic mix of the general population of X shire.]

Data were collected by the attached school psychologist in 1996 and, where possible, by the same school psychologist in 1998. Where necessary, however, other educational psychologists from the same county team were used to complete data collection. Compared to entry data, a few children had left the schools, a further 8 children were absent on either the first or second data collection and one could not name colours, so their results were not used. The size of the final sample was 152 children. To make further correlations between entry scores and later literacy development, the pupils were also pre and post - tested on their picture naming speed from the Phonological Assessment Battery (PhAB) [Research Edition], Frederickson et al. (1997). In the autumn 1998 the same pupils’ reading and spelling ability scores from the British Ability Scales Word Reading and Spelling tests were obtained. Correlations between all measures were computed (see Outcomes). The raw data was inspected for false
negatives (children whose literacy performance was one standard deviation below the mean for the group in September 1998 at average age 7 years 6 months) and also for false positives (children with long colour naming times in spring 1996 but who did not go on to develop difficulties with literacy at the end of Key Stage One).

b) Procedures

i) Contact with schools

In the term before the Pilot Study began the support of schools for this research was sought by the visiting educational psychologist for each school. The Head teacher and Special Needs Co-ordinator were briefed on the project and timeframe and were asked to distribute letters to the parents of the new intake children asking for consent for their children’s measurements to be taken on school entry and again two years later. All parties were assured that any feedback and information that might inform their educational planning would be provided, but such data would be limited until the literacy measurements were available two years later. Each psychologist made independent arrangements to visit the schools to measure the colour and picture naming times of the children within the first three weeks of school entry and their literacy measurements two years later.

ii) Contact with parents

Parents of the children entering each of the project schools in spring 1996 were contacted by the school to inform them of the research and request permission for their children to be included in it. No data were gathered without the knowledge or agreement of parents and data collected were made available to schools for feedback to parents.
iii) Measurement of Colour and Picture Naming times at entry to Reception

As suggested in the Introduction to the pilot study, naming measures are taken to be an earlier and simpler approximation of the reading process by some researchers (c.f. Kirby et al., 2001) and some have suggested that they indicate phoneme to grapheme matching and so marry phonological and orthographic processes together, (c.f. Snowling, 2000). Each child was tested using the Picture Naming section of the Phonological Assessment Battery, Frederickson et al. (1997). They were also tested using the colour naming sheet layouts devised by Denckla and Rudel (1976) but an updated version was created by one of the psychologists in the research group, (see Appendix A for colours sheet and instructions). Children in this study described here were asked to name five colours. (The ages at which the majority of children can name three then eight colours are 2 years 9 months and 4 years 4 months respectively, see Cameron and White, 1987). Any children who were reluctant to participate in the naming (or later literacy) measures were not pushed to do so. Data for each school was entered on a summary sheet for safekeeping until the children’s literacy measurements could be followed up later, (see Data Summary Sheet example in Appendix B).

iv) Outcome Measures at end of Key Stage One

At the beginning of Year Three all of the children whose colour and picture naming times had been measured at entry to Reception in the sample of X shire schools were followed up in their schools by the attached psychologist and repeat measures of colour and naming times taken using the same materials and protocols as used previously. On this occasion the children’s word reading and spelling levels were also measured using the British Ability Scales (II) (BAS) tests, Elliott (1996). These new data were added to the school summary sheets created previously, ready for use in computing the correlations between each measure taken, (see Appendix B).
c) Outcomes

The colour and picture naming times of 160 children at entry to Reception were collected, together with the age of the child in months, their gender, ethnicity, any reluctance to participate and a note of any special need already recorded by the school. Colour and picture naming times, together with word reading and spelling scores were collected for 152 of the same children at the end of Key Stage Two. This enabled comparisons between colour and picture naming times and later literacy performance to be made. The cut-off points for designation of a literacy difficulty at 7 years 6 months were reading and spelling scores of one standard deviation on the BAS tests below the average scores of the whole group or reading and spelling scores of below 6 years.

The naming times for colour naming and picture naming were found to be distributed normally and the picture naming times were normally distributed in the population according to the standardised measures tables available in Frederickson et al. (1997). Reading and spelling as measured by the BAS tests scores were normally distributed by comparison with the statistical tables against which they can be compared. Naming times and literacy measures were interval measurements and all sets of scores had the same variance. The raw score data were thus parametric in nature and a parametric test of correlation, Pearson’s Product Moment Coefficient of Correlation was used to look for associations between naming tasks and literacy performance measures. Parametric tests are more sensitive to significant differences in the factors varying together or otherwise rather than the association being due to chance. Combinations of measures in Spring 1996 and September 1998 were correlated together and are presented in Table 3 below.
Table 3

**Intercorrelations between naming time measures at 4 years 9 months and literacy scores at 7 years 6 months. (Pearson's Product Moment Coefficient, r).**

<table>
<thead>
<tr>
<th>Variable</th>
<th>CN1</th>
<th>CN2</th>
<th>PN1</th>
<th>PN2</th>
<th>R</th>
<th>Sp</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupils ((n = 152))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN1</td>
<td></td>
<td>.57</td>
<td>.78</td>
<td>.51</td>
<td>-.38</td>
<td>-.37</td>
<td>.12</td>
</tr>
<tr>
<td>CN2</td>
<td></td>
<td></td>
<td>.49</td>
<td>.52</td>
<td>-.23</td>
<td>-.23</td>
<td>.12</td>
</tr>
<tr>
<td>PN1</td>
<td></td>
<td></td>
<td></td>
<td>.54</td>
<td>-.37</td>
<td>-.32</td>
<td>.12</td>
</tr>
<tr>
<td>PN2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.29</td>
<td>-.20</td>
<td>.12</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.78</td>
<td>.12</td>
</tr>
<tr>
<td>Sp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.12</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


*p < 0.01 in all cases*

There was no intention in this study to separate out pupils who might later be described as ‘dyslexic’ compared to those who might experience literacy difficulties of a less severe or permanent nature as it was considered that the measures used were administered too early to discriminate between these two groups. The colour-naming screen, as it was used and presented to children near school entry, proved to be significantly correlated with literacy performance at the end of Key Stage One \((p < .01)\).
Correlations between naming speed indicators and literacy performances were negative because naming time increases as literacy performance decreases. The correlations found were all statistically significant and thus colour naming times can be used to identify the potential for later literacy difficulties in children at 4 years 9 months at school entry. The sensitivity and specificity of using such a measure are discussed in the next section. Interestingly, picture naming from the phonological assessment battery, also gave statistically significant results against literacy performances at the end of Key Stage One when administered at 4 years 9 months, and has not previously been examined against this age group. Later, at the end of Key Stage One, colour naming was still significantly correlated against both reading and spelling performances, but picture naming from the PhAB was significantly correlated against reading but not spelling performance in this study. Inspection of the raw data reveals the scores for any children who were identified as having potential for literacy difficulties but did not produce literacy scores of below one standard deviation from the average performance of the group (false positives). It also reveals the scores of those children who scored well enough on the original colour naming task at 4 years 9 months but who went on to develop literacy difficulties, that is, performed at one standard deviation from the group's literacy scores (false negatives). If any screen produces a high number of either false positive or negatives on the characteristic being measured, then its utility would be restricted.

d) Discussion

i) Validity

Face validity is very imprecise when applied to screening devices, as it rests on the judgement of those administering the screen as to whether it is relevant to the issue under examination. More usefully applied to screening tests is the notion of predictive
Validity as it gives information about the accuracy of the test's results, that is, the number of children who are under- or over-referred as a result of using the device.

**ii) Predictive Validity of the Colour Naming measure for later literacy performance**

The predictive validity of the colour naming measure created is obtained from comparison with later measures of the area predicted (literacy) in the same children. For the pilot study phase one, the performance measures were standardised scores on the BAS Word Reading and Spelling Scales and the cut-off point for judging a child would be experiencing difficulties with literacy at a level preventing access to the curriculum was taken as at one standard deviation below the norm for the test at the average age at which literacy levels were measured, 7 years 6 months. Accuracy and thus predictive validity of a screening test is based on the sensitivity and specificity of the test which in turn is based on the number of children over- or under-referred from the use of it. ‘Sensitivity’ refers to the proportion of children deemed at risk who are correctly identified by the test. ‘Specificity’ refers to the proportion of children deemed not at risk who are correctly excluded from further diagnostic assessment. These two measures give the capacity of a screening test to correctly classify children as at risk or not at risk. (The limitations of screening procedures have been alluded to in the Literature Review and will be discussed again in the final chapter.) The sensitivity of a screening test can be computed by comparing the number of true positive identifications with the number of false negative identifications (from inspection of the raw data). Similarly, the specificity of a test can be computed by comparing the number of false positive identifications with the number of true negative identifications, as shown in Figure 3.
Figure 3. Sensitivity and Specificity of screening devices. (After Meisels, 1989).

### Follow-up assessment

<table>
<thead>
<tr>
<th>Screening Test</th>
<th>Intervention needed</th>
<th>No intervention needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>At risk. Refer for evaluation</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Not at risk. Do not refer on</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

- True positives (a)
- False negatives (over referrals) (b)
- False negatives (under referrals) (c)
- True negatives (d)

### iii) Sensitivity and specificity of the colour naming measure for later word reading

Using Figure 3 and inspecting the raw data for colour naming measurements and word reading outcomes, the sensitivity of this screen for identifying later word reading difficulties is 60 per cent and the specificity of the screen for correctly excluding children from further assessment is 33 per cent. The predictive power of the colour naming screen; as it was used here for identifying difficulties in later word reading, is moderate and its specificity is low. This means that if colour naming times were to be used without further refinement, further means of following up those children not identified by the screen but beginning to struggle with literacy should be put into place and/or the cut off point for identification of ‘at risk’ could be re-examined.
iv) Sensitivity and specificity of the Colour Naming measure for later spelling outcomes

Using raw data to compare colour naming measurements and spelling outcomes the sensitivity of the screen for identifying later spelling difficulties is 43 per cent and the specificity for spelling needs is 83 per cent. The sensitivity of the screen for identifying spelling support needs is low and its specificity is high. With current cut off points for identifying difficulties the screen is not particularly useful for identifying spelling support needs but excludes children not in need of this support well.

The sensitivity of the colour-naming screen is 60 per cent for later reading support needs and 43 per cent for later spelling support needs. The specificity of colour naming used as a screening procedure for reading and spelling needs also varies and is 33 per cent for reading and 83 per cent for spelling. The problem of false negatives, where children ‘at risk’ are not identified, is more serious educationally (numbers are included in the sensitivity measure) as these pupils may go on to develop difficulties if not supported. The colour-naming device as used here is more sensitive to potential reading support needs but more specific for spelling support needs. This might be addressed for the screen by adjusting the cut-off point for judging that a child needs additional support downwards to include more of those deemed not to be at risk initially. Children who are identified by the screen as in need of support but do not need it (over-identified) should come to light while receiving support by making rapid progress. Those not identified can be included if the cut-off point for defining difficulty is adjusted as suggested above (and continued vigilance is needed to spot those in need of support who are missed by screening procedures anyway). The different sensitivity and specificity of colour naming as a screening procedure for later literacy difficulties may reflect differential rates of development of the sub-systems on which literacy is built and means that colour naming is a better proxy measure for later reading development than for spelling.
v) Reliability

The exercise would need to be repeated on another and bigger sample of children to increase the confidence with which the effects could be reported and the cut-off point for categorising children as 'in need of support to avoid later difficulties' set lower to capture more of the 'borderline' children who showed up as false negatives here – thus increasing the specificity of the screen. With a larger sample, pupils could also be matched on the basis of pre school experience or ability or colour naming times and interventions to remediate potential difficulties could be tried as in the main study described later.

In this study, no attempt was made to examine reliability of the colour naming device, either inter-rater or test-retest, as the main aim of this phase of the pilot study was an initial examination of whether and what colour naming times would have any predictive validity for later literacy difficulties if used as a screening device without other measures as has been the case in previous studies. Similarly, no intervention was pursued in each of the schools in phase one of the pilot study and in the case of all but one of the schools the same psychologist took measurements at the beginning and end of the pilot study and so inter-rater reliability was not judged to be an issue for examination here. If colour naming were to be used as a stand-alone screen or as part of a wider battery of measures to identify those children in need of further assessment and thus possibly support for later literacy needs it would be necessary to examine the reliability of it as reliability is an important measure for other testers to use in selecting appropriate tests for their purposes. Similarly if screening were to be repeated with a larger number of children, adjustments to administration could be made to test inter-tester reliability for this device and the question could be asked directly of teachers whether or not the materials are easy to use and interpret for pupils at this age, as well
as a useful source of information.

vi) Centre effect

There may have been an effect according to location between the 14 schools in phase one of the pilot study in terms of the progress individual pupils made in literacy and indeed across the whole cohort according to school. As intervention was not part of phase one of the pilot study this was not specifically examined or controlled for at that time.

vii) Practicality and developmental appropriateness

Only one child from the original sample of 165 was unable to name the five colours and the administrators were instructed not to proceed if the child was not able to grasp the test instructions or did not know the five colours used. The screen produced was thus judged by participating psychologists to be developmentally appropriate. Measurement of colour naming times as an indicator of later reading difficulties is practical, only one child in the original 165 tested was unable to name the colours used, and the psychologists administering the naming screen test did not encounter any difficulties. In phase one of the pilot study, colour naming was significantly correlated with both reading and spelling at 7 years 6 months but a more sensitive indicator for future reading difficulties than spelling difficulties. The screen met the objectives stated at the outset of the pilot study, which were to create and trial a colour naming screen to identify those children at risk for literacy difficulties early in their school careers and that the device should be developmentally appropriate.

There are issues with the specificity of the screen as outlined above and this has been noted in brief discussion within this section. The inclusion of such a device in the
Foundation Stage Profile will be raised in the chapter discussing the whole study. The pilot study does not enquire about the various factors contributing to literacy but these are measured and the variance attributable to them on the literacy development of the children in the main study was calculated. Comparison of the validity and reliability of the use of colour naming times for the prediction of likely support needs for literacy development against other research will also be made in the discussion chapter.

If colour naming times were to be used (as in this study) for further research, the sensitivity and specificity of the screening device used would require further work by adjustment of the cut-off point for times used to identify children 'at risk' and recalculation of these aspects within new parameters. The inter-rater and retest reliability would also have to be examined for the screen to be used again so that future users could identify how much variability in measures to expect typically from using the screen. Four years and nine months would seem to be very early to examine whether children need immediate support to further develop the sub skills on which literacy is built at entry to school - but the demands of the formal National Curriculum start at this stage too - requiring most of the curriculum time available. Thus, despite the inadequacies of sensitivity and specificity of the colour naming device at this point and reliability measures not being available, it seemed worthwhile to examine the same issues of identification of risk for later difficulties with literacy at entry to nursery so that, if needed, more time for support throughout nursery education would be possible within the bounds of a less formal curriculum requiring less time for delivery during these years. Re-examining the use of colour naming as a measure to screen children on entry to nursery at average age 3 years 9 months was the purpose of phase two of the pilot study.
3.3 Pilot Study – phase two (Screening at average age 3 years 9 months)

e) Introduction

For this phase of the pilot study the aim was to repeat phase one but with younger children, that is, to examine the predictive validity of using colour naming as a device for identifying those at risk for later literacy difficulties so as to be able to provide support when the curriculum is less formal and allows time for practice of the sub skills on which literacy is built. As for phase one of the pilot study, colour naming is taken as an indicator of the both linguistic and orthographic processes on which literacy rests, for example, Snowling (2000) has suggested that it illustrates the phoneme to grapheme matching process and thus marries phonological to orthographic processing in literacy development.

Phase two of the pilot study was carried out in a different county to phase one. Yshire has over 150 primary schools, many with attached nursery classes as well as eight stand-alone nursery schools. All nursery schools and classes were canvassed by letter to gauge interest in early identification of children who might require support for later literacy and brief details of the proposed project and time commitment required were sent to them. All eight nursery schools and 32 nursery classes expressed interest in being involved in the project. The colour naming materials and simple instructions were sent to each volunteer school together with letters of consent for parents to complete, (see Appendix C). Schools were encouraged to make phone contact if unsure about what to do and several did so, (three required a subsequent visit).
Yshire is a largely rural county with four medium to large centres of urbanisation. Thus the number of children entering participating provisions varied from one to twelve. Of the volunteer nursery venues for the colour naming screen, four could be described as in affluent areas, sixteen as located in deprived areas and the remaining twenty four as in mixed areas. Of the 154 children whose colour naming times were measured, ages ranged from 43 to 47 months with an average age of 45 months at the point at which the measure was taken.

The ethnicity of Yshire varies a little from Xshire, where phase one of the pilot study was carried out. In Yshire 94 per cent of the population were white, 3.5 per cent Asian, 1.7 per cent of African/Caribbean heritage and 0.8 per cent 'other'. The ethnic mix of the population varies greatly in Yshire with all of the non-white/English as a second language groups living in the four centres of urbanisation outlined above. Of the 154 children at the outset of phase two of the pilot study 132 were white and first language English speakers (87 per cent), 12 were Asian of whom two were first language English speakers who had siblings at school and whose English was therefore beyond a ‘beginner’ stage at nursery entry (7.8 per cent), five were from African/Caribbean backgrounds and first language English speakers (3.2 per cent), and there was one child each from France, Italy and Slovenia – all learning English as a second language with not much English at entry to nursery (1.9 per cent). Thus in this phase of the pilot study the Asian, African/Caribbean, and ‘other’ groups were over-represented in the research cohort compared to the general population.
f) Method

The research cohort for phase two of the pilot study consisted of 154 children entering Yshire nursery schools and classes in April 2001. All children entering the participating nurseries at that point were screened as no parent objected to this measure being taken. This was considered ethically sound as the activity was short and developmentally appropriate, the participating nurseries formed a representative group of providers and the children a representative sample of children at average age 3 years 9 months entering nurseries, with a slightly higher ethnic minority groups representation than in the general population of Yshire, as outlined above.

In phase two of the pilot study, measures of literacy were taken earlier in children’s school careers making it necessary to use outcome measures consisting of emerging reading and spelling skills rather than standardised measures. The children were between 5 years and 5 year 6 months at final assessment in the main study and so standardised tests of literacy were not used. Instead, the measures used were the number of sounds known, words read and words spelled from the lists of sounds and words to be learned as part of the National Literacy Strategy, (NLS).

Colour naming times were collected by the staff in the nurseries, supported by their educational psychologist if they had expressed a concern over the procedures (three venues) and after at least one member of staff from all of the participating nurseries had received training for administering the colour naming sheets, (see instructions in Appendix A). Later. Reception staff assessed and recorded the children’s performance on the NLS measures after one term in Reception and returned this data to the researcher. [They had all received training on the NLS and assessment for NLS progress through the county’s Key Stage One and Literacy Adviser and Consultants.]
All of the children in this phase could name all of the colours on the colour naming sheet, even though they were one year younger than the children in phase one of the pilot study, and so all children’s scores were used. However, one child could not be traced from nursery to school at Reception and another had left the area and so their literacy performance measures were not available and this reduced the total number of children in phase two of the pilot study to 152.

g) Procedures

i) Contact with nurseries and nursery classes

Initial contact to gain expressions of interest in the project were made by letter and 40 venues responded. Each venue was asked to send at least one member of staff for central training to use the colour naming sheets to measure the children’s colour naming times. 53 staff attended. The two centres not represented and one other were followed up later with a visit. Letters for the parents of the children shortly to enter the nurseries to give consent for their children’s information to be recorded were given out at that point and distributed to new parents by the nurseries as the children entered the provision. When the children entered the nurseries, summary sheets for entering their colour naming times were sent to the nurseries with a reminder to test the children within the first three weeks and return consent slips to the researcher. No more contact was made with the nurseries until the end of the research, unless there were children attending who had produced high colour naming times and who became part of the intervention or control groups for the main study.

ii) Contact with schools

Mostly the children whose colour naming times had been measured on entry to nursery progressed to the school to which the nursery/nursery class was attached and so new
contact did not have to be made as the children transferred to school. However, in a few cases children moved out of district or attended a different school from the one located near their nursery and so these schools had to be contacted to explain the research up to that point and ask if they would participate in the final stage of data collection – literacy measures after one term in Reception.

iii) Contact with parents

A letter delivered by the participating nurseries made contact with parents. Consent was gained by return slip from the letter. No parent refused consent. Nurseries were encouraged to direct parents to the researcher if there were further queries but none arose. [There was no need to contact parents again as their children entered school as consent was given for data collection throughout the project at the outset.]

iv) Measurement of colour naming time on entry to nursery

The cut off point for colour naming times that signalled children to be at risk of difficulties with early literacy was taken as those with colour naming times in the top quartile of times recorded by the children in the study, or above 102 secs in this instance. Each child was tested by nursery staff using the colour naming sheet layouts devised by Denckla and Rudel (1976) but an updated version had been created by a member of the research group in phase one of the pilot study, (see Appendix A). Any children who were reluctant to participate were not pushed to do so, similarly any child who could not name the colours. Data for each nursery was entered on a summary sheet for return to the researcher for analysis of high and low times to identify those children who might be at risk for later literacy difficulties and so in need of intervention in the main study (see data summary sheet in Appendix B).
v) **Measurement of literacy performances after one term in Reception**

Children were tracked to the school they attended after Reception using nursery report and for a very few the county system for tracking via Unique Pupil Reference numbers. School staff had been trained to assess literacy performance by local authority advisers and consultants and so they were asked to complete the data summary sheets on the children by assessing and entering the number of sounds, words read and words spelled correctly per child from the NLS lists and return the data to the researcher. Cut-off points to signal a difficulty in developing early literacy skills at this point were taken as one standard deviation below the average performance of the whole group for that measure or three sounds known, 2 words read and 5 words spelled (not including the child’s name) at 5 years 6 months.

h) **Outcomes**

The data comparing colour naming times at entry to nursery with literacy performance measures after one term in Reception were analysed using Pearson’s Correlation Coefficient because these data fulfil the requirements for the use of a parametric test. Viz. the data are normally distributed, are interval in nature and that the variance of all sets of data is equal. Parametric tests are more sensitive to significant differences in the factors varying together or otherwise rather than the associations being due to chance. In phase two of the pilot study the correlations between the naming speed measure and literacy indicators were negative because time taken to name colours increases as literacy performance decreases. Results are set out in Table 4 overleaf.
Table 4

*Intercorrelations between colour naming times at 3 years 9 months and literacy measures at 5 years 6 months, (Pearson’s Product Moment Coefficient).*

<table>
<thead>
<tr>
<th>Literacy measure</th>
<th>Correlation Coefficient (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupils (n = 152)</td>
<td></td>
</tr>
<tr>
<td>Sounds known</td>
<td>-.31*</td>
</tr>
<tr>
<td>Words spelled</td>
<td>-.28*</td>
</tr>
<tr>
<td>Words read</td>
<td>-.27*</td>
</tr>
</tbody>
</table>

*Note:* *p < 0.01 in all cases

i) Discussion

Inspection of the data shows that it is normally distributed and that compared to the colour naming speeds of the children taken at 4 years and 9 months in phase one of the pilot study, children generally take a few seconds longer to identify the colours on the naming sheet at 3 years 9 months. Correlations between colour naming times at 3 years 9 months and early literacy measures at 5 years 6 months were statistically significant at less than the *p* .01 level of significance. Thus, the colour naming materials used at entry to nursery at an average age 3 years 9 months appear to identify children at risk of difficulties with early literacy skills in Reception. Inspection of the raw data revealed the number of children who were identified as ‘at risk’ for literacy difficulties but did not experience them at 5 years 6 months (false positives). It also revealed the number of
children with low colour naming times who did have difficulties with early literacy at 5 years 6 months (false negatives).

Whilst these correlations reach statistical significance, the predictive validity of a screening device has to be judged by the number of children over- or under-identified by it. ‘Sensitivity’ refers to the proportion of children at risk who are correctly identified by the test. ‘Specificity’ refers to the proportion of children not at risk who are correctly excluded from further diagnostic assessment. These two measures give the capacity of a screening test to correctly identify children in need of follow-up. The limitations of screening procedures have been alluded to in the Literature Review and will be discussed again in the final chapter.

\( i \) Predictive Validity

Three measures of literacy performance were taken at 5 years 6 months from those children whose colour naming times had been measured at entry to nursery and the predictive validity of colour naming times for each of these aspects of later literacy are set out in Table 3:

Table 5

<table>
<thead>
<tr>
<th>Literacy Measure</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupils (( n = 152 ))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sounds known</td>
<td>83</td>
<td>62</td>
</tr>
<tr>
<td>Words spelled</td>
<td>74</td>
<td>76</td>
</tr>
<tr>
<td>Word read</td>
<td>64</td>
<td>71</td>
</tr>
</tbody>
</table>
Colour naming times as used here to screen for children at risk of difficulty in developing early literacy was more sensitive at 3 years 9 months than at 4 years 9 months. The situation for specificity of colour naming times used to screen for early literacy support needs is more complex in that as used here the screen was less specific for sounds known and words spelled at 3 years 9 months than at 4 years 9 months but more specific for word reading. This is possibly explained by Walley’s (1995) notion of progressive ‘unitization’ of representation of sounds over time from broad segments to individual phonemes before these are mapped across to orthographs in the process of becoming literate.

The sensitivity and specificity of colour naming times used at 3 years 9 months to screen to identify those children needing further investigation/support for early literacy development, particularly for sounds known and words spelled, are respectable amongst figures found for various screening instruments used for several purposes. However, the whole pilot study needs replication, and preferably with a bigger research cohort, before colour naming times used to screen for children in need of further investigation/support for literacy development could be recommended. If this were to be done, it would also give the opportunity to refine the device by examining the cut off points for colour naming times taken to signal ‘at risk’ which would affect the sensitivity and specificity of the device and allow in particular for this to be investigated for word reading as this literacy outcome fares worse from the use of the screen at 3 years 9 months as it stands.

ii) Reliability

No attempt to examine reliability was made, either test-retest or inter-rater. Both are necessary if the colour naming device used here were to be used more widely by others, as users need to know that the measure could be used by different people with similar
outcomes and by the same people on different occasions with similar effect. This allows judgement of the extent to which results produced are from the measure used and how much is dependent on the person using it or the particular circumstances of use.

iii) Centre effect

As the staff of the nurseries and Reception classes took the measurements of colour naming times and literacy measures there may have been an effect due to different people interpreting the instructions and counting times or literacy items. Whether there is an effect of conducting the research in different locations can be better judged if the reliability of the measure being used is known and unfortunately in this study this was not examined. If there is under or over counting affecting the children’s scores, it will also affect the sensitivity and specificity measures calculated for any screen. This likelihood makes it even more important to examine the test-retest reliability and inter-rater reliability of the colour naming times taken at 3 years 9 months in this study. If the colour naming device used here was to be used more widely, it would have to be investigated in terms of reliability and the cut off point used to identify those who might experience difficulties into the future, as this in turn affects the sensitivity and specificity of the measure.

iv) Practicality and developmental appropriateness

It was strongly felt that colour naming was the most appropriate of the naming tasks previously used in other research as the children were a year younger than in phase one of the pilot study and the task is the most developmentally appropriate naming speed task available. Of the 153 children whose colour naming times were measured, all were able to name the colours. Nursery staff found the colour naming sheet and instructions easy to follow and use.
v) Effect of first and second language use on colour naming times

First and second language made no difference to the colour naming times produced by the children. Those with enough proficiency in English used and were scored for using appropriate colour words and those whose English as a second language did not permit them to do this named the colours in their first language. (Correctness of colour words in a first language was verified by first language support in nurseries or by parents.) The naming times of children naming the colours in their first language were normally distributed across the range of times found across all of the children in the study.

The correlations of colour naming times at 3 years 9 months to early literacy measures at 5 years 6 months (Table 4) reached statistical significance in all areas. The table of sensitivity and specificity of the predictive validity of colour naming times at this age for literacy performance after one term in Reception (Table 5) showed variable results. There is greatest sensitivity when colour naming is used to predict ‘sounds known’ but least specificity for this aspect of literacy and so it would be inadvisable to use colour naming for screening to identify support needs without further investigation of the parameters of the device used here or on going monitoring of pupils for this aspect of literacy. For example, the cut off point for defining difficulty at one standard deviation of performance of the whole group at this age could be lowered to include more of those children [false negatives] who would potentially be missed for support at the current cut off point. The situation for the prediction of word reading and spelling at 5 years 6 months from colour naming times at 3 years 9 months is better in that the sensitivity here is relatively high (64 per cent and 74 per cent respectively) whilst specificity is also high (71 per cent and 76 per cent respectively) which means that more children are correctly excluded from further assessment/support and so there would be less opportunity for error targeting supporting to those who need it to develop reading. Kirby
et al., (2001), amongst others, found that colour naming in Kindergarden is a better indicator of later word reading (and comprehension) than other aspects of literacy and suggests this is evidence that it is related to but not the same as phonological processing. These findings from the pilot studies will be further discussed later.

The outcome of phase two of the pilot study was to provide a colour naming screen which could be used with children at entry to nursery to identify those children who may need targeted support to develop the skills on which literacy is based. If this device were to be used more widely, adjustments to the cut off points for identifying children in the ‘at risk’ group would have to be made to maximise the sensitivity and specificity of this screen and the reliability of the device also researched.

Part of the literature review for these studies outlines approaches which have been taken to supporting children with literacy needs but leaves the situation unclear as to which approaches might give the best gains for later literacy performance if provided in nursery. The main study examines the effects on early literacy skills of some approaches to support for children in nursery suggested in the literature.
4.1 Introduction

Identification of those children with high colour naming times at 3 years 9 months (indicating those at possible risk of literacy difficulties) was carried out as part of phase two of the Pilot Study. Attempts at remediation were the goal of the main study. Given the developmental contribution of various sub-systems to literacy and research into several areas, the second research question is:

What sort of early intervention might best provide appropriate support leading to improvements in literacy development, that can be measured later?

Given the areas investigated and suggested from existing research and the normal developmental sequence of change from logographic to alphabetic to orthographic coding in literacy development suggested by Frith (1985) means there are many potential areas in which to intervene and where their effect might be seen in early literacy development. Linking many of the areas of research and ‘bottom up’ with ‘top down’ explanations of literacy development and areas for potential difficulties is the development of phonology. Research into mapping phonological skills to orthography also needs to be taken into account. From current theories of causation of literacy difficulties based in phonology areas for intervention chosen were:

- Phonological awareness as suggested from the work of Bradley and Bryant (1985), Hatcher et al. (1994, 1997 and 2004), Solity (2000);
- Distinctness of phonological representations as suggested by Elbro et al. (1998);
- Phonological memory as suggested by Gathercole and Baddeley (1996).
Research has previously indicated that key factors predicting literacy performance later are:

- IQ and vocabulary (Blachman, 1984),
- exposure to print (Troija, 1999),
- good linguistic development and support (Scarborough, 1991).

(See discussion of the research noted above in the Literature Review – Chapter Two.)

4.2 Method

For this study it was possible to calculate ability and vocabulary measures for the children in the study from nursery Baseline scores and to ask parents to rate themselves as a family on the amount of reading at home. (The rating scale is reproduced in Appendix C).

i) Variables measured at outset at average age 3 years 9 months

At the outset of the main study information gathered on each child consisted of:

- Date of birth/age.
- Gender.
- Colour naming time.
- Nursery Baseline, which gave standardised ability and vocabulary scores.
- Measure of exposure to print at home.

Other information collected on participating children at the outset was: any other distinguishing characteristic: Code of Practice stage, Statement of Special Educational Needs, English as an additional language, poor attendance; the name of the nursery location the child attended; and the name of the nursery class teacher and support staff.
ii) Information gathered later – output literacy measures

Further information was gathered at an age of 5 years 6 months on each child remaining in the study (152). The information consisted of:

- Number of letter/blend sounds the child could name correctly on sight of the orthographic representation.

- Reading (number of words read independently from the National Literacy Strategy List 1).

- Spelling (number of words spelt independently from the National Literacy Strategy List 1).

Other information collected was the name of the school that the child attended and the name of their Reception class teacher.

iii) Ability and vocabulary score description

Baseline schemes measure children’s performances on a range of areas of development. Some Baseline schemes available are recognised and registered by the DfES and others are not. Those schemes, which have been recognized, are based on several years of use and the results they have produced have been used to calculate a nationally standardised scheme. Yshire used a non-recognised but registered (by the DfES) nursery/Reception Baseline scheme so calculation of ability and vocabulary via the national standardisation was not possible. However, the 40 venues in the study agreed to re-score the children’s nursery Baseline against the Early Years Educational Screen (EYES) by Clerehugh et al. (1991). This screen has been standardised by NfER and standardised ability and vocabulary scores can be calculated from the language and early literacy measures taken as part of the screen. Thus the use of the EYES by conversion gave both ability and standardised vocabulary scores.
iv) Exposure to print at home

Exposure to print and reading support at home have been identified in many studies as significant factors in literacy development, see Brooks (2002) for a review. The parents of children in the main study were asked to estimate the amount of exposure to print/literacy support given weekly on a five-point scale: (See Appendix C.)

1 = No support.

2 = Some exposure to print and support by, for example, weekly reading.

3 = Twice weekly exposure to print and support by reading to the child.

4 = Four times weekly exposure to print and support by reading to the child.

5 = Daily exposure to print and support by reading to the child.

This scale was not intended to be a balanced interval scale to measure exposure/support with print. Any associations between exposure to print and support for literacy at home in this study must therefore be interpreted with caution despite previously reported correlations between these factors.

v) Tracking pupils

Of the 154 children participating, surprisingly few dropped out and few scores were excluded. One child left to live in France, another went on an extended holiday in Pakistan but returned, one could not be traced in the receiving primary school for follow up measures. The final number of children in the study was 152. (Only one child could not name the colours used at the outset.)

The children from 40 nursery venues whose colour naming times were measured attended 19 different schools later. Nursery venues provided the children’s unique pupil numbers and an indication of likely primary school placement. At follow up if a school
had not received a pupil the local authority traced the child via their unique pupil number so that ultimately 19 schools were involved in the final measurements.

vi) Ethnicity

The ethnicity of Yshire is 94 per cent white and 6 per cent Black, Asian, and other races and these ratios were represented in the ethnicity of the children in the study. Higher proportions than 6 per cent from minority ethnic groups were found in one of the nursery venues involved in the interventions, but not in the intervention group. Proportions in the intervention groups, as in the whole cohort were: 87 per cent white English speakers, 8 per cent Asian, 4 per cent from African/Caribbean heritage and one child each (speaking English as a second language) from France, Italy and Slovenia. One interesting finding was that colour naming times were consistent across first languages and for those children naming the colours on the screen in English as a second language. The nursery staff or parents were asked to verify that children were naming colours appropriately in their mother tongue by reference to their parents. Since this factor did not significantly reduce colour naming times, it would seem to support the view that colour naming time taps into key underlying cognitive processes.

vii) Allocation of children with the highest colour naming times to interventions

The main aim of the current study was to examine the effects of intervention for those children identified as ‘at risk’ of developing literacy difficulties later. This meant that only some children would undergo intervention and these were the ones with the highest colour naming times in the study, since previous research has indicated a correlation between higher naming times and literacy difficulties. The cut-off point for selection was colour naming times in the bottom quartile of scores for the whole cohort, that is, the longest times to name the standard array of colours.
It was not considered ethical to intervene with some children only, that is, those with the highest colour naming times. However, as this was a control study, and those children with high colour-naming times allocated to the control group having been identified it was felt unethical to just monitor their outcomes over time so they received adult attention for equal time compared to the children in the intervention conditions but did not follow a specified programme to raise their skills.

Children with the highest colour naming times were matched for age, gender, colour naming times, ability, vocabulary, exposure to print at home and allocated to intervention conditions or the control group. Wherever possible children at a particular nursery formed an intervention group simply to limit the number of interventions at any one nursery setting to reduce confusion and contamination effects. (Only one large nursery was asked to carry out two different interventions with 4 pupils). Twenty venues took part in the interventions with a maximum of five children in one venue and a minimum of one child in seven venues. [See table of scores used for matching and allocation to interventions in Appendix D.)

viii) Training and support for running the interventions

Children were identified for the intervention and control groups with the highest colour naming times from the whole cohort of children in the study. They were located in 20 nurseries and staff trained to carry out the interventions. One training session for each intervention was run centrally and in addition the nursery running two interventions (SM) was visited separately. Each intervention and the control group sessions ran for 10 to 15 minutes three times a week with each child for most weeks of three terms (April, 2001 to April, 2002). [Nurseries found beginnings and ends of terms difficult times to commit the 30 to 40 minutes a week per child because of other pressures.]
4.3 Procedures

i) Contact with parents

After the colour naming times were taken at the beginning of the pilot study phase two, parents were informed by letter that their children would be monitored again after school entry and any issues would be reported to them by schools. For those children undergoing intervention or in the control group, parents were also contacted in a ‘non-anxiety arousing way’ to say that nursery was working on pre-reading skills with their child and they were invited to speak with nursery staff about the nature of this support if they wished to. Of 48 identified children, eight parents followed up this invitation. The parents were not encouraged to duplicate the interventions at home. Five parents maintained contact with the nurseries throughout the course of the interventions.

ii) Contact with nurseries

All venues were visited before the interventions and control group input began. Half termly contact was kept with each venue during the intervention period. The total period for the intervention was three terms. Contact was kept by phone and/or visit if necessary. Three other educational psychologists with a remit and interest in early years issues also attended all of the training sessions and kept a watching brief on the 20 venues throughout the course of their work.

4.4 Interventions

i) Distinctness intervention

A simplified version of the ‘puppet procedure’ developed by Elbro et al. (1998) was used with those children with high naming times allocated to this intervention. In Elbro’s study children were asked to teach a puppet how to pronounce target words distinctly. The experimenters in Elbro’s study made a deliberate mispronunciation of an
obvious word and the child corrected them to teach the puppet the correct pronunciation (a picture of the target word item was also shown). The child was asked to repeat their pronunciation of the target word once. After this the experimenter repeated the child’s pronunciation and asked if it was correct. If the child agreed, the pronunciation was accepted and scored, if not, the experimenter had the child teach the puppet again and then repeated the re-taught pronunciation until the child agreed it was correct. In Elbro’s study, nine target words were used: these were well within the active vocabularies of the subjects, who were all aged six years.

Elbro’s was a short term experiment and for the main study described here account had to be taken of the likelihood of several terms of practice and that the receptive vocabulary of three to four year olds is much less than that of six year olds. A set of stimulus words were found that gave scope for more than nine target words because of the length of the intervention. Materials developed by Speech and Language Therapists that increase in the complexity of speech sounds to be mastered were used. These were published materials written by Laranga (1999): Animal noises, Animal lives, Animal stories, My House. My garden, My Street. To include an element of self-selection of materials as was the case in the other interventions target themes were selected using a spinner. The child swung the spinner and the category it landed on determined the specific short sequences of words to be pronounced as distinctly as possible. The child having selected the theme the teacher led with the sounds/stories at each level and the child repeated each level to a criterion of being able to lead the teacher and recount a complete word/phrase/short story with distinct pronunciation. For example, the ‘Animal Noises’ booklet and cards depict several animals, what noise they make and where they live. The child had to be able to tell the teacher the name of the animal, what noise the animal makes, and their home. [For example, ‘Slithering Sid is a snake who sleeps in
trees shaded from the sun. He says ‘Sssssssss’. As the other interventions included an element of orthographic processing the sounds/words and short sentences the children were pronouncing were also represented on small colourful cards and the children handled the cards as they worked. Letter sounds were pointed out to the children as each new sound was pronounced appropriately. Each child in this intervention received 10 to 15 minutes input three times weekly following the distinctness programme and later their literacy performances were measured and their results compared to children in the other interventions and control group and the general cohort.

**ii) Phonological awareness intervention**

Children in this intervention followed the ‘Learning to Read with Nursery Rhymes’ programme by Wilson (1995). This programme was specifically written for children in nursery and Reception groups. It consists of instructions for the teacher (and all staff involved also attended a training session) and exercises for children to follow on: alliteration, rhyme, word segmentation skills, word matching, picture of rhymes to colour, nursery rhyme sentences to cut and reconstruct, and a rhyme cloze procedure. Children chose the nursery rhyme to be worked on each week. The programme includes many phonological awareness activities and some emphasis on early literacy output, thus orthography, as well as analysis skills. The whole nursery rhyme was taken as an equivalent to short stories in the other intervention conditions. It was also deemed suitable for a lengthy intervention because several nursery rhymes are involved which gave scope for lengthy practice of phonological activities in an appropriate developmental and curriculum based way. Again, each child received 10 to 15 minutes support three times weekly following the ‘Learning to Read with Nursery Rhymes’ programme and were later measured on literacy performances and their results compared to the other intervention conditions, control group and the general cohort.
iii) Phonological 'Memory' intervention

Building on the research of Wolf et al. (2000), RAVE-O, a final intervention was designed to be developmentally and curriculum appropriate for nursery. This intervention was based on the use of little books that could be used to build vocabulary and repetition of one-minute stories for very young children. This was done to encourage vocabulary expansion. Repetition of new phonic patterns by practice and exposure to controlled orthographic patterns was also built by exposure to the books.

It is based on a series of little books about everyday topics relevant to 3 – 4 years olds written by Hanks and Taylor (2000). The children were allowed to select the book to be worked on each week. The total set of 48 books has titles such as; ‘Pets’, ‘Toys’, ‘School’, ‘Work’. Each has brightly coloured pictures and characteristically six simple sentences per book with words varying in length and conceptual level from ‘a’ to, for example, ‘astronaut’, ‘caterpillar’, ‘break-time’. As for the other intervention conditions the children are encouraged to look at the shapes of letters making the sounds, which make up words as soon as they have mastered the contents of the short story within the book. A criterion of being able to repeat the six sentences in a book back to the teacher was set before any emphasis on sounds was taken in the support programme. Thus, some deliberate emphasis on orthography was also taken in this intervention. As before, each child received 10 to 15 minutes support, three times per week using the little books and were later measured on literacy performances. Their results were compared to the other intervention conditions, control group and the general cohort.
iv) Controls

As for the children in the other intervention groups the children in this group had colour naming speeds in the bottom quartile of all the measured speeds (that is, long colour naming times), and received equivalent time and attention to children in the intervention condition but not following a specified programme. Of their 10 – 15 minute support sessions the first part was spent going over the contents of the Big Book used in the Nursery Literacy session (a two way exchange between teacher and child which also builds vocabulary). The second part of the support session involved making a picture of something from the story with the specific purpose of targeting a word for the teacher to write it down so that the child saw the word and attention could be paid to the sounds in the word. The support session was ended with the child telling the teacher a story (or something about home or their day if they were not able to tell a story). This was to allow vocabulary and language practice as found in the other intervention conditions. Children in the control group also had their literacy performance measured at a later date and compared to those of the children in the intervention conditions and the general cohort.

4.5 Summary of outcomes

1. The pilot study (phase one) produced information that allowed literacy attainment (reading and spelling) at 7 years 6 months to be compared with colour naming times previously measured at an average age of 4 years 9 months. Comparisons were made using Pearson’s Product Moment Coefficient of Correlation. This is a statistical test of association between related variables for parametric data [Correlation coefficients for colour naming times and reading and spelling and the sensitivity and specificity of the screen at this age are set out in Table 3, Chapter Three.]
2. The pilot study (phase two) examined the colour naming times scored by children at average age 3 years 9 months and comparison with their literacy outcomes (sounds known, words read and spellings correct) at average age 5 years 6 months provided data which allowed correlation coefficients for colour naming times and each literacy measure to be calculated and the sensitivity and specificity of the screen at this age computed. Again, comparisons were made using Pearson's Product Moment Coefficient of Correlation, a parametric test, as the data in the second phase of the pilot study were normally distributed and of equal variance. A parametric test was used since the data met the requirements for use and such a test is more sensitive to significant differences in the factors varying together or otherwise rather than the association being due to chance. [Statistical analysis results and sensitivity and specificity of the screen at 3y 9m are set out in Table 4, Chapter Three.]

3. To address research question 2, (What sort of early intervention might best provide appropriate support leading to improvements in literacy development that can be measured later?), the target group of children identified using the colour naming screen examined in the pilot study were supported via three different interventions and there was also a control group. The outcome literacy attainments of these children were compared in three ways:

- Using group data, boxplots were used to give a visual representation of comparative effects of interventions and the control group literacy outcomes;
- Statistically using an ANOVA and Chi-Squared to examine whether intervening makes a significant difference;
- All of the variables associated with the children measured at the outset of the study were compared using multiple linear regression analysis to examine strength and order of contribution of each to the children’s later literacy
attainments. This was done to be able to compare this study with others that have suggested the strongest predictors of later literacy attainment are: IQ, Blachman (1984); exposure to print, Troija (1999); and linguistic development, Scarborough (1991).

4.6 Detailed outcomes

i) Boxplots

The results of the literacy outcome measures for children in the intervention and control groups are shown as boxplots below to give a visual representation for the effects analysed by ANOVA for the literacy outcome measures. Boxplots enable comparison to be made between the distributions of data from which later statistics are calculated, for example, the relative position of the mean and median and of each sample. The range of scores of an intervention group against the outcome being measured and how broadly or narrowly those scores are spread is also evidenced and this gives a sense of whether given similar characteristics of members of each sample the treatment they have received has had more effect on some members than others or a similar effect on all of those treated in a similar way. Lindsay, 1995, has cautioned about the effect of "fluctuating developmental status" (p.10) on the correlations found between screening and assessment measures and later measured outcomes it is important to take into account the differential effects of each intervention on the different members of the matched groups as this will show using boxplots better than other visual layouts of the data. This is especially important when dealing with small sample research data.
Figure 4. Boxplots of early literacy attainments by intervention.

a. Boxplot of sounds known by intervention

b. Boxplot of words spelled by intervention
Boxplots of literacy attainments for each of the interventions used by literacy outcomes show there are two outlying scores, in the phonological memory condition for words read and in the control group for sounds known. Both scores were checked against raw data and are true scores and thus represent the literacy development of children in the study and should not be removed before statistical analysis. The boxplots also show that all interventions have more of an effect on sounds known and words spelled at 5 years 6 months than on words read. They also show that the rhyme and phonological memory interventions had the greatest effect on these two literacy outcomes but that the effect is quite variable between individuals in the groups which may indicate their fluctuating developmental status at the outset, as suggested by Lindsay (1995) or it may indicate differential application of the interventions or scoring of the outcome literacy measures in different settings as the children in each intervention group were spread across several locations.

The boxplots also show that the distributions of scores are all positively skewed except
for controls, distinctness and phonological memory interventions for words spelled—which are all normally distributed. It is therefore important to further analyse the data on the basis of the median scores of the intervention and control groups as this measure is less affected by individual scores than the mean of the scores.

ii) Comparison of interventions, (ANOVA and Chi-Squared)

The literacy performances of the children in the intervention and control groups were compared statistically to see if any particular treatment produced significantly different outcomes compared to the others. Previous matching on several key variables meant that children could be randomly allocated to intervention groups, control group and a no-intervention group. Comparison of the effects of interventions/control/no treatment was carried out using the Kruskal Wallis ANOVA by ranks test, a non-parametric test for differences between the medians of independent groups. A non-parametric test was selected because the number of subjects in each condition was small (12) and thus these data are not likely to be normally distributed. (Figures for the Kruskal-Wallis test for each literacy measure against the various interventions are set out in the Table 6.)

Table 6
ANOVA comparing effect of interventions on literacy attainments, (Kruskal-Wallis statistic = H)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupils (n = 48)</td>
<td></td>
</tr>
<tr>
<td>Sounds known</td>
<td>10.5**</td>
</tr>
<tr>
<td>Words spelled</td>
<td>4.2*</td>
</tr>
<tr>
<td>Words read</td>
<td>3.8*</td>
</tr>
</tbody>
</table>

Note: **p < 0.01, * p < 0.1
A Kruskal-Wallis test was used to investigate whether the intervention approaches had any effect on improving the literacy development of those children identified at risk of difficulties at 3 years 9 months by use of a colour naming screen. This statistical test suggests that the interventions produced a significant difference in all literacy measures taken with the most influence on ‘sounds known’ (H = 10.5 at less than p = .01 significance level) with ‘words spelled’ and ‘words read’ being affected at less than the 0.1 significance level. To further analyse which intervention(s) produced a significant difference individual Chi-Squared tests for each literacy outcome measure were carried out (using Yates Correction because the numbers in each intervention group were small). The Chi-Squared values achieving significance were confined to the ‘phonological memory’ intervention and given in Table 7 for each literacy outcome measured.

Table 7

**Chi-Squared values for literacy outcomes in the phonological memory intervention**

<table>
<thead>
<tr>
<th>Literacy Measure</th>
<th>$X^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupils (n = 12)</td>
<td></td>
</tr>
<tr>
<td>Sounds known</td>
<td>11.4**</td>
</tr>
<tr>
<td>Words spelled</td>
<td>1.5NS</td>
</tr>
<tr>
<td>Words read</td>
<td>9.4*</td>
</tr>
</tbody>
</table>

*Note: ** p < 0.01, * p < 0.05, NS = Not Significant, d.f. = 3

Inspection of the scores for ‘sounds known’ and ‘words read’ shows that the children in the phonological memory intervention group knew more sounds/words than the children in the other intervention groups and the control group. This intervention may have some promise in enhancing early literacy development for those identified at risk in nursery.
To investigate the interventions more fully would have required a larger number of children per intervention group than the twelve in each group here. In doing this the interventions could be further refined, for example, materials used balanced for exposure to orthography, phonemes used, conceptual level.

iii) Comparison of outset variables with later literacy, (Multiple linear regression analysis)

Each output literacy measure (sounds, words, spellings) was examined against each variable measured at the outset of the study for the whole cohort using multiple linear regression analysis to examine the strength of association between each variable and literacy attainments measured later. This allows comparison with the variables found to predict literacy performance in other studies. As the whole cohort is involved and the variables measured are normally distributed it is possible to use the parametric version of linear regression and the results are set out in Table 8.

Table 8

Multiple Linear Regression Analysis of factors associated with later literacy attainment

<table>
<thead>
<tr>
<th>Age/exposure to print/gender/ability/vocabulary/colour naming time</th>
<th>Pupils (n = 152)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sounds known</td>
<td>0.46*</td>
</tr>
<tr>
<td>Words spelled</td>
<td>0.31*</td>
</tr>
<tr>
<td>Words read</td>
<td>0.26*</td>
</tr>
</tbody>
</table>

Note: *p < 0.001 in all cases
All of the measured at the outset factors taken together are significantly associated with later literacy attainment at less than p.001 level with the R² values given above. What is probably more useful are that the results of the multiple linear regression analysis can also be used to show which and at what level factors are significantly associated with each aspect of later literacy performance and these are given, if significant, in Table 9:

Table 9

*Factors found to be significantly correlated with early literacy (5y 6m) in this study*

<table>
<thead>
<tr>
<th>Sounds known</th>
<th>Words read</th>
<th>Words spelled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pupils (n = 152)</td>
<td></td>
</tr>
<tr>
<td>Age **</td>
<td>Age **</td>
<td>Age **</td>
</tr>
<tr>
<td>Colour naming *</td>
<td>Exposure to print **</td>
<td></td>
</tr>
</tbody>
</table>

*Note. **p < 0.01. *p < 0.05

There are some very interesting effects in the order of contribution of variance of outset factors measured at average age 3 years 9 months and the literacy outcomes at average age 5 years 6 months, (see Table 9). Age contributes the most variance to all aspects of literacy measured and achieves statistical significance at less than p .01 level. Exposure to print has a particularly marked and significant effect at less than p .01 level for 'words read'. This would be expected in very early literacy following Frith's (1985) model where logographic strategies are the first to be used. As mentioned earlier, the measure of exposure to print used in this study was self-reported by parents, it is not objective. However, high correlations or contribution of exposure to print to literacy performance have also been noted in other studies of this type.
The contribution to variance in early literacy outcomes of colour naming times is low in all areas, but reaches significance at less than the 0.05 level for ‘sounds known’ at 5y 6m in this study. Vocabulary measures taken at the outset to the main study did not reach statistical significance with later literacy as they have done in other studies, e.g., Scarborough (1998). One possible explanation is possibly because the literacy outcome measures here were taken earlier than in other studies. The variance in later literacy accounted for by colour naming times found here is low but appears to be following the pattern predicted by Frith’s 1985 model of the development of literacy through logographic to alphabetic to orthographic representations in this study, that is, it only achieves significance for ‘sounds known’ in this study. The differing orders of effect may indicate that a sufficiently developed phonological memory underpins all literacy processes but that laying down distinct representations of sounds, as might be expected, is more important for the number of sounds known during early literacy development (developing during the orthographic stage) whilst rhyming is more important to early spelling and reading (alphabetic stage).

Several factors emerge from the current study:

- All children in the intervention and control groups were identified as in need of support to develop early literacy skills and those in these groups made statistically significant gains in literacy compared to their peers. This means that ‘intervening’ made a difference.

- Intervention produced more effect on the number of sounds known at average age 5 years 4 months compared to words read or spelled. According to several researchers, for example, Baddeley et al. (1982), Hatcher et al. (1994), Kirby et al. (2001), the number of sounds known in Reception is a good indicator of later literacy performance. This is a positive finding and indicates the value of
intervening early to build the sound system used for later phonological analysis and phoneme/grapheme conversions at later stages of literacy development. This may indicate the importance of promoting development of the sound system to enable alphabetic processing, as suggested above, or there may be a link to compensatory mechanisms which will promote alphabetic processing when there is poor phonological loop function. [N.B. All interventions produced a statistically significant effect on all early literacy outcomes measured.]

- A statistically significant effect amongst the various interventions was shown for the ‘phonological memory’ intervention and using the Chi Squared the significant effect is on number of ‘sounds known’ and ‘words read’. Thus there may be mileage in researching interventions to develop phonological memory independently of and possibly before rhyming skills

- Colour naming times can be used to identify children who need support for developing the early stages of literacy, particularly ‘sounds known’. With more research and refinement a simple colour naming screen could be added to entry assessments to enable planned and appropriate compensatory experiences as early as possible whilst there is a less structured curriculum and more time available to promote the developmental status of children’s language systems;

- Nursery staff all commented on the value of staff knowing more about literacy development and having knowledge of specific approaches to support its development for young children at risk.

4.7 Discussion

i) Non-use of standardised tests

Despite the above findings, there is difficulty in interpreting the literacy performances of children in these studies as final measurements were taken at age 5 years 6 months,
after one term in Reception. Very few children had literacy performances that would have appeared on standardised tests. The measurements used were raw scores of words read, words spelled and sounds represented by letter/letter clusters known. As no standardised measurements were available because of the age of the children and their stage of literacy development, it is impossible to compare development on different aspects of literacy (reading, spelling, comprehension) with each other according to various interventions. Also, although the words read and spelled were all from the National Literacy Strategy Word Lists 1 and 2, the children may have produced the same scores but have read or spelled different words thus raw scores are a much poorer measure of development or achievement than standardised scores as they do not reflect population norms. Relationships between literacy performances and intervention would be clearer if it had been possible to use standardised tests. Standardised tests of literacy could have been used if measurements of literacy had been taken later than the end of the first term in Reception, but it was necessary to stop the study at that point. Equally it would have added fuller information on patterns of development and interactions between interventions and literacy outcomes if measurements had been taken more frequently and over a longer period, perhaps stretching into Years One and Two. (Kirby et al., 2001. study does investigate patterns of early indicators for later literacy outcomes including the contribution of colour naming as an early indicator of reading skill. The association of colour naming with later reading, particularly reading comprehension, and its persistent association over time is described this by these researchers as “intriguing”, p.5.)

ii) Reliability

Screening larger numbers of children and involving more participants in each intervention would improve the reliability of all findings. Any improved literacy
performance on account of intervention with 12 participants compared to another 12 participants in a different intervention group from a total population of 152 is more likely to be influenced by chance occurrences, inconsistencies in delivering the interventions or inadequate controls and thus any effect of intervening reduced. Because of the developmental sequence in sub-systems on which literacy rests, it would also be interesting to repeat literacy performance measures over time as was done by Kirby et al. (2001). This would also increase the reliability of effects found as well as allowing investigation of the contribution of colour naming time indicators to later literacy and the effect of the various interventions beyond early literacy development.

If the colour naming screen used here were to be used to identify those children in need of support for literacy development, the inter-rater and test-retest reliability of the device would also have to be measured as discussed as a result of the pilot study.

**iii) Centre effect**

The number of nursery schools and classes over which the interventions were spread, 20 locations, may have introduced a large amount of ‘contamination’ in outcome due to the variation in approach taken within each intervention according to the person(s) delivering it. For example, although all children were involved in literacy learning by participating in the Nursery Literacy Strategy, one venue noted that they also topped up literacy time in nursery by using Code Breaker to teach phonics! This means that despite matching of children in intervention conditions it is highly likely that some children in interventions and those in the general cohort received different experiences. Clearly, this makes comparisons within an intervention group spread over several venues difficult, either weakening or strengthening the effects of the intervention. Effects found in other medium scale studies over several venues are generally very
small because of the variable experiences in different locations that make it difficult to ensure the same has been received in each, see Hatcher et al. (1997).

iv) The interventions

All of the interventions produced statistically significant gains in early literacy skill in the ‘at risk’ group compared to their peers. Even paying attention to the children in the control group for the same amount of time as those in the intervention groups without following a specified programme produced significant gains! This underlines the importance of giving time and attention to young children’s language experiences and their access and interaction with literacy materials (orthography) to support their early literacy development.

The phonological memory intervention produced the most significant gains in early literacy skills and rhyming produced the next most significant gains for reading and spelling. Distinctness of sound representations produced the second largest gain for ‘sounds known’. Together with the work of other researchers, for example Elbro et al. (1998), this suggests phonological memory underpins all aspects of literacy and that work to improve the sound representations stored in the phonological system should precede work on rhyming. Such a finding may seem obvious but there is surprisingly little support for distinctness of speech for children entering nursery as issues are either dismissed because the sound systems are expected to develop over time or support is seen as exclusively the domain of speech and language therapists.

Of the interventions used in this study, ‘Learning to Read with Nursery Rhymes’, Wilson (1995), is available commercially but the interventions for ‘distinctness’ and ‘phonological memory’ were created for this study from research carried out by others.
and would therefore need more work done on them to be usable by educational psychologists. Speech and Language Therapists and others working with young children.

v) Summary

Colour naming times can be used with children as young as 3 years and 4 months on entry to nursery to identify those meriting further investigation for support needs for the development of early literacy skills. The colour naming screen used here would require more refinement of the cut-off point for the identification of those ‘at risk’ and the reliability of the device would also have to be examined. Colour naming time is significantly correlated with the number of sounds known in Reception. The nursery staff and psychologists participating in this study found the colour naming device easy to use.

All of the interventions used in the main study produced significant gains in early literacy skill in the ‘at risk’ group, especially the ‘phonological memory’ intervention. This study also indicates that phonological memory contributes to all aspects of early literacy, whilst distinctness of speech contributes to the number of sounds known in Reception and rhyme contributes to early spelling and reading. The nursery staff commented on the value of knowing more about the development of language and literacy and how to support the development of both.
CHAPTER FIVE
DISCUSSION

5.1 Introduction

Discussion of the current study will be based on what effects were actually found in using colour naming times to screen for potential literacy difficulties and the differential outcome of the various interventions put into place to support those children identified as at risk for literacy difficulties. Relationship to research in the area and theories about literacy development as they continue to develop will also be discussed as well as the implications for future research arising from the current study. Where there are indicators of early experiences that might improve on literacy outcomes later, particularly in nursery, these will be drawn out in case it is possible to design even more appropriate interventions for very young children. Finally, there will be consideration of other factors involved in the support of very young children's language to literacy development on the basis of this study. Research into postulated underlying mechanisms to explain the effects found in the main study is also discussed.

5.2 Pilot study - use of colour naming times to identify potential literacy difficulties

i) Outcomes

Colour naming times at entry to nursery/school were found to be significantly correlated with later performance on all measures of literacy in both phases of the pilot study, as has been shown by other research, for example, Blachman (1984), Kirby et al. (2001). The sensitivity and specificity of using colour naming times to screen for children in need of further investigation varies according to age at screening and literacy outcome measure, (see Chapter Three). The colour naming screen used to identify children in need of support to develop early literacy skills was generally more sensitive and specific for reading and spelling used at 3 years 9 months than at 4 years 9 months, (the
exception being that the specificity of the screen at 4 years 9 months is higher for spelling than at 3 years 9 months). As literacy outcome measures were taken at 5 years 6 months in phase two of the pilot study, the number of sounds known in Reception was also measured as this has been shown by Bradley and Bryant (1983) and others (Lundeberg, 1988, Hatcher, 1997) to be a good indicator of later literacy performance. Colour naming used at 3 years 9 months was both highly sensitive (83 per cent) and specific (62 per cent) for identifying those children who needed support for the number of sounds they knew in Reception.

ii) Critique of pilot study – improvement suggestions

a) Are colour naming times to identify support for literacy development useful?

The sensitivity and specificity figures for the use of colour naming given above are typical of screening measures and to this end their use helps in what Blatchford and Cline (1992) and Lindsay and Wolfendale (1999) give as a purpose for entry screening: identification of pupils who may have difficulties (and in which area further investigation/support is needed). Used as a screen in this way, colour naming times can be examined against the areas Blatchford and Cline (op.cit.) set out for the evaluation of school entry assessment schemes:

- Theoretical integrity. Colour naming is taken to be an earlier approximation of reading (Kirby et al., 2001). Snowling et al. (2003) explain this further and take colour naming to signal the efficiency of the working together of orthographic and phonological processes in literacy including the compensatory trade off effected by semantic processing. Thus, colour naming measures the development of the sub skills on which literacy is built and those children identified with high naming times are those in need of support to further develop these processes;
• Practical efficiency. The colour naming device used in the pilot study took about five minutes per child to administer, was easy to understand and score and the results from using it are easy to interpret with respect to which children need further investigation of their support needs;

• Equity and accountability. Of 319 children asked to name the colours on the colour naming device only one was unable to do so even as young as 3 years. There were 17 children in the study whose first language was not English but this did not affect their naming times compared to those for whom it was. [If needed these children had bi-lingual assistance with the instructions for the screen thus ensuring access.] No child was asked to participate if they did not wish to and all staff and parents involved were in agreement with procedures and kept informed throughout. The screening results were for research purposes and not used to allocate resources other than to identify those pupils in need of support for early literacy development. [Nursery Literacy time was also delivered to all of the children in the nurseries at the same time so that no child missed out on an entitlement.]

Thus colour naming times used to screen for those children in need of further investigation/support to develop early literacy can be positively evaluated against these suggested criteria.

b) Repetition of use of colour naming to screen for potential literacy difficulties

There would be more confidence in the use of colour naming times to signal later literacy performance if the pilot study were to be repeated. The study could be done with larger numbers of children on entry to nursery or their early education, wherever provided. Of course, this would likely mean many venues would have to measure the
colour naming times of the children entering their provision and this may have the effect of diluting effects found due to measurement differences between testers. This can be minimised by training the testers but is impossible to remove totally unless one tester tests all of the children for the research, which is an impossible task on the numbers needed.

c) Reliability

The pilot study also needs repetition to establish test re-test reliability of using the colour naming screen if it is to be used as a by others, such as researchers, early years educators, psychologists or speech and language therapists. There is currently no measure of test re-test reliability for the use of colour naming as a screening tool for the identification of support needs for literacy development. This information should be available before decisions are made by professionals seeking to use such a device in Nursery, especially as there are already such problems with the measurement technology of Baseline Assessment as it is already carried out and used, (see Literature Review, Chapter Two.)

d) Second language effects

The use of colour naming times with a larger number of children would also give more opportunity to examine any issues of English as a second language on the correlation between the times produced by these children and their literacy outcomes, although there were no indicators of this having made any difference to colour naming times in this study.

e) Adjustments to cut-off point for ‘at risk’

Using a different cut-off point for the identification of ‘at risk’ children would adjust the
sensitivity and specificity of this screen. For example, for this study the cut-off point was set at those children whose early literacy measures were one standard deviation below their peers, but this could be adjusted downwards with the likely effect that the sensitivity of the screen would be less but the specificity more. Alternatively, the cut-off point for sounds known, spellings and words read, could be set at different points to maximise the sensitivity and specificity of the screen for each aspect of early literacy. This may make the screen more useful for identification of support for the development of both reading and spelling, although these figures are close to the sensitivity and specificity figures found for screening devices already. [At 3 years 9 months for later word reading the sensitivity of the colour naming screen is 64 per cent and the specificity is 71 per cent. For words spelled the sensitivity is 74 per cent and the specificity 76 per cent.]

\[f \text{ Would colour naming times be a useful addition to Baseline screening/FSP?}\]

As can be seen from the above discussion, there is still much work to be done on colour naming if used as a screen to identify children with literacy support needs. Traditional nursery/school entry ‘assessments’ indicate children’s development and support needs across several areas. Research into three Baseline Assessment schemes and their relation to later literacy performance gives correlations of \(r = .7,\) (Tymms, 1999; Lindsay & Desforges, 1999). Colour naming times as used here at 4 years 9 months correlate significantly with later literacy at \(r = .38\) for reading and \(r = .78\) for spelling, but this falls when the screen is used at 3 years 9 months to \(r = .28\) for spelling, \(r = .27\) for reading and for sounds known is also \(r = .31\) (all still achieve statistical significance at less than the \(p < .01\)). Even though statistically significant, these correlations seem low. Given Lindsay’s (2001) conclusions that for Baseline Assessment schemes there is already a lack of comparability between them with respect to their emphasis on
language and literacy and much variability with respect to the three areas of literacy development it does not seem sensible to suggest that colour naming times should be added to current arrangements without much more refinement of the device and the FSP.

Despite the technical inadequacies of the colour naming screen used in the pilot studies, that might be improved with further research, it provides a means of identifying children with potential literacy difficulties. However, identification is for the purpose of providing support to ameliorate difficulties if and where possible. The focus of the main study was to intervene with those children showing high colour naming times using various language and orthographically based programmes aiming to raise their language and early literacy skills. Analysis of the outcomes of the main study show that all the interventions carried out achieved this, but that the ‘phonological memory’ intervention produced the biggest gains in early literacy skills.

5.3 Main study – intervention in Nursery to support early literacy development

All of the interventions used with the children in Nursery produced significant gains in early literacy performance in the ‘at risk’ group compared to the general cohort. Amongst the interventions, the ‘phonological memory’ intervention produced the biggest effect. As subjects were matched for: gender, ability, vocabulary, colour naming times and exposure to print at home this would have minimised effects due to differences in the groups but there is always the possibility that some unexamined and controlled for alternative factor is driving these results. The interventions too had similarities and these will be outlined before moving on to any differences that may help to understand why one intervention produced greater gains than the others and why all of them may have made a difference. This analysis is important as it may help to give
direction to further work that could be undertaken to refine appropriate intervention to support early literacy development during the Nursery year(s).

The various interventions were designed so as to provide very similar amounts of:

- Adult attention;
- Time spent practising several sub-skills involved in literacy: receptive and expressive vocabulary, exposure to print, more specific work on learning about orthography, practise of sounds being encountered with associated orthography, early writing of the sounds/words being encountered;
- The interventions also included child led choices of focus for each session, lots of repetition; the learning and re-telling of a story about each concept/rhyme worked on, concepts broadly within the concrete experience of 3 to 5 year old children.

To explain the differential effect of the various interventions it is perhaps more important to focus on any differences between them to attempt to understand why ‘phonological memory’ produced the biggest effect on all aspects of literacy with ‘rhyme’ and ‘distinctness’ being next in order of effect for words read and spelled but ‘distinctness’ and ‘rhyme’ being the order of effect for sounds known in Reception. Key differences were:

- Amount, quality and focus on orthography in the materials used for the various interventions with focus on the word level being higher in the ‘phonological memory’ condition than in the other interventions, and;
- How immediate and ‘concrete’ the concepts worked with were. For example, the ‘distinctness’ intervention introduced work on the sounds animals the children had never met (even though pictures were provided) would make and the materials for ‘rhyme’ were the illustrations in the published package used which
are line drawings about more remote concepts, (Jack and Jill going up a hill to fetch water – something which is likely outside the children’s direct experience).

[Of the 24 little books used in the ‘phonological memory’ intervention there were few ‘concepts’ which are outside the everyday experiences of young children, possibly for example, ‘Going to the vets’.]

- The focus on the sound, word or sentence level within the work carried out in the intervention. For the ‘distinctness’ intervention focus was mostly on sounds within words. For the ‘rhyme’ intervention focus was on rhyming sounds and a little on the whole nursery rhyme. For the ‘phonological memory’ intervention the focus was on the sentence on each page of the little books used and also on trying to remember the whole ‘story’ of the book – usually 6 simple sentences in length. Badian (1998) reported on a study using sentence memory in 235 five year olds whose literacy performances were compared at 6 years and 7 years with a battery of pre-school tests involving letter naming, visual matching and sentence memory. Sentence memory was the biggest single predictor of later literacy outcome followed by letter naming and visual matching. These differences in emphases in the different interventions may have introduced a confounding factor which would need addressing in further research into all of the interventions by keeping the focus on the same unit in each or balancing each unit within each intervention to allow comparisons to be made.

i) Improvement suggestions

To enable a fair comparison between interventions to be made, the study should be repeated with larger numbers of children and ensuring that orthography, conceptual level of materials used and focus on the word and sentence level in what is to be learned is balanced across them. This may produce the same finding, that is, any intervention
produces gains; or it may produce an intervention that is clearly ahead in terms of promoting early literacy development in which case this knowledge could be passed on to others to affect nursery practices for children whose literacy development is vulnerable.

ii) Delivery of intervention by teachers/nursery staff

If the research were repeated, it would be possible to build in feedback about the interventions from nursery staff to refine them and ensure maximum practicality for delivery, including the possibility that teachers/nursery staff would train other staff to deliver them.

iii) Research carried out across several locations – ‘centre effect’

The number of nursery schools and classes over which the interventions were spread may have introduced an amount of ‘contamination’ in outcome due to variations in approach within the intervention according to the person delivering it. This will either weaken or strengthen the effects of the intervention despite the subjects in each intervention condition having been matched on several measures before the outset of intervention. However, the boxplots in Chapter Three show that intervention has a differential effect as even though subjects were matched the range of scores produced in literacy outcomes as a result of the ‘phonological memory’ intervention is wider than for the other intervention conditions and statistically this effect shows, (ANOVA and Chi-Squared).

Effects found in other medium scale studies over several venues are generally very small because of variable experiences in different locations which made it difficult to ensure the same has been received in each one, (see Hatcher et al., 1997). There is no
ideal solution to this. One strategy would be to have a researcher deliver the intervention in several venues but this would have been very time-expensive and lose the advantage of having centre staff learn a new approach, be able to train others or pass on their recommendations to other similar staff. Another strategy would be to train all of the delivery staff as in this study, emphasize that the delivery should be as close to the training sessions/methods as possible and for the researcher to then follow up in each venue after training with regular visits to maintain some quality control over what is delivered, but this is again very time-expensive and no guarantee that variations will not occur. Intervention studies carried out on very large numbers possibly balance out these effects statistically.

iv) Literacy outcomes measures used
Conclusions about the efficacy of interventions could have been more exacting if it had been possible to use standardised tests for the literacy achievements of the children at 5 years 6 months but because of their early stage of literacy development, this was not possible. The measures used allowed comparison of effects of the various interventions but do not allow for comparison with other studies because it is not possible to compare literacy performances between studies where standardised tests have been used and the number of items from NLS lists as used here. To be able to use standardised tests of literacy the outcome measures would have to be taken later so that the children's literacy scores might register on standardised tests.

v) Entry variables affecting later literacy performance
In this study a multiple regression analysis with the variables measured at outset and later literacy performance showed a significant effect of age for all literacy outcomes, exposure to print for 'words read' and colour naming for 'sounds known'. It is
necessary to point out that the measure used for exposure to print was not a balanced interval scale and was also a self-report by parents thus may have under or over-estimated the amount of exposure to print of the children in the study and skewed the statistical effects found. This could be remedied by using a instrument with a balanced interval scale to measure and/or objective verification of the amount of exposure to print at home.

5.4 Relationship of main study to theory and research into language to literacy

i) The phonological loop

Stephenson (2003) estimated that the heritability of literacy difficulties is 60 per cent in those children whose parents have dyslexia. Scarborough (1991) noted that ‘at risk’ children have similar expressive vocabularies at 30 months to children not at risk but make more pronunciation errors and more syntactical errors. By 36 months and 42 months of age these children’s vocabularies are also affected compared to controls. Baddeley et al. (1998) have suggested the linking and explanatory mechanism between vulnerability for literacy difficulties and language experiences is the ‘phonological loop’, a component of working memory which analyses incoming sounds against stored sounds and detects new patterns (and is therefore influenced by already acquired vocabulary). The comparison process between what is laid down in memory and new patterns allows adjustment of the store over time depending on what is heard. Thus, the store becomes the child’s working model of language, both phonologically and syntactically. The authors suggest that if the store has limitations because of capacity or lack and restriction of what is stored in it, as the phonological loop has an effect on processing new sounds it will take longer to commit them to memory (store). For those with poor phonological processing, it will take more repetition of the same experiences to build the store to a level where it can usefully contribute at speed to analysis of
speech sounds to allow mapping on to visual patterns required for reading.

**ii) Effect of linguistic environment on language development for literacy**

Scarborough (1991) noted that an effect found in the vocabulary and syntax of children 'at risk' for literacy difficulties is key to understanding what is not being developed in these individuals and Baddeley *et al.* (1998) have suggested the mechanism. However, as Locke (1997) and Hart and Riseley (1995) have noted, the linguistic environment of 'at risk' children differs considerably from those not at risk. Hart and Riseley (op.cit.) noted that children in more language-enriched environments are exposed to three times more words than those in language impoverished environments and the syntax to which they are exposed is more complex. For those 'at risk' even their early babble shows restricted phonological segments compared to controls at eight months, (Locke, 1997).

These studies suggest a link between literacy difficulties and restricted expressive phonological development (phonological segments) in early language development. Vocabulary development seems to be key. It seems that the internal representation, or coding of speech sounds, is initially as whole words and that during the pre-school years, the representations are gradually reorganized into smaller segments, for example, syllables, onsets and rimes and eventually phonemes. Walley (1993) suggests that this awareness of segmental size is driven by earlier vocabulary growth, specifically a growth spur that takes place between 18 months and 3 years of age. Baddeley *et al.* (1998) argues that the phonological store has an influence via its contents and that this store is developed via vocabulary acquisition. Wolf *et al.* (2000) suggest that later in the process of becoming literate the phonological store has an effect by allowing the phoneme/grapheme matching required to proceed based on adequate stored phonological representations.
iii) Compensatory effect of expressive language

Snowling et al. (2003) carried out a study comparing explicit tests of phonological processing with language and literacy aiming to specify the developmental relationships among oral language, phonological awareness and reading skills between 4 and 8 years. The researchers compared high-risk children (for literacy difficulties) who did and did not develop difficulties and a comparison group of low risk children. Their testing began earlier, at 3 years 9 months and continued until the children were 8 years with a mid-study set of measures at 6 years. Their findings are similar to those obtained by Pennington and Lefly (2001) with their only surprise being that high risk unimpaired children who go on to become ‘normal’ readers had significant deficits in grapheme/phoneme skill at 6 years, yet had good oral language skills. They suggest the children’s good expressive language skills mitigate against poor phonological skills because better vocabulary development may facilitate the development of segmental representations and therefore phoneme awareness. Following analysis of their data, Snowling et al. (op.cit.) concluded that:

"Contrary to the prevailing view that dyslexia is the consequence of a specific phonological deficit, the early precursors of reading disability in family studies appear to include slow vocabulary development and poor expressive language and grammatical skills. Children from high risk families who went on to become normal readers at 8 years did not show these symptoms to a significant degree, although they were impaired relative to controls on a test of nursery rhyme knowledge at 3 years 9 months". p.70.

This conclusion and Scarborough’s (1991) findings are in line with the proposal made by Walley (1993) that the development of phonological representations depends at least
in part on vocabulary growth. Thus, better vocabulary development of high-risk unimpaired children may facilitate the development of segmental representations and therefore phoneme awareness. In turn, good phonemic skills may go some way towards protecting them from the reading failure that might be expected given poor grapheme/phoneme skills. Within this framework, phonological deficits have their main impact via compromising the mappings between orthography and phonology. Nation and Snowling (1998) have suggested that individual differences in semantic skill can therefore moderate the effects of poor decoding through compensatory semantic processing.

Snowling et al. (op.cit.) suggest that children at high risk of difficulties, yet have good oral language skills may begin to rely on the semantic pathway from an early stage. Better language skills support reading development in several ways. They would have an effect on phoneme awareness thus increasing segmentation and blending to identify words and would allow better use of context cues to boost ineffective decoding thus likely increasing practice. Finally, Snowling et al. (op.cit.) suggest that as the pattern of weaknesses predicting literacy failure was wider than oral phonological processes including grapheme/phoneme mismatches in transcription at age 6 years and poorer letter/nursery rhyme knowledge at 4 years, something else in language processing must be contributing. That is, in the view of these researchers, both mild and severe literacy difficulties are based in poor phonological processing and it is possible to compensate via semantic coding.

An alternative interpretation that allows for the mediating effect of the semantic pathway for some is that a marker for potential difficulties is poor verbal associative learning, that is, naming skills are the marker for semantic knowledge that might
mediate and moderate poor phonological development. According to this view, individuals with a deficit in associative learning will only develop literacy difficulties if they also have language deficits. Deficits in letter and nursery rhyme knowledge could be environmental, which is relatively easy to remediate. However, if such difficulties were because of (or as well as) poor visual to verbal paired associate learning, this could also be addressed early if the gap were identified whilst children were still gaining a wide vocabulary and visual pairing provided for new words in their support programme.

Accounts of the Precise Timing Mechanism, (see Bowers & Wolf, 1998), disentangle the relationships between naming speed, phonological awareness and reading. Their view sees rapid naming deficits as an impairment of a timing mechanism and as independent of phonological skills in reading. If a child is slow to name highly familiar symbols like letters (colours earlier) then s/he will be slow to automate their reading processes and this will affect fluency of reading. Manis et al. (1999) measured the contributions of phonological awareness and rapid naming in 85 Grade One pupils to their reading in Grade Two and found (controlling for verbal ability and previous reading levels) that naming speed made a unique contribution to word recognition, orthographic tasks and exception words whilst phonological awareness contributes to word recognition, non-word reading and comprehension but not orthographic tasks.

In these studies naming speed and phonological awareness tasks tapped into separable aspects of phonological processing. Manis et al. (op.cit.) suggest that naming speed tasks tap into arbitrary associations between sounds and letters and thus it might be expected that children who are ‘slow namers’ will have difficulty in learning the connections between specific sounds and letters when they first encounter the alphabet. The general pattern emerging from literature on the effects of language processing on
literacy is that word decoding is affected by phonological development and reading comprehension is more affected by vocabulary and syntax. Snowling et al. (2003) are of the view that naming speeds are the marker for semantic knowledge and thus also indicate phonological development.

iv) Intervention to develop the expressive language of children 'at risk'

This is important to understanding the differential effects of the interventions attempted in this study compared to the outcomes produced in the children's early literacy development. Each intervention in the main study was based on current theories of causation of literacy difficulties: the effects of speech representations (distinctiveness intervention); poor phonological development at the word-syllable level (phonological awareness intervention); and poor storage/access/retrieval of vocabulary (phonological memory intervention). Subjects were matched on age, vocabulary, ability, exposure to print and colour naming speeds. Interventions were run for an equivalent amount of time and materials and exposure to print were controlled within each condition. Despite criticisms of the possible variability in delivery of support to children in the interventions which may have occurred because the subjects were spread over 20 nurseries, a small but significant effect, \( p < .05 \), was found in the number of sounds known for those children supported in the phonological memory group and it is important to understand why this might be so if this finding is to be built on.

Within the phonological memory intervention in this study it could be argued that there was an emphasis on the six to eight sentences of each of the little books, which form a short story about the theme of the book. However, whole sentences were also repeated as they were in the phonological awareness intervention as part of the 'Learning to Read with Nursery Rhymes' programme. The possible difference between the interventions is
a different focus on the ‘unit’ to be learned. ‘Sentences’ in the phonological awareness intervention are in fact lines in nursery rhymes and the point of the programme to learn the rhymes. (The topics on which nursery rhymes are based may also be more remote from the child’s everyday experiences.) There was an expectation in the phonological memory intervention that the child would learn the simple sentences in the book in sequence for each book to be able to repeat them back to their teacher. This may have helped to improve sentence memory, which was not tested, and has been shown to be highly significantly predictive of later literacy performance, see Badian (1998). It is possible that this may turn out to be a remote indicator of the size of the phonological store in the phonological loop and would be a topic for future investigation.

It is interesting that the most significant influence on literacy development of intervention in the main study was on the number of sounds known before words read or spelled, but this is in line with the developmental sequence in literacy evidenced by much research and outlined in the model proposed by Frith (1985). It would have been of great interest to continue to follow the children in the intervention groups for longer as literacy developed to see if the effect of knowing more sounds enabled the phoneme to grapheme translation process (alphabetic processing) into rapid automatic reading via orthographic processing as exposure to print increased. The phonological memory intervention used in the main study in nursery showed many characteristics of the RAVE-O programme designed by Wolf et al. (2000) for older children. It emphasised semantic and phonological skills by building vocabulary whilst enabling young children to use the preferential processing route for incoming auditory information suggested by Sloutsky and Napolitano (2003) by using good quality visual materials. These materials also allow the children to begin to inspect the orthographic features of the text.
v) Active exposure to the orthography of sound representations in text

It may also be of significance to the interventions used in the main study that although all interventions used visual material, this was to varying extents and of varying quality. Visual impact of materials used was greater in the phonological memory intervention where brightly coloured little books were used to present stories and therefore visual and verbal information were very obviously presented together, aiding comprehension of the concepts in the materials and making a clear link to orthography.

vi) Linking phonology, orthography and semantics together for literacy

Figure 5. Triangle model of reading. (Seidenberg and McClelland, 1989).

Many researchers in this field (see for example, Blachman 1984, Baddeley et al. 1998, Snowling et al. 2003) have all suggested that literacy is underpinned by a phonological mechanism. Siedenberg and Mc Clelland (1989) have provided a model (see Figure 4
above) that goes beyond phonology and encompasses orthography and semantic knowledge into their explanation of the literacy process. Over time and with appropriate experiences, the phonological and semantic pathways are established and developed - first by language experiences and later by exposure to print, at which point the representations of sound within the system can be mapped onto the orthography of print. This model reflects those suggested by Frith (1985), Goswami (1994) and Ehri (1997), (see Table 1 in Chapter Two). The models suggested by these researchers link the various aspects of literacy by semantic and phonological pathways. This account sounds very like Gathercole and Baddeley’s (1996) notion of the phonological loop.

If the phonological loop is characterised in this way it can be seen that its functioning (that is, both the semantic and phonological pathways) are built by receptive and expressive language experiences and also by exposure to print. This characterisation of the phonological loop compares favourably with a recent article by Snowling, (2004), where she suggests that promoting better language skills in children at risk can mitigate against the worse effects of literacy difficulties. Further, the screening device developed in this research identifies those children who in Snowling’s terms will ‘recover’ from earlier literacy delays because their language functioning can be improved early. It also identifies those further along the continuum of difficulties at the earliest possible point in their ‘education’, giving maximum opportunity to improve their language and thus literacy outcomes eventually. It can be argued that this research demonstrates phonological loop functioning can be affected by development that is dependent on environmental influences.
vii) Contribution of the main study

The contribution of this research to what is already known about the early development of literacy is two-fold. Firstly, weaknesses in language processing which might later contribute to literacy difficulties and usually go unnoticed can be identified by colour naming times alone as early as 3 years 6 months, which for most children now corresponds to the beginning of the Foundation Stage of the National Curriculum. Secondly, young children identified with language vulnerabilities which impact on literacy development need appropriate support to further build their phonological memories by improving their vocabularies (and so phonological and semantic processing). If the two pathways suggested by Seidenberg and McClelland (1989) correspond with ‘the phonological loop’ suggested by others the differential outcome of the language-based interventions used in this study that promoted language development can be explained.

The important characteristics of the intervention which showed the best early literacy gains for children identified ‘at risk’ by this means in the main study are thought to be:

- The conceptual level of the materials used needs to be very concrete to the children’s everyday experiences and progressively extending their memory for sounds as this is built by pattern matching and storing new aspects presented;

- The visual quality of the materials needs to be very good and also to allow some emphasis on the orthography of the vocabulary being learned so that the children are helped to understand that sounds made can be represented by words and letters;

- The language content, level and units of linguistic information to be learned need to focus on and build memory for words and their meanings as well as their sounds.
In short, the materials and teaching approach used in the phonological memory intervention of the main study reflected Bowers and Wolf's (1998) analysis that the orthographic, phonological and meaning aspects of literacy are equally important and profoundly interactive even before children are formally exposed to print. The little books used in this intervention allowed the characteristics outlined above to come together for the purpose of enabling the children to engage in learning and understanding new vocabulary, the phonology of the words used and also gave opportunity to inspect the orthography of the words. It demonstrates that for those children deemed or identified to be at risk for literacy difficulties these sub-skills need to be specifically taught but in a developmentally and curriculum appropriate manner which teachers can relate to. It adds to our knowledge of approaches to support literacy development that can be used by staff in nursery and Reception classes, especially before formal instruction begins.

viii) Discussion in the context of classroom based research

Several recent studies have attempted to marry phonological development and literacy with learning theory and educational practice see especially Hatcher et al. (1994 and 2004), Blachman et al. (1997), Solity et al. (2000). All of the researchers named above have developed programmes specifying the order in which the sub-skills of literacy should be taught. Hurford et al. (1994) and Blatchman et al. (1997) also recommend which term and/or year of education the various sub-skills should be taught so as to lead to good functional literacy. All of these accounts are compatible and can be mapped on to Frith's (1985) diagram of the stages of literacy development presented in Chapter One.
Hatcher (1997), an educational psychologist, has developed a sequential programme for literacy acquisition based on the outcomes of research and stresses that phonology and reading should be taught alongside each other to be maximally effective. He has recently, Hatcher et al. (2004), refined his programme for school use and specified that some children do not need specific teaching of phonics in Reception, this being better left to Year One (these are the children who show the greatest delays in phonological loop function.) Blachman (1997), a speech and language therapist, and colleagues completed a two-year study involving the professional input of teachers and educational psychologists, which is rigorous and includes a control group. This study is a rare example because the children’s regular classroom teachers administered the intervention programmes in classrooms. The children’s own teachers were used specifically because they had expressed concerns that they would like to better understand the links between Kindergarten activities to enhance phonological awareness and the development of decoding skills in early school grades. The researchers felt that the intervention would be more convincing to other teachers when reported if the children’s skills improved as a result of the action of their regular teachers instead of specially trained staff imported into schools. In their approach specific instruction was given in the alphabetic code. By the time the programme was completed, the children had experienced all the syllable combinations required for English spelling rules. This intervention was found to enhance later literacy development.

Solity (2000) has recently reported outcomes which are better than those produced from the National Literacy Strategy in matched schools using the principles of instructional psychology in an approach they call the Early Reading Research. This has in common with the approach taken by Blachman et al. (1997) that the intervention is carried out in everyday classrooms with the specific aim of integrating aspects of acquiring
phonological skills with other aspects of literacy teaching. Children are taught through distributed (rather than massed) practice three times a day for 10 to 15 minutes. Part of this approach involved reading high quality stories to the children with elements of shared reading as the children’s skills improved.

In the main study described here the children’s usual nursery staff were trained to and delivered the interventions. They also, as in Blachman’s (1997) research, expressed the need to know more about children’s literacy development and how they might contribute to this at early stages. All interventions significantly improved the early literacy scores of children considered at risk of difficulties at nursery entry thus once again showing that delivery of specific activities by the children’s usual teachers and helpers made a difference. Each intervention was balanced for time delivered, emphasis on: building vocabulary, exposure to print, handling text, specific links between sounds spoken and their orthography, making the symbols for sounds learned on paper. Practice was carried out daily for most weeks for three terms and thus was underpinned by similar principles of instructional psychology as those built into the research by Solity et al. (2000).

There was no particular teaching sequence defined for any intervention as choice of materials within each intervention was child-led but the same materials, (sound, rhyme or book), were used to mastery. Possibly as the children with vulnerabilities in underlying processes needed for literacy were identified early significant effects were found even without specifying a sequence in the phonics to be mastered as has been a recent trend in classroom based research and is certainly found in many ‘catch up’ programmes developed for older children. To test whether the interventions delivered here could produce even more gain for the children concerned if the sequence of
phonics were specified, the research would have to be repeated doing just that but this
would introduce and element of 'formality' into Early Years teaching which might not
be welcomed or effective.

The 'phonological memory' intervention produced the most significant gains in the
study described here and the possible reasons for this have been discussed earlier.
Again, to test out whether the other interventions could achieve the same gains, the
study would have to be repeated with specific attention paid to balancing the aspects set
out in discussion for each intervention: conceptual level, visual quality and language
content of the materials used.

5.5 Summary of suggestions for further research based on discussion of pilot and
main studies

- Both the pilot and main studies were carried out with relatively small numbers
  of children and could be repeated with larger numbers. If the same effects were
  found it would increase the face validity of findings;

- The use of colour naming times to identify children at risk for literacy
difficulties could be repeated to give technical information on test-retest and
  inter-rater reliability;

- Examination and adjustment of the cut-off points for identification of 'at risk'
  for later reading and spelling difficulties from colour naming times would alter
  the sensitivity and specificity of their use. This would affect the predictive
  validity of the use of colour naming times to identify those children in need of
  further investigation and possibly support for development of early literacy
  skills;
Further investigation of the interventions to enhance early literacy skills used here and balancing of conceptual levels, visual quality of materials and emphasis on the units of language learned. This would enable strict comparisons and conclusions to be drawn on how best to support young children who are vulnerable for early literacy difficulties;

More follow-up with the staff delivering the interventions by the researcher aiming to build in quality control over delivery to minimise the effects of differences in what children receive in different locations. This would lessen the effect of differences and mean the results analysed would be a truer reflection of the various interventions;

Standardised tests of literacy performances should be used where possible as these allow the outcomes of one study to be better compared against other similar studies. [Another way of ensuring this for the main study here would have been to follow up the children at the end of Key Stage One, but this was outside the time limits of the researcher in this case.]

As vocabulary is implicated by several theorists in affecting the phonological base on which literacy is built (see Gathercole & Baddeley, 1996; Locke, 1997; Scarbrough, 1998; Snowling et al., 2003), any repetition of the pilot or main study should include a basic measure of vocabulary as both an entry and outcome measure for the purposes of comparison with colour naming times and to examine the influence of intervention on this;

Nursery staff involved in testing the colour naming times of the children and in delivering the interventions made several positive comments about their gains from the research but these were not specifically elicited or used to inform delivery. This could be built into any future work as it may enhance practicality of their delivery and be useful learning for other nursery staff;
• Further examination of the interventions used here might provoke ideas for other language based interventions for young children which could be collaboratively researched (as suggested above) and disseminated to all groups of staff working in early education and care settings;

• Further consideration could be given to including colour-naming times at entry to provision as part of the FSP for formative use. Such a strategy would help to identify as early as possible those children in need of fuller investigation and possible intervention to develop the sub skills on which literacy rests, but not until more work has been done on the technical quality of both devices.

5.6 Implications for EP practice

i) A more sophisticated knowledge of literacy development and appropriate interventions

It would be ideal to ensure that every adult working with pupils needing to develop literacy skills has a thorough knowledge and understanding of the processes and sequence of development so that they can generate individualised solutions to problems more readily before they become entrenched. [Nursery staff involved in these studies commented as such without being specifically invited to do so.] However, illiteracy figures show we are far from this ideal position and thus as ‘experts’ in development and learning it would seem sensible that educational psychologists are confident to provide advice on appropriate methods of identification and meeting literacy development needs based in research as requested. This is both an initial training and continuing professional development need for educational psychologists that has implications for training courses and EP Services.
ii) Recognition of the importance of interventions for language to literacy for early years

The interventions used in the main study described here were based in support for developing language more than for developing literacy per se. More research into these interventions is indicated and this may also suggest other language-based interventions to develop later literacy. This area of educational psychologists' knowledge and practice may need to be addressed given the opportunity they afford for delivery during the early years when there are less formal curriculum demands allowing for more time to provide compensatory experiences for children who need this. Again, this has implications for initial and continuing professional training for educational psychologists.

iii) The potential for involving parents/carers in interventions

Given the influence of exposure to print at home found in this study (and many others) and particularly the effects on early literacy found from encouraging children's phonological development pre-literacy via language it seems sensible to suggest that educational psychologists suggest and provide practical support and training to encourage parents/carers of children considered to be 'at risk' (and those who work with them, including work before 'early education' begins) to do this at home as well as early years staff providing intervention in their provision.

iv) EP-led further research into pre-school interventions for literacy development

The interventions used here require further research and refinement. This presents research opportunities that could be carried out by a range of professionals. However, they would present an ideal opportunity for educational psychologists because of the possibility of following up children identified and worked with during their early years later into their educational careers to inform educational psychology practice.
v) EP-led further research into colour naming as an early indicator of literacy processes

Colour naming times at 4 years 9 months in the pilot study were highly correlated with later spelling \( (r = .8) \) and even though less so with later reading \( (r = .4) \), this still reached statistical significance. As colour naming is a quick and developmentally appropriate device that is accessible and equitable in use for young children the cut-off points used for identification of ‘at risk’ for literacy difficulties in using colour naming could be further researched by educational psychologists. If adjustments to the cut-off points of colour naming times used to identify ‘at risk’ for literacy delay/difficulties were made to maximise the sensitivity and specificity of the device used here, it could be used very early.

vi) A clearer perspective of the inadequacies of screening and other National Curriculum ‘measurements’

The research into the inadequacies of Baseline Assessment and other screening devices may be well known but there is less written about National Curriculum ‘measures’. Although there are moderation arrangements in place for teacher assessments along the National Curriculum and end of Key Stage tests are externally marked local authorities base resource decisions on schools’ National Curriculum scores and this affects decisions made for some pupils within schools. National Curriculum measures are criterion referenced for the marks awarded and the moderation systems for school-based scoring between end of Key Stage tests introduce sources of error in the same way as Baseline Assessment schemes. Thus, as educational psychologists we need to be aware of the inadequacies of screening and National Curriculum ‘measurements’ in advising local authorities on resources based on these tests. We also need to be prepared to challenge similar measurements and decisions at school and pupil level and encourage
this level of awareness of the inadequacies of the national measurement systems in
others as there is a risk that children and young people will become labelled as a
consequence of them and expectations laid on them will be too little or too great. As
screening devices are not completely accurate vigilance by educational psychologists
and teachers is also needed for individuals not identified by use of them.

vii) Collaborative working for both research and interventions

Professionals from different backgrounds based interventions used in the main study on
research: educational psychologists, academic psychologists and speech and language
therapists. Each brought to their research a variety of theoretical and professional
backgrounds and experiences that informed their lines of enquiry. The interventions
involved joint work for delivery from several groups of staff. However, all were
working with and on behalf of the same vulnerable group of children. There might be
considerable advantage in terms of perspectives to draw from, quantity and quality of
research and solutions if activity were pooled and carried out collaboratively, rather
than all working from as single agents of change.

viii) The development of more sensitive measurements and consequences of this

Collaborative working as outlined above may lead to the development of alternative
measures which are more sensitive to children’s developmental needs for later literacy
and thus require educational psychologists to work with younger children and their
families in and through a range of settings and providers.
CHAPTER SIX
CONCLUDING COMMENTS

The implications of knowledge and understanding of literacy development and early identification of developing literacy difficulties for the practice of educational psychology is at every level of involvement for educational psychologists:

For the individual child, it is important to reliably identify a potential difficulty early and intervene ethically and appropriately. With further work, the colour-naming screen presented here could be used by early education providers to identify ‘at risk’ children on entry. All of the interventions used in this research produced significant gains in early literacy performance for the ‘at risk’ group and with further refinement could be used to support language to literacy development, especially for children at risk for literacy delays and difficulties;

For education providers and local authorities data from screening children on entry to nursery or school could enable identification of those who need more support if they are to improve literacy outcomes and thus children’s life chances. Ideally, the screen would be included in the assessment methodology of the FSP as it is intended to be used formatively from entry to school or nursery so that it will lead to intervention right from the start where needed. However, it is clear from the research into Baseline Assessment that the technical merit and use of the FSP will need further work (as well as the same for the colour naming device used in these studies.)

Given the current emphasis on community approaches to promoting the very early development of young children, for example, ‘Sure Start’, in socio-economically deprived areas, educational psychologists and all involved working with families of
very young children need to be aware of the importance of language experience and willing to persistently encourage it.

Clearly too, there needs to be more liaison between educational psychologists, speech and language therapists and early years staff both for the design and delivery of language programmes to support literacy in nurseries/schools but also on a wider basis in the community before children enter nurseries and schools. This is especially important in the future as many Primary Care Trusts will not be carrying out developmental assessments of young children after the age of two unless parents self-report difficulties. This means that lack of development in vocabulary and syntax will only be spotted in those few children referred to Speech and Language Therapists and this number is about to decline as a result of removing developmental screening for all children. The effect of language development on later literacy must be taken seriously by education professionals and providers to make up not only this shortfall in the monitoring of development of pre-schoolers but to enhance understanding of the importance of early language for literacy. Elbro et al. (1998) noted “an indistinct (sound) representation may serve its purpose in everyday communication perfectly well, but may be very hard to segment into phonemes and use as the basis of further manipulations”, p.53. Their point is that imprecise and impoverished memories laid down in the phonological store proposed by Baddeley et al. (1998) will impact on literacy development later.

If emphasis on those aspects of language needed for literacy and intervening to prevent potential difficulties is done in nursery or Reception later problems may be alleviated and children’s life chances enhanced. Well’s huge study carried out in Bristol in 1985 also provided evidence that when vocabulary development is slow and inadequate for
educational purposes there is a fundamental effect on thinking and problem solving leading to very much lowered school achievement in affected individuals. As indicated in the opening Chapter, 30 to 52 per cent of offenders have literacy difficulties and 59 per cent had extra help at school but did not find it useful. After specific teaching of literacy skills in prisons from the Dyspel project the re-offending rate of offenders fell by 82 per cent. Many offenders who were interviewed in the course of the Dyspel project (c.f. Klein, 2002) commented that they were sure that if they had been able to master reading and spelling at school they would have found the whole experience less 'shameful' and felt less resentment.

The challenging question is - why wait until people at risk of literacy difficulties fail? At the end of this study, it can be argued that much suffering might be alleviated and more people realise their potential if we simply re-focused on early identification and provided appropriate support for language and literacy development as early as we can.
APPENDIX A

COLOUR FAMILIARISATION CARD

Read the following instructions to the child, pointing to each colour as you name it:

'I'd like you to name these colours as fast as possible. For example the first colour here is "blue", the next is "red", the next is "yellow", followed by "black" and "green".

Now you name them as fast as you can.'

Praise the child’s efforts.

Prepare to turn over the page which will reveal Card 1 to the child.
COLOURS
COLOUR CARD 1

I’d like you to name these colours.

Go from left to right. (Sweep your hand across the row, from left to right as you say “left to right”.)

Say the names of all of the colours on the page as quickly as you can.

Do you have any questions? (Answer questions.)

Remember, name all of the colours as quickly as you can. Ready, when I say “start”.

Pause for about 2 seconds before proceeding.

Ready . . . start. (Pause for about one second between saying “ready” and “start”.)

Begin timing as you say “start”.

Stop timing as the child names the last colour.

Praise the child’s efforts.

REST

Allow the child a minutes rest before turning over to reveal Card 2.
COLOUR CARD 2

Now we’ll do it again with a different card.

Remember, name the colours as fast as you can.

(Pause for about two seconds before proceeding).

Ready . . . start. (Pause for about one second between saying “ready” and “start”.)

*Begin timing* as you say “start”.

*Stop timing* as the child names the last colour.

Praise the child’s efforts.

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Assignment One

The profession and its context.

Valerie Ann Legg
# Assignment One

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THE PROFESSION AND ITS CONTEXT - ASSIGNMENT I - VALERIE LEGG

Introduction.

A book written during the 1970s suggests that children are influenced by the socialisation provided by their family and then through the school as an instrument of the world beyond the family. The book is "The child, the family, and the outside world". Winnicott. (1964). In reading about the history of educational psychology it seems that the profession has followed the same developmental path into the outside world as described by the title of that book, but perhaps 'the family' in the title should be replaced by the influence of 'the school'? Over the course of time since educational psychologists came into practice there have been shifts in the way in which professional practice is delivered to take account of the context in which children are educated and the needs of the child. This is beset by difficulty as the child is the 'client' of the service received but the school is the 'customer' and the Local Education Authority is the provider/purchaser of services, but they are delivered by Educational/School Psychological Services. Thus educational psychologists have responsibility to all three: clients, customers and purchasers.

By analysing publications referring to what educational psychologists do it is possible to chart the progress of the delivery of educational psychology to schools and other customers through several changes. These are broadly: providing assessment only, through informing others to consulting them, and from consulting them at the point of referral to surveying their needs before involvement in an attempt to assure quality in what is received. After analysing the literature, information from a survey of a random sample of educational psychology services is presented. This was carried out to examine how far the profession has moved from assessment led services towards other activities, and to what extent the British Psychological Society Quality Standards framework is in operation.

The changes in professional practice over time and results of the survey of services are then compared with proposed changes in accountability, such as the 'Best Value' in public services initiative. Changes in initial training of educational psychologists are already proposed and the results here support these in order that the profession can continue to develop as future directions emerge. Some of these are implicated in the survey returns and are discussed in the conclusion.
There seems to have been four shifts in focus over time brought about by the increasing influence of the school and the outside world. Children, parents, teachers, schools and everything that influences them make for complex interactions. Thus the role of educational psychologists has broadened as awareness and knowledge in all of these areas has grown. As well as a broadening of the role(s) a call for greater accountability requires evidence based practise and this affects the way in which educational psychology is practised and delivered. Following a brief history of the growth of the profession evidence for the following shifts in focus will be presented:

- the shift from a 'within child' model of the cause of difficulties to take account of the effects of environment and particularly the influence of school. Tizard. (1971):

- the shift to 'giving psychology away'. Lindsay. (1981), to enable others to optimise children's chances and educate them appropriately.

- the shift to a 'consultation' model used with those who have the main concern about a child. described as "integral to work with the individual child" by Jennings. (1995):

- the shift toward aiming for 'quality assurance' in the delivery of psychology to those requiring it. Lindsay. (1996).

Having examined the shifts under the above headings it is hoped to illustrate that because heed has been taken of the influence and demands of 'the outside world' educational psychology as a profession has been successful in refocusing effort as a result of the first three shifts described above. To gauge where the profession is with the fourth and final shift a survey of the structure and activities of a representative sample of Services is presented. These findings are examined leading to concluding comments on the current trends emerging and called for in professional practise.
Growth of the profession.

Burt was the first and only educational psychologist (EP), appointed by the London County Council in 1914. His role was to apply psychology to the education system including the assessment of individual children, research and advice to the council to guide policy. From 1914 onwards there was a very slow increase in the number of EPs appointed, and thus their location across the country was patchy. For most EPs their role was more restricted than Burt’s and they worked carrying out assessments of children’s development, intellectual and emotional functioning within a team of professionals in child guidance clinics. Links with schools were often limited. Many authorities developed a parallel school psychological service to which an EP would contribute some time. Unfortunately, this was often only one person. The shift from a clinic setting where there were other similarly trained professionals for support and guidance to a few lone practitioners visiting schools raises the question of quality control in what could be achieved or was received by clients/customers. The British Psychological Society is a learned body that can regulate the profession by the dissemination of knowledge and a collective view of best and good practice. They are also the body to which complaints about individual psychologists are taken. The Division of Educational and Child Psychology came into being later. Despite these bodies there was no overall quality control obvious except for the rare and extreme instances of misconduct, indicating what is not expected rather than what is.

By the 1960s many local education authorities (LEAs), were beginning to rely on the advice of their EPs for placement and educational treatment and resources for children. The national shortage of EPs at that time caused the Government to set up The Summerfield Committee to solve this situation. The Summerfield Report described a wide range of good work already undertaken by the very small profession in terms of numbers. (354 EPs in England and Wales in 1968). They also recommended more training courses and an increase in numbers. At that point the list of activities in which EPs were engaged, (and used in the Summerfield survey to analyse where time was spent), was - in order of decreasing amounts of time spent on the task: assessment, writing up, treatment, liaison, travel, organisation and administration.
The role of educational psychologists in the assessment of pupils with special educational needs was outlined and reinforced by the 1981 Education Act. This followed from the recommendations of the Warnock Committee. (1978), reporting on and suggesting a system that would aim to ensure that pupils needs were adequately recognised and met rather than ignored. This statutory duty of LEAs to identify and meet the special educational needs of pupils between 0 - 19 in its geographical area led to another increase in numbers of educational psychologists in their employment. The statutory emphasis on assessment has at times heavily skewed the work of LEA psychologists and not until the 1993 Education Act gave some responsibility for this back to schools was there the opportunity to plan to do much else. Growth in numbers has continued throughout and by the 1990s there were approximately 2100 EP posts (full-time equivalents) in the British Isles. (HMI Report. 1990).

From the early 1970s there was increasing discontent with the model of assessment being used with children referred to child guidance clinics. (Tizard. 1973). Specific discontent arose because this route for referral and type of assessment was seen to single out children and then assessment in the clinic often did not point up the difficulties seen in school. That being so it was even more difficult to advise on what the relevant adults could do to help. It became obvious that no account was being taken up the influences of environment in causing the behaviours seen. Thus EPs became increasingly interested in assessing children in the context of their school. (Gilham. 1978).

Child and school.

Access to schools and an increasing awareness of the effects of this environment on children led to other developments:

- the desire to be preventative, that is, to prevent educational failure. This led to systems of screening being investigated and developed. For example, the Infant Rating Scale. (Lindsay. 1981);
- there was an increased interest in working with systems in schools and within the LEA;
- types of approaches and curricula for different groups of children were developed. for example, Direct Instruction. Solity. (1987):
- other group approaches emerged, for example, types of social skill training:
-the above led to small-scale projects in schools and within LEAs:
-the greater presence of EPs in schools increased the need to consult more widely with teachers and parents:
-awareness of approaches that worked and those that did not and the small number of educational psychologists compared to the number of children led to increased teacher demand for in-service training of teachers throughout the 70s and 80s. (An HMI survey of psychological services in 1990 indicates by that year 20% EP time was spent on training teachers compared to none in the 1968 survey).

However, it was at about this time of burgeoning interest in the learning environment and approaches to instruction that the 1981 Education Act brought together the good practice going on informally in LEAs, where EPs already advised the LEA about a child's needs and likely resourcing. The 1981 Act made this a statutory function of the EPs role. This continues to the present day and is seen as both a blessing in that allows EPs to contribute to the assessment of individual children's needs, but can also be a drain on time to do other things, for example, preventative work. It can also alter the perceptions of school and parents that EPs are there to provide access to more resources rather than try to create more appropriate action and attitudes on behalf of children.

A formal process for identification and support of children with special educational needs and a desire to prevent educational failure led to much transfer of knowledge and skill to other professions involved. This time in the development of practices in educational psychology is referred to in the literature as 'giving psychology away' and information about this era will be presented next.

Giving psychology away.

Discontent with assessment of 'within child' factors and increasing awareness of the effect of context led EPs to venture away from child guidance clinics and into schools. This led to demand for them to be in schools and particularly to contribute to Inset. (The increase in time spent training teachers from none in
1968. (Summerfield). to 20% by the HMI survey of 1990 has been referred to previously and is presented
more fully below.

This can be charted from the surveys of EP practises and a few more recent studies done of how EPs spend
their time. The Summerfield Committee in 1966 carried out a comprehensive survey of what EPs did and
asked them to estimate the percentage of time spent for each activity. The Division of Educational and
Child Psychology has repeated this in 1980. (DECP), using psychologist's own reports of their practise.
Her Majesty's Inspectorate of Schools repeated it again in 1990. (HMI), based on visits to a third of all
services of 1990 are in a sense more independent of the profession coming as they do from outside. The
changes in percentage time spent on various activities are interesting:

<table>
<thead>
<tr>
<th>Time spent on: (%)</th>
<th>Summerfield '68</th>
<th>HMI '90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>16-28</td>
<td>)</td>
</tr>
<tr>
<td>Writing up</td>
<td>15</td>
<td>) 60 - all categories</td>
</tr>
<tr>
<td>Treatment</td>
<td>10</td>
<td>)</td>
</tr>
<tr>
<td>Liaison</td>
<td>5-10</td>
<td>)</td>
</tr>
<tr>
<td>Travel</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Organisation and administration</td>
<td>15 ( 1 in 8 )</td>
<td>20- Inset and 'other'</td>
</tr>
</tbody>
</table>

| Full time equivalent EP posts | 354 | 1.500 estimated |

Simply calculated, one day per week of 1.500 EPs time would be equivalent to 300 days available weekly
to train teachers/others - and given that the size of groups involved in training is usually from ten to
twenty people - that is a lot of 'giving psychology away' even if we divide the figure in half to take
account of time given to 'other' activities!

There were also numerous courses developed by EPs to be delivered in schools and then to form stand-
alone packages for schools and teachers to dip into. Many of these courses rely on direct behavioural
methods or collaborative processes. There is a very long list of topics, but a few examples are: Special
Educational Needs in Mainstream Schools. (SEND). Mallon et al. (1989). We don't have bullies here.

Besag. (1992). There are also packages developed to train professionals working with children who are not yet in school and thus greatly involve input from their families, for example, Portage, by Cameron and White. (1987). Latterly, there are also approaches developed to help schools problem-solve and to develop at the institutional level, for example, Soft Systems Methodology. Frederickson. (1990).

Many teachers having interest in particular types of difficulty experienced by children have sought further training, some courses being certificated by their professional bodies. EPs and universities working together often provide training on these courses. For example, the Certificate in the Teaching of Blind and Visually Impaired Children, and the Royal Society of Arts Diploma in the Teaching of Dyslexia. Many LEAs have developed peripatetic support teams to support pupils with particular types of difficulty as well as encouraging staff in special schools and units as well as a mainstream teaching staff to develop their skills to undertake such courses to better meet the needs of the school population. EPs provide this training in LEAs and via universities.

There have been several changes in legislation and a shift in budgetary control which have moved the responsibility for the identification and provision of pupils with special needs in mainstream schools. (1981. 1986. 1988 and 1993 Acts). From the 1993 Act was created a specialist post for the co-ordination of all aspects of day-to-day matters for pupils with special educational needs. (SEN), within schools. This person's post, the Special Educational Needs Co-ordinator. (SENCO), is described in the relevant documentation. National Standards for Special Educational Needs Co-ordinators. Teacher Training Agency. (1998):

"The SENCO, with the support to the headteacher and governing body, takes responsibility for the day-to-day operation of provision made by the school for pupils with SEN and provides professional guidance in the area of SEN in order to secure high quality teaching and effective use of resources to bring about to improve standards of achievement for all pupils."

9
Within their professional knowledge and understanding the documents state that:

"It is important that the SENCO remains up-to-date with developments in special education and in particular with education generally".

Of course, their training and development is provided by the specialist teachers already trained by EPs and EPs themselves. Also, in their job description under "leading and managing staff" it states:

"SENCOs support staff involved in working with pupils with special needs by ensuring all those involved have the information necessary to secure improvements in teaching and learning and sustain staff motivation.".

This is indeed having given some aspects of educational psychology away such that the SENCO maintains the day to day oversight of input to pupils with special needs and part of the support element for their staff and parents in a way previously done by the EP.

So what do the EPs do now? Having been so successful in 'giving psychology away' has not allowed EPs to disappear. far from it. now many other people are aware of the need for an understanding of children's development, special needs and the effects of differential education practices. an EP is required to consult on these matters to ensure people feel confident. decisions are made and children's needs identified and met. (As one SENCO put it to me recently. "I know I know a little bit about special needs and the LEA procedures and teaching in this school and the children and parents - but I need help to help me make better sense of it. I don't have the knowledge of how it all fits together that you do. You help me feel I've made the right decisions." K. Nicholls. SENCO at Castlefield School. High Wycombe. personal communication.) This is one SENCOs definition of the role of an EP and how the process of consultation feels.
Now that much day to day responsibility in schools is carried by the SENCOs. EPs can bring different aspects of psychology into schools for others to tap into. As stated previously, much work is done by and through others but the point of contact to enable them to decide on the most appropriate course of action is consulting the EP. Several factors led to the shift in delivering educational psychology to schools by means of consultation.

Consultation.

Just as in the early 70s there was discontent with the assessment of within child factors. Tizard. (1973). similar discontent with the notion of EP as solution-finder erupted. (Georgiades and Phillimore. 1975).

Gutkin and Curtis. (1982). point out that at this time school psychology was an attempt to implement the medical model in school settings. There had also been a longstanding issue because the outcome of a great deal of research on treatment, for example, psychotherapy, (Eysenck. 1953). indicated that they caused little change. The realisation that change has to be effected in others in the world beyond the child to ensure that something different happens for the child and that change is maintained by others led to an increasing shift away from working with individual children and increased emphasis on working with and through others.

Models of collaborative-problem solving and change were sought from several disciplines including counselling. organisational development and models of consultation were adapted from medicine and business. A definition of consultation describing the desired collaborative problem-solving framework which is widely accepted is found in Conoley and Conoley. (1990):

"Consultation is a parallel relationship between two professionals in different fields, which focuses on work-related problems. The purpose is to enhance the problems solving capacity of the consultee. A particular consultation should provide the consultee with all or some of: new knowledge, new skills, a greater sense of self efficacy, a greater degree of objectivity."

11
Consultation within applied psychology as used in schools is described very well by Miller, (1991). It is worth describing his notions of the collaborative problem solving used by EPs and the 'mainstream' psychology they bring to bear as it gives a good picture of the contribution of both pure and applied psychology in EP practise as it might be as an ideal today. He describes the stages of problem-solving as:

- identification:
- assessment:
- formulation:
- planning:
- intervention:
- evaluation:
- action.

These are a series of broad steps which provide the opportunity to move back and forth between them.

He describes the contribution of psychology as coming from undergraduate knowledge of:

- research methods:
- statistics:
- social psychology:
- cognitive psychology:
- biology:
- developmental psychology.

This is then built on by training in applied psychology. Training in applied psychology allows the problem solving sequence to be used professionally. This seems to explain 'consultation' very well and he includes the following diagram to illustrate all aspects of pure and applied psychology used within a consultative framework:
He places the role of teacher as central in the whole process:

"a shared and clear agreement between a teacher and psychologist at the formulation stage is absolutely essential if a problem-solving approach is to stand any chance of helping a pupil because of the teachers central role in the whole process".

He illustrates this with the example of a restless 8-year-old boy who frequently disrupts the work of others.

There could be several explanations for this behaviour but it is crucial that the teacher and the psychologist "generate a list of hypotheses together". This involves much listening to each others point of
view because both may bring old memories and interpretations or subconscious processes to the situation and it is necessary to get to the stage where all of these are stated before effective collaboration can proceed. He considers this to be the essential skill of the psychologist - to bring relationships to a spirit of co-operative enquiry. Again, a useful diagram included below illustrates this point about open communication:

<table>
<thead>
<tr>
<th>Teacher's formulations</th>
<th>Conscious and stated</th>
<th>Conscious and not stated</th>
<th>Subconscious</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYCHOLOGISTS' FORMULATIONS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscious and stated</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscious and not stated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subconscious</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thus, according to Miller there should be no loss of psychology in the shift from methods used in schools by EPs to a consultation approach. Many Educational/School Psychological Services have worked on these ideas and used the approach in service delivery. Wagner, (1995), has even explained how the approach can be used within a group or family context. There is now sufficient history of the use of this approach to examine its benefits scientifically, though to date much of this work has been done in America and is
reviewed in Gutkin and Curtis. (1982). From this research they report the main benefits of a consultation approach used in American schools to be:

- referral rates drop;
- teacher skills in problem-solving generalise;
- children whose teacher or parent received consultation achieved better later;
- teachers found problems to be less serious;
- teacher effectiveness with other children with special needs increased;
- teachers reported an increase in professional skills;
- teacher attributions of the cause of children's difficulties move from 'within child' to an interactionist perspective;
- teachers and pupils learning and psychology are enhanced in terms of wellness and skills.

Gutkin. (1986). re-examines this review and cautions that in the interpretation of findings on consultation in American schools one should be aware that a school psychologist's effectiveness as a consultant is mediated as much or more by the subjective perceptions of the consultees as by objective reality. A great deal of the research used teacher self-reports of change and increase in skills rather than objective measures of behaviour change in the teachers or their pupils. Even where behavioural measures were used there are few studies using a strict experimental design and therefore results could be due to one or several factors other than the ones implied in the studies.

Miller. (1996). reports research where teachers perceive an EPs personality to be as important as the consultation process. This begs the question of just what is important in the process of consultation or the delivery of educational psychology in schools? It could be any number of factors. for example; consultation per se. EP personality. the beliefs of teachers, teacher investment in strategies or children, attitude change, etc. It seems there needs to be more and better analysis of just which factors and in which combinations are acting to lead to effective consultation. Gutkin and Curtis. (1982). conclude that
consultation is not a panacea and call for an integrated model of delivering developmental psychology to schools with consultation and traditional EP methods if appropriate.

Within the profession examination of what could be achieved by consultation in schools was timely because funding structures underpinning the education system have shifted from the 80s to the mid-90s progressively towards putting money into the schools budget for the purchase of support services. This is referred to as the Local Management of Schools (LMS), and shifted the power base away from the LEA as provider towards schools as purchasers. During this period there were several years when it was unclear whether not the funding for psychological services would be delegated to schools for them to decide whether and what to buy back. Analyses of what EPs had uniquely to offer, like the one found in Miller above, were timely to allow the profession to see what should be offered or could be offered by others. A few services took the opportunity to sample the outside world to see what aspects of EP work were valued. There are notable examples from Lindsay, (1991), and Dowling and Liebowitz, (1994), describe the setting up of the new Westminster Psychological Service. This sampling of the requirements of the outside world comes close to a 'quality assurance' notion of the delivery of educational psychology to clients/customers.

Quality assurance becomes important in terms of customer satisfaction now that educational psychology is delivered to nominal purchasers of the service. Particularly important at the moment as the government is encouraging purchasers to demonstrate they have received the 'best value' from amongst services delivering similar functions.

It is fortunate indeed that the idea of quality control in what EPs deliver has shifted to the notion of quality assurance over time as it is extremely difficult to demonstrate the direct effect of an EP because of the lack of objective evidence and the dearth of studies as reported by Gutkin, (1986), and what they do is mediated by the attitudes and actions of those who have consulted them, as Miller, (1996), suggests.
Shift Towards Quality Assurance.

Quality assurance is not the same thing as 'effectiveness' but a wider concept based in what is delivered compared to identified needs and perceptions. This is complicated in educational psychology services because the customer is often the LEA or school but the client the child. According to Fox (1991) the concept of quality in industry grew up through the development of engineering and by the turn of this century was inextricably linked with the inspection of a product which had set characteristics. In the 1930s and 1940s statistical techniques were developed to be applied to quality work and put it on a scientific footing. It became accepted that variability, as defined statistically, was a fact of life and the key to quality was sampling techniques to find a range of "acceptability". During the 1950s and 1960s the notion shifted from 'quality' to 'quality assurance' which moved the base outside manufacturing to commerce and service industries and finally in the 1990s the notion shifted once again to "strategic quality". This last shift suggests we use quality as part of our strategy to deliver a highly regarded service.

However, with the shifts in this notion there has been a widening of underpinning philosophy to include client choice and effect of time. Fox. (1990). describes the main shifts as:

- the customer defines the quality of the service, not the organisation itself;
- satisfaction with the service is related to alternative services;
- satisfaction with the service is not only at the point delivery but also within a longer temporal perspective;
- there are multiple dimension of quality. according to Garvin. (1988). these are:
  - performance;
  - features. (for example. what the service does on a day-to-day basis);
  - reliability;
  - conformance. (for example. service members following policy in a consistent way);
  - durability;
  - serviceability;
  - aesthetics;
- perceived quality.

Centrally, quality is not fixed but varies with consumer expectation. In the instances which have been investigated (reported in Garvin), where consumer expectations of the service were taken and used in design and delivery of the service, satisfaction with what was received has been high.

By 1991 in an educational and educational psychology services context, Lindsay, (1991), describes LMS as "just getting up and running". This was before educational psychology services became a mandatory exception to the delegated schools budget because of equitable access for all children. Before this there was a period of uncertainty about whether Educational/School Psychological Services would be delegated to schools to be 'bought' back. It seemed to several the right time to ask what the requirements of a service would be from 'customers' and this was done within the Sheffield Education Psychology Service and LEA, particularly via schools. In this endeavour the Service asked itself some fundamental questions. For example:

- What is a reasonable job in respect to the content of assessment?
- How much and how to generate consistency in standards of advice to the LEA?

Customer (schools) expectations of the service were elicited by questionnaire and through discussion between groups of all head teachers and other sections of the LEA. This generated a wide range desired activities from customers and later that year, (and again partly in 1993), headteacher satisfaction with the Service was questioned. Results speak for themselves:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Very Dissatisfied</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>1991</td>
<td>14 33 28 17 9</td>
<td>8 20 28 23 20</td>
</tr>
<tr>
<td>1993</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lindsay. (1996). comments on this as. "We have moved in the right direction".

Following the demise of the Inner London Education Authority. (ILEA). in 1990 several new Educational/School Psychological Services were created across London. Dowling and Liebowitz. (1994). have described their work in the newly created Westminster Psychological Service. Headteachers were questioned about the preferences of the type of service delivery required and written service agreements were made. Evaluations of the service by headteacher opinion were carried out at 15 months and 27 months from inception. There was a 71% response rate to the questionnaire and a "very positive" picture of headteacher satisfaction.

Thus since a move from clinic settings into the 'outside world' educational psychologists have as a profession increased knowledge and skills in the profession and in others as well as developed consultation approaches. Practise has moved so far in the direction of the world beyond education that many services are now asking customers their requirements and negotiating delivery at the outset in the manner of a 'service industry'. In a news broadcast on Radio 4. 2/9/99. Tony Blair. the Prime Minister. outlined his vision of the future public services. He described a time when the client has responsibility to request resources to get their needs met. As stated. this may be difficult for many children as clients. but it seems several services are already adopting this philosophy and practise with customers.

Lindsay. (1996). however. sounds a cautionary note in pointing out that as a profession educational psychology has borrowed models from industrial and medical settings. so they may have limitations when applied to other human systems. He is particularly at pains to point out that because services are set within the context of local councils they are constrained by finance and council priorities as well as Government
initiatives and so may have to prioritise activities as well as deliver a quality service. A contemporary development which Lindsay’s comments portend is the ‘Best Value’ initiative. Under this initiative the Government have placed a duty on LEAs to examine whether it could get better value for the money it spends on a service, such as its Educational/ School Psychological Service, by buying it from another provider. Fortunately, it is not necessarily obliged to accept the lowest tender for any work but can take into account a whole range of factors including the quality of the service provided. Unfortunately, measures of quality in educational settings are not very advanced. Information from the survey of activities in psychological services will be analysed against Fox’s 1990 dimensions of quality to gain some impression of the shift in emphasis towards these aspects of service delivery, as these are dimensions likely to be required into the future.

To examine where the educational psychology services in which the vast majority of EPs practise are in relation to the major shifts across the profession discussed here a survey of a random but representative sample of 20 educational psychology services about these issues was carried out. The results are presented and discussed below.

Survey of educational psychology services.

The survey used is included in Appendix 1. Questions posed in the survey arose from the literature discussed to this point and were designed to elicit a picture of practises today taking into account all factors influencing delivery as they have been presented in the text. There were also questions included which refer to LEA structures and planning documents as they might affect delivery. Finally, questions about the new Quality Standards Framework for services and the views of PEPs about the future are asked. Half of the survey forms were sent to city-based services and half to ‘shire’ services. This enabled a contrast to be made between the two types of location to see if there were any influences and to add weight to any findings, which cut across both types of setting. The return rate was 75% with seven returns from city-based services and eight from shire-services.
ANALYSIS

The results and conclusions of this survey are analysed question by question below.

Q1. Numbers and proportions of full-time posts to part-time posts:

<table>
<thead>
<tr>
<th>Nos. in service</th>
<th>Average</th>
<th>Range</th>
<th>Proportion FT posts to PT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>City services</td>
<td>13</td>
<td>5-20.5</td>
<td>2/3</td>
</tr>
<tr>
<td>Shire services</td>
<td>25.5</td>
<td>8.5-50</td>
<td>3/4</td>
</tr>
</tbody>
</table>

Shire services are generally larger.

Q2. Tier of LEA at which PEP holds responsibility.

City services - exclusively third tier.

Shire services - three quarters at third tier and a quarter at fourth tier.

The survey did not ask whether this had always been the position, so there is no way of knowing if this represents a move closer to the centre in city services or away from the centre in shire-services.

Q3. Proportion of promoted posts and what responsibilities these posts carry.

City services - one seventh to one half of posts are promoted posts with a quarter as the mode.

Shire services - one tenth to one seventh of posts are promoted with an eighth as the mode.

This means that generally in shire services larger groups of maingrades are managed by the same number of promoted post-holders.

There is some overlap between the areas of responsibility of senior psychologists and specialist senior posts. These are represented in three columns below with the central column containing those common terms used to describe specialist senior posts and areas of responsibility of seniors without specialist posts.

<table>
<thead>
<tr>
<th>City senior posts</th>
<th>Areas managed named by both city/shire</th>
<th>Shire senior posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out of county</td>
<td>Early years</td>
<td>Management</td>
</tr>
<tr>
<td>Raising achievement</td>
<td>Professional development</td>
<td>Portage</td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>Management/evaluation</td>
<td>Assessment teachers</td>
</tr>
<tr>
<td>Research/development</td>
<td>Geographical areas</td>
<td>Advisory teachers</td>
</tr>
<tr>
<td>Projects</td>
<td>Behaviour</td>
<td>Autism</td>
</tr>
</tbody>
</table>
Q5 Other qualifications.

<table>
<thead>
<tr>
<th>Qualification</th>
<th>City</th>
<th>Shire</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Diploma in family therapy</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Occupational psychology</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Clinical</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>PhD/Doc EP</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Diploma in hypnosis</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Diploma in counselling</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

In this sample there are a greater number of MBAs and PhD/Doc EPs than any other additional qualifications with no significant skew in favour of either type of service.

Q6 Type of work with clients/customers.

This was analysed according to the proportion of the sample returning that their service carried out the type of activity and is quoted in percentages.

<table>
<thead>
<tr>
<th>Activity</th>
<th>City %</th>
<th>Shire %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional/service development</td>
<td>85</td>
<td>100</td>
</tr>
<tr>
<td>Consultation to schools</td>
<td>85</td>
<td>100</td>
</tr>
<tr>
<td>Family work</td>
<td>57</td>
<td>37</td>
</tr>
<tr>
<td>Multi-agency work</td>
<td>100</td>
<td>87</td>
</tr>
<tr>
<td>School development work</td>
<td>71</td>
<td>75</td>
</tr>
<tr>
<td>Consultation within the LEA</td>
<td>71</td>
<td>100</td>
</tr>
<tr>
<td>Projects in schools</td>
<td>71</td>
<td>87</td>
</tr>
<tr>
<td>Individual assessments</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Critical incident work</td>
<td>42</td>
<td>100</td>
</tr>
<tr>
<td>Group work in schools</td>
<td>28</td>
<td>62</td>
</tr>
<tr>
<td>Pre-school</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Inset 71 100  
Research 57 25  
Statutory work 100 100  
1:1 work/counselling 71 62  
Other: Therapy - 12  
Managing other services - 12

There do not seem to be major differences between the types of activity carried out by services in the two locations except for critical incident work which occurs much less in city services in this sample. Perhaps this is because other agencies are available to do such work? There was also surprisingly little work done with families, groups in schools and research.

Q7. Service activity tied to Education Development Plan or Behaviour Services Plan.

City based services - 3 from 7 respondents felt this to be the case with 1 stated ‘partly’.
Shire based services - 3 from 8 respondents felt this to be the case and 1 stated ‘partly’.

It seems there is a greater tie to the EDP and BSP in city based services than in shire based services, at least in this sample. Where there is little or only partial tie between the service and the LEA plans it raises questions of the accountability of public services.

Q8. Monitoring time spent on tasks and client satisfaction.

<table>
<thead>
<tr>
<th></th>
<th>City</th>
<th>Shire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time on tasks</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>EP performance</td>
<td>71%</td>
<td>100%</td>
</tr>
<tr>
<td>Service performance</td>
<td>85%</td>
<td>87%</td>
</tr>
<tr>
<td>Interventions</td>
<td>14%</td>
<td>25%</td>
</tr>
<tr>
<td>Client satisfaction</td>
<td>71%</td>
<td>75%</td>
</tr>
</tbody>
</table>

This represents quite high monitoring of the above categories with the only difference between types of location being in the extent to which EPs time on tasks is monitored. The small number of services monitoring interventions in this sample is perhaps surprising considering the requirement for evidence.
based practise within the profession. There is a greater emphasis on monitoring client satisfaction, which is evidence for the shift in emphasis towards quality assurance and accountability.


Responses broke down as follows:

<table>
<thead>
<tr>
<th></th>
<th>Meeting standards</th>
<th>Partly meeting standards</th>
<th>Not meeting standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Shire</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Within this sample city based services are further towards meeting the BPS Quality Standards framework requirements than shire based ones.

Q10. Future.

For the future most wanted to see a further move away from statutory work in favour of preventive work. Most wanted recognition for the breadth of EP work, but interestingly one PEP commented reflecting Lindsay's views that it would be nice to see. "a greater focus - - - so that - - - we could have something to contribute."

There was a high level of concordance in responses. However, with the exception of one, PEPs felt that their services are as overwhelmed by statutory work as ever and perhaps we should heed this and bear it in mind when helping the DfEE review the future role of education psychologists?

Concluding remarks.

From the survey of activities in psychological services questions 3 and 6 provide evidence for a change in practises over time as suggested in the opening paragraphs of this assignment.

The analysis of returns for question 3 shows that whilst one mention is made of assessment, three are made of activities promoting skill and knowledge in others, (raising achievement, professional development, Portage). Interestingly, no mention is made of consultation, but this may be because it is considered to be a process rather than a function. An equal number of aspects are mentioned under quality
considered to be a process rather than a function. An equal number of aspects are mentioned under quality as are under promoting skill in others. These are: quality standards/assurance, performance management and planning. It is also worthy of note for the future that provision was made for projects and research and development existed in city services in this survey.

Further analysis of the returns for question 6 suggests that all services still spend a high proportion of their time carrying out assessments. (100% in both types of location). Less time is spent on Inset, consultation and quality issues than on assessment and the proportions are similar for all three types of activity in each type of location. Least time is spent on research and development than other types of activity, which raises questions of accountability and evidence based practise.

The analysis of the returns to these questions suggests that work is carried out in all of the areas identified as skills in professional practise but perhaps there has been less of a shift away from assessment work as evidenced from the number of comments and the concentration on this activity in services? This point was echoed overwhelmingly in the final comment about the future made by the 15 PEPs responding in that 14 of them remarked on their desire to see a greater emphasis on other areas of work which could only be effected by a decrease in statutory work. The lowest level of monitoring was given to types of intervention and although the question was not asked directly this may presuppose that examination of what consultation is similarly low even though most services are delivered to a high degree by this means.

It is perhaps not surprising because of the heavy time demand made on services by assessment work that little time or commitment has been given to examining in a detailed way what EPs do and what works.

Argyris and Schon. (1978), have proposed a theoretical standpoint from which to examine EPs beliefs about what they do compared to what they actually do, but it may be that time or need has not arisen until recently for this type of examination to be done. Interestingly, there are not even any descriptive studies of what EPs do in the literature and no research into the work or job save in the area of 'consultation' in schools in the USA. There has been a series of articles in The Psychologist magazine throughout the last two years where Cavill. Press Officer of The British Psychological Society, has interviewed psychologists working in different areas or encouraged submissions from psychologists to describe their own work; for
example. Bradley and Welch. January 2000. Common themes of the work of all psychologists emerge from these articles. Frequently mentioned aspects of work are: assessment of individuals and environments, training, multi-professional liaison, supported organisational change, consultancy, system design, sensitivity, team building, improving relationships, communication in both oral and written form, promoting equal opportunity, awareness of theoretical bases, research, projects, evaluation of projects/systems/interventions, evidence based practice, clinical skills, meetings and administration.

In an article in The Psychologist. Vol. 12 No 7. July 1999. reporting on a British Psychological Society Symposium, 'Towards a more unified profession', Redford passes on comments made about professional competencies from several branches of psychology. Brotherton, in this article, is quoted as saying that for occupational psychologists there is a "need to map out the competencies occupational psychologists have".

Lunt, an EP and recent President of The British Psychological Society, reported in the same article, recommends that there should be a framework that provides an underlying definition of common knowledge required to be a psychologist, and then specific knowledge for the specific Divisions. Frankish, a clinical psychologist, pointed out that the training of clinical psychologists had expanded to doctorate level to encompass all of the skills thought to be required to the appropriate levels. The Society have commissioned two projects to look at underlying competencies to develop generic standards and what unifies applied psychologists. The work on standards has been completed. Bartram. (1999), but subsequent qualifications are still under construction.

These points about common competencies and unifying skills are laboured here because it seems logical that such an examination should take place with the demand for greater accountability of all professions. Professional competencies within each Division have existed for some time and the current push is for unification across the Divisions. This is leading to some developments in the proposed future training of EPs and the demand for an increase in their project design, research and evaluation skills is mirrored in the workplace and evidenced by the returns to several questions in the survey to psychological services.
While this examination of competencies and unifying skills has been going on it has perhaps been easier and timely to arrive at guidance on quality standards in psychological services. The move towards an implementation of these was queried in question 9. The Quality Standards for Educational Psychology Services consist of guidance on statements, process and management of: professional practice, induction, continuing professional development, supervision of EPs in training, appraisal and performance review, and supervision. If these standards are compared against Garvin's. (1990), dimensions of quality: performance, features, reliability, conformance, durability, serviceability, aesthetics, perceived quality; all elements are represented.

The Guidelines for Professional Practice even provide for mechanisms by which feedback is established on 'all aspects of the Service's functioning'. To move even closer to Fox's. (1990), definition of quality assurance or strategic quality as. 'the customer defines the quality of the service not the organisation itself, it would require not only 'systems by which. in response to feedback--------improve the quality of its activities' but services would have to do as Lindsay. (1991). and ask for customer expectations and requirements before designing delivery. This will require greater flexibility and the skills to seek and analyse information on what is required and then compare it to what is received. These skills are possibly subtly different to the data analysis and intervention evaluation skills currently used but within the range of research skills needed to assure quality and be accountable.

Are any other research skills required? In her presidential address. Lunt. reported in The Psychologist. (Oct., 1999, Vol. 12 No 10) calls not only for 'unity within diversity'. She also calls for the gap between research and practise to narrow by promoting a continued interest in evidence based practise. She points out that many psychological societies have codes which include that the endeavours of psychologists should be for the benefit of humanity and that their practise be based on 'science'. but that because of the gaps between research and practise these are:

"Major and worthy aspirations which may be challenged by the realities of practise."
A recent review of education research carried out by Tooley and Derby. (1998). Ofsted. These researchers have underscored David Hargreaves. (1996). comments that:

"Educational research is poor value for money, remote from educational practice, and often of indifferent quality."

Thus EPs are not alone as a profession in this but as allied professionals working within the sphere of education should perhaps take heed of what is happening in the wider world of research in education?

What does the result of the survey carried out here, taken together with changes in training. Lunt's, Oct. 1999 remarks and the poor quality of educational research in general tell us EPs require in training to meet the demands of the current context in which they work? PEPs are calling for more preventative work and fewer ties to statutory demands. Increasing involvement in the Behaviour Support and Education Development Plans in LEAs and more but little time as yet spent in project work and research all point in the same direction and require EPs to have the skills to bridge the gap between research and practice to achieve best value for clients/customers and employers alike. If research and project management skills are available the opportunities are increasing to use them and if not they are needed and should be acquired in initial training or ongoing professional development.

This analysis demonstrates that the profession of educational psychology has travelled the road indicated that the book cited in the introduction: "The child, the family and the outside world ". Winnicott. (1964). From the survey of current practises in education psychology possibly there is less emphasis on the family than one might expect, but a great deal of appropriate emphasis on schools and an increasing influence within LEA initiatives. The shifts in philosophy and practice reflected here have moved the profession from a 'within child' model through the influences of the outside world to accountability within it and beginning to take account of customer requirements as we design service delivery. There has also been much giving away of psychology along the way. There is now more than ever a call for evidence based practise and that can only enhance the position of the discipline of psychology in education and the wider world beyond this sector.
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Questionnaire on structure and organisation of Psychological Services.

1. Please state the number of EPs in the service according to the category:

   Total: Full Time equivalents: Part Time posts:

2. Please mark which structure best describes the position of the Principal /Chief EP w.r.t. other officers in the L.E.A.:

   CEO/Director of Education CEO/Director Other
   Assistant Directors
   Heads of Services (inc. E/SPS.).
   Heads of Services, (inc. E/SPS.).

   [If 'Other', which tier of the LEA is the Principal/Chief's post, taking the CEO/Director as a '1'?]

3. Please state how many Senior EPs the service has and what their special responsibilities are:

4. If you have any specialist EP posts, please state what they are:

5. Does anyone in the service have 'other' specialist qualifications?
   Please tick from the list below:
M.B.A.; Diploma in Family Therapy; Occupational Psychology qualification; Diploma in Hypnosis/Psychotherapy; Clinical Diploma; Ph.D.; Other. (Please state):

6. Below is a list of tasks in which E/SPSs are usually engaged. Please tick those the service is engaged in routinely:

- Professional and Service development within the E/SPS;
- Consultation to schools;
- Family work;
- Multi-agency work;
- School development work;
- Consultation to other areas of the LEA;
- Projects in schools;
- Individual assessments;
- Critical Incident work;
- Group work in schools;
- Work with Under 5's;
- Inset;
- Research;
- Statutory assessments;
- Individual support/ counselling;
- Other. (Please state):

7. Are the priorities for projects/ research/ specialises/ responsibilities of Senior EPs set by the LEAs Education Development Plan and Behaviour Support Plan?

Y/ N

8. Do you have arrangements in the service for monitoring: (Please tick)

- Time spent on each type of task;
- EP Performance;
- Service Performance;
- Utility of types of interventions;
- Client satisfaction with the Service?
- Other. (Please state):

9. The B.P.S is recommending a 'Quality Standards' framework for
E/SPSs. Do you feel your service meets their recommendations?

Y/ N

10. The work of EPs is being reviewed and their future role is being consulted upon between the DfEE and the DECP. Please say in one sentence what you would most like to come out of this endeavour?
Assignment Two

Early identification: Developing a screen to detect the potential for literacy difficulties in four year olds.

Valerie Ann Legg
Assignment Two

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Assessment. **Early Identification : Developing a screen to detect potential literacy difficulties in 4 year olds.**

*Overview.*

Many children experience difficulties with literacy but not all of these difficulties are thought of as 'dyslexic'. Whilst there is broad acceptance of the British Psychological Society's 1999 definition of dyslexia, (see below), there is not yet complete understanding of all of the possible underlying causes of literacy difficulties/ dyslexia. Literacy difficulties have been conceptualised from several theoretical perspectives and investigated by many methods, not all of which complement each other.

There is also research into the remediation of literacy difficulties. Throughout the research in this area each investigation or series of investigations seem to have a clear rationale and outcomes that seek to inform the debate or attempt to resolve practical problems. However, causation studies do not generate automatic answers for remediation and often remedial programme studies are not clearly linked to possible causes of literacy difficulties. Rutter (1998) explains the complexity of this area by suggesting that professionals working in the field did not start with a clear organising concept to bring together understanding of the area and then name the concept, but that dyslexia/ literacy difficulties have been identified and attempts to match these with possible underlying causes still continue today.

*Dyslexia is evident when accurate and fluent word reading and/or spelling develops very incompletely or with great difficulty* (British Psychological Society, 1999, p. 18).
This definition of dyslexia put forward by a working party of the Division of Educational and Child Psychology of the British Psychological Society in 1999 does help to clarify the confusion, aids both identification and investigation and forms a useful functional description of dyslexia.

'This, (definition), focuses on literacy learning at the 'word level' and implies that the problem is severe and persistent despite appropriate learning opportunities' (p.18).

There are no 'exclusionary criteria'. Indeed, the working party adopt the view that the research into 'dyslexia' has tended to seek causes, whereas in the area of 'specific difficulties' has adopted a functional view, examining what people can do.

This definition was timely as psychologists and educational researchers have come some way towards unifying models or frameworks for the understanding of literacy development and literacy difficulties, and also with methods of investigation. It may help to raise awareness of the need for research into remediation as well as causation.

Introduction and Rationale for this study:

There is sound research indicating that if literacy difficulties are not remedied by age nine, these remain into early adulthood, (Korhonen, 1995). Currently, the teaching of literacy in schools is concentrated during 'The Literacy Hour' which was introduced into the National Curriculum arrangements in September 1998 as a means of trying to improve national literacy standards. Results of Key Stage One assessments for 1998-1999 suggested that not all children expected to were immediately benefiting from this approach, (HMI, 1998). This led to the Additional Support for Literacy arrangements (ASL), which were introduced into the Literacy Hour from September 1999. However, local indicators from the Key Stage 1 results in May 2000 indicate that the ASL
arrangements are doing little to raise the achievement of young children in school who are already demonstrably behind at Year Two, (Bucks Primary Performance Tables, 2000). Given these outcomes it seems imperative that pupil difficulties are identified as early as possible and these children helped to acquire literacy skills.

Identifying and supporting those children who need more of particular types of experiences at school entry would require a quick, reliable and efficient measure, followed by appropriate input. The Reception year would seem to provide more opportunity to give experiences that are implicated in developing the underlying capacities required for literacy than the more formal delivery of the National Curriculum at Year One, including the arrangements for the delivery of the Literacy Hour.

**Objectives.**

The main objective of the current study was to create and trial a developmentally appropriate screening device based on the rapid naming of colours in children at an average age of 4y 9m. For over 15 years, it has been known that the rapid naming of colours at age 5 to 6 is related to a wide range of literacy measures at the same age, (Blachman, 1984). The screen should be able to identify as soon as possible those children who are at risk of reading/spelling failure by the end of Key Stage One in school. Recording of the times taken by children to complete such a device and links with reading/spelling failure in the future should allow a standardisation of results to be possible for future reference, if the device was found to be usefully predictive. Since screening devices differ in their under- or over-identification of individuals on the characteristic(s) being screened, a measure of the error rate of any such screen created should also be examined to judge its efficiency and utility.
After presenting a discussion of the background research that led to the selection of the particular methods used in this screen, the research will be described and the results presented. [No attempt is made to discuss traditional 'top down' explanations of influences on reading, such as amount of language experience or attitudes to reading. The screening device developed in this study concentrated only on one possible indicator of future literacy development, colour naming].

Finally, some suggestions for interventions, based on the research into effective programmes to develop literacy, will be made.

**Literature Review.**

1) **Models of Literacy Development.**

All children need help in developing the same skills. Different children need differing amounts and types of help to improve their skills. Stanovich (1991) demonstrated that the difficulties that characterise unexpected failure in achieving literacy are the same, regardless of ability. To explain those processes which interrelate in literacy, several researchers have produced useful stage or phase descriptions of the development of literacy. Unusually, all of these sequences are compatible.

<table>
<thead>
<tr>
<th>AGE</th>
<th>FRITH, 1985</th>
<th>GOSWAMI, 1994</th>
<th>EHRI, 1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5 year</td>
<td>Logographic phase</td>
<td>Preschool rhyme and analogy</td>
<td>Pre-alphabetic phase</td>
</tr>
<tr>
<td>5-7 years: brings reading and spelling experience</td>
<td>Alphabetic phase</td>
<td>Onset/rime and rime analogy</td>
<td>Partial alphabetic phase</td>
</tr>
<tr>
<td>7-9 years: Increasing convergence of strategies</td>
<td>Orthographic phase</td>
<td>Fluency</td>
<td>Consolidated alphabetic phase</td>
</tr>
</tbody>
</table>
All of the above models are both 'interactionist', that is, acknowledge the influence of experience on the child's reading performance; and 'developmental', that is, they view literacy is a facility that develops over time.

It is important to understand what each of the broad phases in the models represents in terms of literacy development and the literacy behaviours the child will be producing in the real world before attempting to understand literacy failure from the research presented later. Frith, (1985), provides a useful diagram in which the behaviours characteristically observed in children at each stage of literacy development are set out in the order in which they occur in normal development.

[See Diagram of Interactive Processes in Literacy Development, Frith, (1985) on next page.]

According to Frith, (1985), reading and spelling develop out of step with each other but are at the same time interdependent in their development. Logographic, alphabetic and orthographic strategies in turn exert an influence on learning. These three strategies are very different from each other and require different forms of underlying mental representation.

Firstly, orthographic or sight-word reading is taken to be the earliest phase: this is when children perceive words as wholes through personally memorable and visually distinct features, a good example being the distinctively shaped 'M' in the MacDonald's logo. [McGee et al (1988) were forced to abandon a study when they identified 5000 three year olds who knew that 'M' stood for 'hamburgers' or 'MacDonald's' but could not name the letter or give the sound that it made.] Next, the alphabetic stage of print processing emerges as letters of the alphabet are learned by their visual shape and name or sound.
LOGOGRAPHIC STAGE
Word recognition and Writing on basis of salient graphic features.

ORTHOGRAPHIC STAGE
The child grasps the nature of English word formation and can read & spell at the level of the skilled literate person.

READ

WRITE

ALPHABETIC STAGE
Reading and writing are based on letter-sound & sound-letter relationships.

[Diagram of Interactive Processes in Literacy Development, Frith (1985).]
At this phase the beginnings and ends of words are recognised in reading and writing is semi-phonetic as sound to symbol associations are learned. Several workers in this area have produced evidence that this is the phase where sight-to-sound correspondence should be explicitly taught; Gentry (1982); Ehri (1991).

Finally, the orthographic phase of reading has been defined as:

"the process of reading sight words by setting up connections in memory between the entire sequence of letters in spellings and phonemic constituents in the words as they are pronounced." Ehri, (1997), p.166.

In this phase the reader can short circuit the letter by letter phonological conversion by processing strings or 'chunks' of letters which correspond to phonemes. Letter sequence to sound 'chunk' matching becomes increasingly accurate and this is reflected in spelling performance. Next, combinations of two letters that might give the same sound are memorised and finally any exceptions to spelling rules are mastered. Fluency is achieved when this sight-to-sound decoding becomes almost instantaneous.

Clearly then, any inability to perceive, match, store, retrieve or integrate any elements of this model would lead to odd effects or failure in the literacy process.

2) Research into the sub-skills required for literacy development.

Reliable identification of children with severe difficulties achieving literacy has proved interesting and challenging because individuals with literacy difficulties can differ on almost every attribute. The search for salient attributes that distinguish severe difficulties and differences in learning style affecting literacy development has required co-operation across disciplines and a separation of the notions of 'difficulty' from 'overall ability',

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Investigation of the literacy process has proceeded at every level and into every capacity represented on the diagram from Frith, (1985), previously set out. Cognitive sub-skills thought to be involved in literacy acquisition that have been investigated are:

a) Memory.

Poor readers and dyslexic pupils cannot be distinguished from equal ability younger readers by their auditory memory span alone, (Johnston, 1982). However, relatively poor auditory span is associated with reading ability, (Johnston et al 1987; Korhonen 1995); and degraded phonological representations do appear to be associated with poor auditory memory span and problems in rapid naming.

b) Phonological Distinctness.

Research into the possibility of degraded phonological codes contributing to later literacy difficulties was reported by Elbro et al, (1998). He pointed out that indistinct phonological representations will not allow adequate phonological segmentation to allow access to the segments or manipulation of them later. He commented that such variations in distinctness do not as a rule come to the attention of speech therapists or other adults.

c) Phonological Awareness has proved an extremely fruitful area of enquiry in understanding the normal and delayed/disordered acquisition of literacy. Early studies of children who do not attain literacy quickly, easily or along the usual sequence noted a correlation with having had earlier or ongoing Speech and Language Therapy, Lieberman (1971). Bradley and Bryant (1983) built on this notion in their approach to categorising
sounds and learning to read. The highest correlations are produced between phonological awareness and processing and literacy development later, (Yopp 1988). Later work by Bradley and Bryant, (1985), and Bryant, (1989), on training young children in phonological awareness has added weight to the view that it is these sub-skills that are causal in literacy development rather than simply correlating with literacy outcomes.

d) Naming visually presented arrays, (which mimics reading). Naming of digits, symbols, objects and colours has been investigated. Rapid Automatized Naming, (RAN), of visually presented stimuli has also proved a fruitful area of research. It is thought that dyslexic children have a difficulty with rapid 'automatic' naming of several types of stimulus material characteristic of reading because they have difficulty retrieving the phonological codes for these items that are stored in long-term memory, Denckla and Rudel, (1976). Blachman, (1984), noted that in Kindergarten, (5 - 6 years), the rapid naming of colours was significantly related to five of six reading measures, whereas naming of objects was related to three reading measures. Bowers et al, (1988), demonstrated that across abilities and controlling for memory the automacity of naming digits presented visually distinguished those individuals labelled as dyslexic by Grade 2, (7-8y), in the United States. However, Denckla and Rudel, ( op. cit.), have argued that these skills are really another aspect of phonological processing.

e) Precise Timing Mechanism.

Research by Bowers and Wolf, (1993); Ehri, (1991); and Treiman, (1997), suggests that phonology and phonological analysis can be intact but that literacy begins to fail to follow
a normal developmental path when the orthographic codes representing the phonology and the sounds they represent do not marry together for the child. This could be because of lack of experience and/or as Bowers and Wolf, (1993) speculate, there could be a fault in the 'precise timing mechanism' that prevents these two aspects of representation joining. Wolf, (1991), suggests that the timing fault is pervasive across several motor functions and can exist in the absence of phonological deficits. Research into naming speed alone suggests that a deficit in the rate at which presented items can be processed, or accessed from memory differentiates the more severely literacy-disabled child, (or dyslexic), from a merely poor reader, Wolf, (1991). Korhonen, (1995), reported that this same rate of processing deficit persisted into adulthood for adults with reading difficulties. He notes that the deficit persists over time and so does poor auditory short-term memory and explains this phenomenon thus:

'poor auditory memory span in children with reading difficulties points to problems in phonological coding--Therefore, problems in accessing a degraded phonological code might be a possible explanation for problems in rapid naming', p.237.

The mechanism by which children make the transfer from phonological information to decoding or encoding orthographically is fascinating and still being researched, (Foorman et al, 1997). Notions of what this mechanism is have developed over time. Coltheart, (1987b), noted that some children acquire visual or phonological word recognition skills abnormally slowly. Research methodologies for examining this mechanism at various levels are complex, increasingly technological and still evolving.
The picture gained from surveying the available research into sub-skills that are implicated in literacy is complex as various findings indicate that adequate predictors may only hold true for particular age ranges. This is because the process of becoming literate is both developmental as described by Frith's 1985 model, and interactive, in that developing literacy influences the underlying cognitive capacities that are needed to uphold the process. Also, these capacities then have to be correlated against later performance on literacy measures to have any construct or predictive reliability for educational purposes. Research into cognitive processes does not necessarily give pointers for the teaching of literacy and where research indicates that practise of a sub-skill implicated in literacy is beneficial there are few 'pure' or comparison studies to indicate whether it is the effect of this sub-skill alone which is showing through or the nature of the programme/ amount of attention given to the recipients that is beneficial. This point will be returned to in the discussion where several studies, (Blachman et al, 1999; Solity et al, 2000), are discussed.

**Current Study, Data Collection, Results and Analysis.**

For the purposes of this study, underlying causal connections between higher order cognitive processes and literacy development are not speculated upon, but the previously discussed explanations are given to justify the selection of one of the naming tasks shown by Blachman, (1984), to be positively associated with later literacy performance - colour naming. Colour naming was chosen amongst the several naming tasks identified by Blachman because it was the most developmentally appropriate of the naming tasks to present young children with at an average age of 4y 9m on school entry. Children in the
study described here were asked to name five colours. [ The ages at which children can usually name three and then eight colours are 2y 9m and 4y 4m respectively (see Cameron and White, 1987.)] It falls outside the scope of this professional practice assignment to speculate whether rate of colour naming is associated with later literacy performance because of a fault in the precise timing mechanism or degraded phonological representations set down because of poor working memory or because of a lack of adequate experience in the children taking part in the research, although these aspects will be briefly referred to again in a later section.

As the rapid naming of colours has been shown to be significantly correlated with the most measures of reading performance later, (Blachman, 1984; Bowers and Wolf, 1993), it was decided to use this measure to screen young children shortly after school entry. These results were later compared to literacy levels at the end of Key Stage One to see if speed of Colour Naming alone was sufficiently predictive of achievement to indicate its use as a quick and simple screening device to detect those children at risk of literacy failure. Data was collected in fourteen schools on 165 children in spring 1996 and the beginning of the autumn term 1998. Schools were not selected for this research but formed a random sample based on the time available to five psychologists working in an LEA service.

Schools varied in their catchment areas and the size of the intake of number of children at an average age of four years and nine months varied between four children and thirteen children. Data was collected by the attached school psychologist in 1996, and where possible by the attached school psychologist in 1998, but other educational psychologists
from the same county team were used to complete data collection as part of a project if
the attached psychologist to the school could not do this. Compared to entry data, four
children had left the schools, a further eight children were absent on either the first or
second data collection and one could not name colours, so their data was not used. The
size of the final sample was thus 152 children.

To be able to make further correlations between entry skills and later literacy
development the pupils were also tested on their Picture Naming speed from the
Phonological Assessment Battery, (PhAB), Frederickson et al, (Research Edition
1996-1997) at both times. In the autumn 1998 their reading and spelling ability scores
from the British Ability Scales II Word Reading and Spelling tests were computed.
Correlations were taken between all measures. The raw data was then inspected for false
negatives, that is, children whose literacy performance was 18m under chronological age
in September 1998, and also for false positives, that is, children who scored low on the
colour naming task in spring 1996 but who did not go on to develop difficulties with
literacy two and a half years later. [See materials in appendix 1].

Statistical Analysis.

Our working assumption was that the cognitive processes measured by naming tasks
would be distributed normally in the population and that reading and spelling as measured
by the BAS II tests would equally be normally distributed. Thus parametric tests of
correlation, Pearsons Product Moment Coefficient of Correlation, were done between
naming tasks and literacy performance measures. Every combination of measures in
spring 1996 and September 1998 was correlated together and the following table of
coefficient and level of significance presents the outcomes.
Table of correlation co-efficient and level of significance using Pearsons Correlation Co-efficient.

Abbreviations: CN=colour naming, PN=picture naming, 1=Spring 1996, 2= Sept.1998, R=reading, Sp=spelling, sex=male/female.

<table>
<thead>
<tr>
<th>Combination</th>
<th>Correlation co-efficient</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1 x PN1</td>
<td>0.78</td>
<td>0.01</td>
</tr>
<tr>
<td>R x SP</td>
<td>0.78</td>
<td>0.01</td>
</tr>
<tr>
<td>CN1 x CN2</td>
<td>0.57</td>
<td>0.01</td>
</tr>
<tr>
<td>PN1 x PN2</td>
<td>0.54</td>
<td>0.01</td>
</tr>
<tr>
<td>CN1 x PN2</td>
<td>0.51</td>
<td>0.01</td>
</tr>
<tr>
<td>PN1 x CN2</td>
<td>0.49</td>
<td>0.01</td>
</tr>
<tr>
<td>CN1 x R</td>
<td>-0.38</td>
<td>0.01</td>
</tr>
<tr>
<td>PN1 x R</td>
<td>-0.37</td>
<td>0.01</td>
</tr>
<tr>
<td>CN1 x SP</td>
<td>-0.37</td>
<td>0.01</td>
</tr>
<tr>
<td>PN1 x SP</td>
<td>-0.32</td>
<td>0.01</td>
</tr>
<tr>
<td>PN2 x R</td>
<td>-0.29</td>
<td>0.05</td>
</tr>
<tr>
<td>CN2 x R</td>
<td>-0.23</td>
<td>0.05</td>
</tr>
<tr>
<td>CN2 x SP</td>
<td>-0.23</td>
<td>0.05</td>
</tr>
<tr>
<td>PN2 x SP</td>
<td>-0.2</td>
<td>Not significant</td>
</tr>
<tr>
<td>R &amp; SP x sex</td>
<td>0.125 &amp; 0.117 respectively</td>
<td>Not significant</td>
</tr>
</tbody>
</table>
Interpretation.

The correlations between naming speed indicators and literacy performances are negative because speed or rate of naming increases as literacy performance decreases. The effects found were statistically significant and thus the materials and results could be used to screen children at school-entry at average age 4y 9m to identify the potential for literacy difficulties. Interestingly, 'Picture Naming' from the Phonological Assessment Battery, (PhAB), also gave statistically significant results against literacy performances at the end of Key Stage One when administered at 4y 9m, and has not previously been normed against this age group. Later, at the end of the Key Stage, Colour Naming is still significantly correlated against both reading and spelling performances, but Picture Naming from the PhAB was significantly correlated against reading but not spelling performance in this study.

Inspection of the raw data reveals the scores any children who were identified as having potential for literacy failure but did not produce literacy scores of below one standard deviation from the average performance of the group, (false positive scores). It also reveals the scores of those children who scored well enough on the original colour naming task at 4y 9m but who went on to develop literacy difficulties, that is, performed at below one standard deviation from the group's literacy scores, (false negative scores). The measure used would be poor if it produced a lot of false positive and negative scores on the characteristic being measured. Of the total number of 152 children 8 produced false positive scores and 6 false negative scores. This gives the screen an accuracy rate of 90.08 % on the sample used here.
Critique of this study.

In the study described here the aspect of pupil-functioning used, colour naming, is usually positively correlated with the phonological analysis skills associated with literacy performance. Conversely, the lack of such phonological skills are usually associated with 'dyslexia'. However, there was no intention in this study to separate out pupils who would later possibly be described as 'dyslexic' compared to those who would possibly experience literacy difficulties of a less severe or permanent nature. The measures used do not discriminate sufficiently to make this distinction. The colour-naming screen, as it was used and presented to children near school entry, proved to be significantly correlated with literacy performance at the end of Key Stage 1 at the 0.01 level of significance. The materials were simple to use and quick to administer although no attempt was made to train or support teachers in their use on this occasion. [Details of the materials and instructions are provided in Appendix 1.]

Only one child from the original sample of 165 was unable to name the five colours and the administrators were instructed not to proceed if the child was not able to grasp the test instructions or did not know the five colours used. The screen produced was thus judged by the participating psychologists to be developmentally appropriate. The accuracy rate for the screen on the sample used was 90.8% but this rose to 96.06% if false positives in identification are taken out. False negatives, or children not identified is a more serious problem educationally as these pupils would go on to develop difficulties if not spotted and helped, whereas those who are over-identified would hopefully come to light whilst receiving support as making rapid progress and be deemed not to be in need of further help. No children were identified by the literacy measures who had not produced long
colour naming times when these were measured when they were on average 4 years 9 months old.

Thus, the screen met three of the four objectives stated at the outset of the study and in this report. There remains the matter of standardization and this has not yet been attempted. Possibly it would be better to repeat the exercise on another sample of children of at least an equal size to the sample already used or an even bigger sample to increase the confidence with which the effects can be reported. Within a larger sample pupils could be matched on the basis of preschool experience to judge to extent of practice effects. There seems to be good construct validity that this colour-naming screen taps into phonological processing skills as there are significant correlations with literacy skills. If the screen were to be repeated with a larger number of children adjustments to the administration could be made to test inter-tester reliability and whether or not teachers find them easy to understand, use and interpret, as well as useful. Also, other pupil characteristics which might cause or contribute to literacy failure could and should be noted, for example, behavioural characteristics which might impede learning. If the effects of screening remained true and equally valid with these additional manipulations perhaps it could be included in the Baseline Assessment arrangements to identify and plan ahead for raising the skills of children at school entry that will become central to curriculum access in a targeted and fun way?

While it is a social equality issue to provide curriculum access for pupils with different levels of skill, it also becomes a political and financial issue when specialised resources are required to improve the educational outcomes for individuals with severe literacy
difficulties. Resource managers look to teachers and psychologists to help to identify those pupils who will benefit from different types and levels of provision. Even if the intention is to provide for children in the mainstream classroom staff will need to have their understanding of the difficulties enhanced and their skills in supporting children with this particular type of difficulty improved. Based on what is known about the causation and remediation of literacy difficulties, what do educational psychologists have to offer?

**Discussion in the context of wider research.**

Several recent studies have married together what is known about phonological development and literacy with learning theory and educational practice; (Hatcher et al, 1994; Blachman et al, 1999; Solity et al, 2000).

Foorman et al, (1997), conducted research into children's reading, spelling, phonological and orthographic knowledge and demonstrated that orthographic knowledge cannot compensate for phonological deficiencies in beginning readers as it does to some extent with older pupils with a literacy delay. They argue both cases as exemplars of the need for and effects of the active teaching of orthography. Many other studies have replicated this view, for example: Byrne and Fielding-Barnsley, (1991); Hurford et al, (1994). Hurford et al, (1994), Hatcher, (1997), and Blachman et al, (1999), even give accounts and/or programmes specifying the order in which the sub-skills of literacy should be taught. Hurford et al, (1994), and Blachman et al, (1997), also recommend which term and/or year of education the various sub-skills should be instructed so as to lead to good functional literacy. All of these accounts are compatible and map onto Frith's diagram of
the stages of literacy development presented earlier.

Hurford et al, (1994), used a procedure with 6 and 8 year-olds which consisted of training or increasing their phonological processing capacity by presenting and asking for comparisons between two spoken syllables separated by increasing times between the presentation of each pair of syllables. To train children who initially found this difficult they manipulated the complexity of the syllables and the timings. They suggest that the next stage is to continue phonemic discrimination with exposure to grapheme/phoneme correspondence thus overlapping auditory representations of discriminations with visual representations. They add:

'It is also possible that if the individualised phonological processing intervention were completed before the end of the second semester, reading and comprehension skills could be introduced to help strengthen the child's reading ability' (Hurford et al., op. Cit., p. 658)

Hatcher, (1997), an educational psychologist, has developed a sequential programme for literacy acquisition based on the outcomes of his research with others in 1994 and stresses that phonology and reading should be taught alongside each other to be maximally effective. [An overview of his training programme is provided in Appendix 2.]

Blachman is a Speech and Language Therapist and her recent two year study, (Blachman et al, 1999), involving the professional input of teachers and educational psychologists is rigorous and includes a control group. It is also rare because the children's regular
classroom teachers administered the intervention programmes in the classrooms. The children's own teachers were used specifically because they had expressed concerns that they would like to better understand the links between kindergarten activities enhancing phonological awareness and the development of decoding skills in the early grades. The researchers also felt that the intervention would be more convincing to other teachers when reported if the children's skills improved as a result of the action of their regular teachers instead of specially trained staff imported into the schools.

In Kindergarten, the treatment group were given a one term phoneme awareness programme and this group followed a reading programme in Year One and Year Two, if needed. This particular reading programme was given in place of the district reading programme, which the control group received, and includes ongoing emphasis on phoneme awareness and the alphabetic code, (Blachman, 1987.) The underlying model of literacy development used by this group was suggested by Liberman, (1973), and postulates that the fundamental task facing the beginning reader is understanding that speech can be segmented and that these segmented units can be represented by printed forms. Each lesson from the Blachman programme consisted of five steps:

1) One to two minutes of sound-symbol associations learned in previous lessons;
2) Phoneme and blending skills by sounding out an unknown word and blending the letters together. Vowels were colour-coded and selected first from cards then cards for the first and last sounds selected by the child and corrected if necessary by the teacher;
3) Developing automatic recognition of words previously practised in step 2 on flashcards. In addition high frequency words that have to be memorised were selected from stories the children were reading and put on flashcards in a different colour.
These regular and irregular words were practised for 2-3 minutes each day;

4) Ten to fifteen minutes of reading connected text from the 'Primary Phonics' series and selected stories from the district's basal reading scheme. [Teachers were free to use whatever books they thought appropriate for the rest of the day and children could visit the library for independent reading.];

5) Writing to dictation. Four to six words and a sentence. Teachers selected the words from those practised in step 2 and in the controlled readers. Children write the words under column headings for target vowels for each day, e.g.: a, ai, oa, ea, etc..

By the time the programme was completed, the children had experienced all the syllable combinations required for English spelling rules.

Blachman and colleagues also found that children who participated in a phonological awareness programme in Kindergarten followed by a reading programme in Year One, (extended into Year Two for those who needed it) that built on phonological awareness and emphasised explicit instruction in the alphabetic code demonstrated significant advantages in literacy at the end of both Year One and Year Two. [According to Elbro et al, (1998), it would also be important to pay attention to children's pronunciation and the diction of those who work with them as it is important for children to store distinct phonological representations.]

Solity et al, (2000), have recently reported outcomes better than those produced from the National Literacy Strategy in matched schools using the principles of instructional psychology in an approach they call The Early Reading Research. This has in common with the approach taken by Blachman et al, (1999), that the intervention is carried out in
everyday classrooms with the specific aim of integrating aspects of acquiring phonological skills with other aspects of teaching reading. Children are taught through distributed (rather than massed) practice three times a day for 10-15 minutes. They are taught each skill to a high fluency level and how to generalise their skills through a process known as interleaved learning which minimises forgetting. Children were taught on a whole class basis with each of the three sessions per day covering for two minutes each: synthesis skills; segmentation skills; phonic skills (letter sounds, decoding phonically regular two-, three- and four-letter words, letter combinations, and suffixes and prefixes but not rhyming skills or onset-rimes); and sight vocabulary. The remaining four minutes involved reading high quality stories to the children with elements of shared reading as the children's skills improved. The children in the Early Reading Research schools were found to be on average seven months ahead of the children in the comparison schools at the end of Year 1. Solity et al, (2000), interpret these results as indicative that progress in reading is dependent on the quality of instruction rather than the children's level of development or time spent in school. They also point out that whilst similar gains have been demonstrated using a Reading Recovery approach, (Sylva and Hurry, 1995), and Sound Linkage, (Hatcher, 1994), these approaches require a one-to-one pupil-teacher ratio and are only demonstrably effective with pupils perceived to have difficulties, not being as effective with higher achieving pupils.

The literacy training programmes reported in this study are a useful addition to any educational psychologist's knowledge in that schools find 'off the shelf' approaches efficient at times. It would however be better to ensure that every adult working with
pupils needing to develop literacy skills has a thorough knowledge and understanding of the processes and sequence of development so that they can generate solutions to problems more readily before they become entrenched.

All of these approaches can be seen to be commensurate with the capacity and development of working memory as described by Logie, (1999) as a temporary store with a limited capacity and involves the operation of processes which include both verbal and visual components (the phonological loop and the visual cache). This is co-ordinated by the central executive that allows the individual to manipulate incoming information in a conscious manner and relate this to the knowledge base. The more extensive and secure the information in the knowledge base, the greater will be the individual's working memory capacity.' [A useful discussion of this model appears in Dunsmuir and Turner, 1999.] This presupposes good 'educational' practice or training of memory. Male, (1995), states that memory tasks should be well structured, and teaching should incorporate repetition, reinforcement and a high level of feedback, as are described in all of the approaches to intervention outlined above.

Thus the implications of knowledge and understanding of literacy development and the use of a colour-naming screen for the early identification of literacy difficulties for the practice of educational psychology is at every level of our involvements. For the individual, it is important to reliably identify a potential difficulty early and assist in the remediation of it. With further work, the colour-naming screen presented here could be used by psychologists to identify 'at risk' children at 4y 6m - 5y.

Further, if validated by more research and if a suitable training programme could be
designed teachers could use this screening device with large groups of children. Data provided could also enable LEAs to identify schools where more support is needed if they are to achieve their literacy targets and educational psychologists could become involved in supporting teachers to deliver whole class or group approaches to literacy based on good instructional psychology. Ideally the screen would be included in the assessment methodology of Baseline Assessment at school entry so that identification will lead to intervention right from the start.

Acknowledgements.

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Planning and Information Team (1998) *Primary School Performance Tables - Trials* Corporate Communication Unit, Buckinghamshire County Council Education Department.

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Assignment Three

Developing a supervision system in an EPS

Valerie Ann Legg
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Introduction

This assignment describes the development of a supervision system in Xshire Educational Psychology Service, (EPS), towards the British Psychological Society’s, (BPS), quality standards for services. [The standards are reproduced in Appendix 4.]

Section 1: Aims

The British Psychological Society (BPS) regards the process of supervision as a sufficiently important part of psychological service life to include it as a quality standard for Educational Psychology Services (EPSs). There is little research into models of supervision. Some research has been carried out into various aspects of supervision, with much of the research focussed on supervision for counsellors and on counsellor training. Supervision in EPSs is under-researched, the main focus being on surveying practices rather than on evaluating outcomes.

There has been a shift in the level of accountability of all professionals working in education, for example, most now are required to demonstrate their daily activities and increasingly to measure the effectiveness of their work. A corresponding search for economical and effective means of measuring and enhancing performance and effectiveness has arisen. Performance management for teachers has increasingly come into effect during the last two years and by Septemeber 2001 Local Education Authorities (LEAs) were expected on a statutory basis to have in place performance management policies and practices relating to their centrally employed teachers, ( often specialist support staff for pupils with special educational needs). It may only be a matter of time before educational psychologists will be affected by the similar requirements as those expected of teachers. If supervision can enhance performance by transfer of skills and
understanding it is indeed timely that BPS have included it within the standards expected of psychological services. From the research into supervision in counsellor training there is evidence for increased independence of supervisees directly related to their supervision experiences, Hill et al, (1983). If a service feels it is currently unlikely to be fulfilling its supervisory functions at a level which would meet the BPS quality standards it would seem to make sense to build on what exists within them already but take account of what is known from research. One aim of this assignment is to examine the research available in this area to become aware of what is proven effective in supervisory practices. Research into supervision in teaching, educational and clinical psychology services and in counselling training and practice will be discussed fully in Section 3.

To facilitate the development of supervision in Xshire research was carried out to understand staff needs and views to enable the development of a system working towards the BPS standards. To enable the position in Xshire to be addressed quickly methods and models of supervision were examined. A second aim is to compare models and methods of supervision against their underlying theoretical orientations with the BPS quality standards for supervision in order to highlight those which offer the 'best fit' to Xshire service and possibly others. The theory, research and practice presented in Section 2 of this assignment will be further explored in Section 3 towards this second aim.

Other more pragmatic aims were:

• offer a choice of methods to suit learning styles and expectations

• arrive at a common service framework and system

• fit a supervision system alongside other service activities and functions and into the busy working lives of service members, who include both teachers and psychologists.
EPS functions and systems which a supervision function has to sit alongside are: team and service structure in terms of location and management, time management and allocation to various functions, appraisal and review, performance management, professional development. The service needed a system which is simple, sensitive and available in order to be accessible to service members and meet their needs.

Ideally, any changes to service supervision structures would and could be evaluated by ratings of satisfaction, uptake and effects in service outcome measures. Thus the contribution of supervision to effectiveness and the value of the service could also be examined. These last points were not deliberate aims but are important to a fuller discussion of the contribution of supervision in educational psychology services and accordingly will be explored further in Section 4.

Summary of Aims:

• to survey the research on supervision to find what is proven to be effective in supervisory practices
• to use the literature on supervision to identify key models and practices
• compare models and practices in supervision against the BPS quality standards requirements to identify those which 'best fit' the standards
• identify from those models and practices which best fit the BPS standards those that would map across Xshire EPS requirements and expectations
• explore how the chosen model(s) and practices of supervision in Xshire would fit practically alongside and link into other EPS functions
• develop Xshire’s supervision practices to meet BPS quality standards
Section 2: Practice and Context

Several factors led to the need to review the supervisory practices in Xshire EPS and develop the function to meet the BPS quality standard expected into the future. These are set out below.

Until 1998 a particular Senior Psychologist (SEP) had been responsible for the overview of supervision within Xshire EPS and since she left the service that particular function had been given a lower priority than many other service areas. Xshire EPS consists of 25.8 psychologists organised into three area teams, including Seniors and the Principal Educational Psychologist (PEP). There is also a team of 11 teachers who visit Under 5's with special needs in their homes and early education settings. During 2000/2001 a new SEP was appointed with line management responsibility for the teachers in the service and during this period they achieved Teacher Threshold level for performance and payment. This process involved both external and internal evaluation of performance and brought into question the need for permanent mechanisms for monitoring performance linked to means of learning skills and raising competence where needed. This placed the teachers in the service in the same position as the psychologists with respect to the need for system(s) to support their performance and development.

To add strength to their particular needs the newly appointed SEP with responsibility for management of the teachers in the service identified through the service six monthly review process that all of the teachers were actively requesting supervision to raise their skills and understanding for the rapid pace of change they felt they were experiencing in early education. Similarly, a result of the six monthly review process amongst the psychologists in the service the other SEPs in Xshire identified the same request for a
more active supervision system to be put into place. A key question arising from
discussions in the management team of Xshire EPS was whether the same supervisory
practices and system(s) could be used for both the psychologists and the teachers in the
service. There was an obvious and urgent need to examine the supervisory function and
roles within Xshire EPS which was carried out as follows.

All members of the service had highlighted the need for more supervision at six monthly
review and to take this forward they were asked if they would agree to be interviewed to
identify their more specific needs within supervision and help to decide on methods and
system(s) to put more active supervision in place. The whole service agreed to participate
and were interviewed and the newly appointed PEP did the same when he joined the
service 4 months later. Questions used to guide the structure of the interviews are
included in Appendix 1.
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The Interviews

Questions used for the interviews arose as issues within the literature and research into supervision. They are expressed as 'open' questions to elicit each participating service members own views and experiences of supervision so as to be able to look for themes, categories, concepts and facets in responses. Interviewees made their own notes of their responses on the questionnaire sheets after verbal discussion with the interviewer and the interviewer checked that all parts of the discussions were recorded for future analysis.

Analysis of the interviews looking for themes, categories, concepts, and facets in the responses were carried out using the techniques of Grouded Theory, Glaser and Strauss, (1967). Grounded Theory was chosen as the method of enquiry into service members views of supervision as it characterises much contemporary qualititative research in 'messy' situations where;

"local interactions and meanings are related to the social context in which they actually occur", Pidgeon, (1996).

This methodology serves to uncover theory as it progresses rather than be guided by it and thus seems more suited to investigating views expressed during interactions which may very well have been set up as a result of the previous interactions along the theme of the subject of the enquiry. In Grounded Theory analysis of concepts and facets of what is being expressed progresses both within the interviews as 'leads' from interviewees can be followed through at the time by the interviewer and meaning in what has been expressed can also be analysed later by inspection, analysis and categorization of the interview protocols. Both aspects allow the interviewee and interviewer to bring to bear their previous experience and understanding to generate local, contextual or 'grounded' theory.
Data on an issue or topic elicited by the methods of Grounded Theory can be analysed in stages as follows. First the concepts in the text or data considered to be relevant to the problem being studied are labelled by the researcher. Once the relevant concepts are decided instances in the data which illustrate concepts are noted. Each instance can then be compared against other instances of the same concept in order to produce a number of facets of the concept. Some facets produced by comparing concepts in the data form categories. Some of the categories which emerge stem from the people interviewed, which are referred to as 'members categories' by Pidgeon and Henwood, (1996); and those which occur to the researcher from constant comparison and recasting of the data are referred to as 'researcher categories'. The categories produced enable the whole area being researched to be described and ordered thus aiding theorising about it.

Analysis of the semi-structured interview protocols of the teachers in Xshire EPS reveals a slightly different balance in the set of concepts generated about their understanding and requirements in supervision but the balance in concepts produced did not produce differences in the facets of all of the concepts produced by both groups of staff in the service. [Lists of the concepts and facets around supervision generated by the teachers and psychologists in Xshire EPS are included in Appendix 2.]

The complete list of concepts, facets, and categories generated across the service members in Xshire EPS is produced overleaf:
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<th>Concepts</th>
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This data, analysis and the eventual use made of it in Xshire EPS will be discussed in Section 4. From the use of Grounded Theory a great deal of data is produced and the complete exercise cannot be appreciated until some of the links between categories generated by the interviewees have been discussed, which will be done here. The differences in links made between categories by the two different staff groups within Xshire EPS are particularly interesting.

To illustrate these points it is useful to present portions of the transcriptions of the
interviews. For example, in response to the question: 'Has supervision in any other role or job been different and how?'

Teacher PP:
"When I was doing my teacher training I liked to listen to my supervisor from the university. He had a wonderful turn of phrase and it helped to understand when he explained why different ways of teaching different children worked. He used a lot of stories of how things had worked or not for him when he was teaching. I like to listen and feel I learn best when I do."

Teacher AB:
"Once as a student I did a stint as a tea-lady in a college holiday. The supervisor there liked to boss us about and I guess had to organise who was where and what to do. That's very different from the supervision I've received here which has been more about questioning yourself than being organised."

Psychologist TJ:
"Oh yes. I only came into practice as an EP two years ago so even when I was teaching I got a sort of mentor supposedly to help me in my learning to teach. In reality he occasionally asked me how it was all going and once when I really pushed it he came to one of my lessons so we could talk about it afterwards. I still didn't feel I learned much from him! Supervision whilst I was training to be an EP was very different and much better. My field supervisor was interested in everything I did and how and why. She also
helped me think everything through at a much deeper level."

Senior Psychologist, RB:

"When I was a maingrade psychologist I used to get supervision! I've had no official supervision on the other side of the fence but have been lucky enough to learn from the PEPs I've worked with, especially the last two. I suppose I'll have to try to answer this according to my experiences of supervising psychologists? [I understand you can go on PPD courses for this now?]

In my experience supervising EPs requires a lot of ---- changing points of view? By that I mean, trying to work out how they are coming at things and helping them think it through. I eventually hit on the notion of asking people lots of clarifying questions to get to a useful point. Thinking back, I'm glad I originally had a lot of training in psychodynamics as I feel it's helped me to pick my way through what was going on at times. The process is as important as the outcome!"

Teacher PP makes links between the specific skill of listening and learning from it without any further analysis of what may have been changing for her as a result of supervision. For AB, differences in supervision experiences hinged on different purposes for which the supervision was in place. She highlights her professional supervision as having caused her to ask questions, indicating she was required to process experience as a result of supervision and by what means. Psychologist TJ also highlights the "thinking ---- through" which occurred as a result of supervision in training to be an EP whereas SEP RB makes the same link to 'questioning' but very different links in the area based on
his wider experiences and different roles in supervision. He also links supervision to 'thinking' but further expands on it by referring to 'process' and 'dynamics'.

A differential effect of types of experience is also found in responses to the final question in the interview, which is: 'Attached are brief explanatory notes/diagrams outlining methods and techniques used in supervision. Can you say if you have any preferences amongst these any why?' [Information on: traditional supervision, group/peer supervision, coaching and mentoring was given to interviewees and discussed as necessary before they gave a response to the question. In the discussions coaching was seen as a means of developing skills needed for work directly whilst mentoring was viewed a whole approach to personal and professional development much more akin to the whole function of supervision.]

Teachers' knowledge of supervision methods outlined in the literature on the subject was limited to the model and methods of 'traditional 1:1' supervision, but some did comment that they could see how peer supervision would work by using the same model as 'traditional supervision' but with a peer as supervisor. The psychologists' knowledge of all types of supervision was greater but tended to be limited to those models and methods they had themselves experienced in other services as well as in Xshire. The teachers opted for the group supervision model and methods as their preferred choice of meeting their needs in this area for the future in addition to the observation requirement of DfES recommendations within the Performance Management framework for teachers. This framework outlines a system of observation of teaching activity by a senior teacher with feedback according to prescribed categories. 25% also commented that they could see that
coaching might be a better way of learning some of the skills they need to develop. Responses from the psychologists were much more mixed with 50% preferring peer supervision as a means of meeting their needs in this area into the future and the others opting for all of the other methods presented. Group supervision was named as a preferred arrangement by 25% of the EPs. Six of the psychologists commented that they had experience of and could see that a variety of techniques could be useful in thinking and learning during supervision and beyond. What they were more firm about was that they would prefer to undergo supervision with peers, seeing supervision involving the SEPs/PEP as a less preferred option.

However, the responses of the new PEP in Xshire, who gave a response shortly after joining the service and four months after the other interviews were carried out, indicate that he has concerns about maintaining a balance between professional development through supervision and accountability of service members in terms of meeting externally imposed targets. His responses to the question on preferred methods for supervision left open how Xshire EPS might use the information gained from this exercise to carry forward supervision as a service function to maintain this balance - although he also added that too much emphasis on achieving targets can decrease motivation!

Links between concepts for individual interviewees are interesting and give a rich picture of the multiple meanings generated by the same issue for different people. Their input contributed to the categories generated about the area by the researcher at a more abstract level. The researcher categories should be borne in mind throughout the next Section where the literature and research into supervision is discussed. The links made between
concepts by interviewees will be returned to in Sections 4 and 5 where consideration is made of fitting the chosen methods into the culture and daily organisation of EPS.

Section 3: Psychological Theory and Research

Databases searched to identify background research and literature in the area of supervision were Psyclit and the Social Sciences Citation Index via BIDS using the terms: 'supervision', 'counselling', 'counsellor education', 'counsellor training', 'teacher education', 'counselling in teacher training/education', 'mentoring'.

The literature on supervision is extensive but unfortunately it appears to have a minimal theoretical basis. Instead of theories in this area, major orientations from within Psychology emerge from the literature on supervision. The definition of supervision provided by the Division of Educational and Child Psychology, (DECP), (1987), is:

'A process of examining one's own work and issues arising from it, at a professional and personal level within an individual supervisory relationship'.

This definition does not proscribe any particular theoretical basis. Osborne et al, (1990), describe 'supervision' approaches which mirror approaches taken with clients. The common assumptions are that a parallel process exists between supervisee-client issues and supervisor-supervisee issues and, therefore, techniques useful for working with clients are also effective in training practitioners. The major orientations to supervision discussed in the literature are listed here for completeness, but the Developmental Orientation is presented more fully as it is thought to be the most applicable for use in psychological services.
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**The Dynamic orientation.**

In these models the supervisee begins by viewing the supervisor as a figure of authority and influence, then works through interpersonal conflicts to a stage where the supervisor becomes less active and encourages more independence from the supervisee.

**Facilitative orientation.**

Facilitative approaches are closely aligned with facilitative therapies, for example, Rogerian Therapy, (Rogers, 1957). Such approaches emphasise therapist modelling, graded experiences in helping others and a supportive atmosphere as hallmarks of supervision. Evidence from research supports these views. For example, Alssid and Hutchinson, (1977), demonstrated that modelling was the most effective form of training compared to training of other sorts provided by 'confident' therapists. However, this study used only rating scales completed by the trainees and may thus be quite subjective, no objective measure of trainee performance according to training approaches being used. Pierce and Schauble, (1970), also demonstrated that effective supervisors demonstrate empathy, warmth and genuineness, much like effective therapists in their view.

Selfridge's, (1975), research also suggests that a focus on personal growth in the supervisee is more effective than a didactic approach.

However, the bulk of the research in this area indicates that supervisees will recall their own supervision experiences when working with clients and also use the skills learned in supervision later with their clients, good examples of this finding can be found in Kagan, (1975) and (1980). These studies use both self-report and observation of trainee behaviour thus providing more corroboration of the self-report findings.
Behavioural/Skills Training orientations.

Common practices in supervision within these models centre on the training of supervisees in specific tasks associated with behavioural therapy, for example, goal setting. There is good evidence from studies of reinforcement of these behaviours in training and rates of response in supervisees demonstrating the efficacy of these techniques, Leddick and Bernard, (1980). Characteristically within this orientation, individuals can become proficient by being apprenticed to an experienced professional whilst continuing instruction in learning theory, ongoing training techniques, role-playing, and supervised sessions with clients.

'Blended' models

From 1970 developments in cognitive psychology led to more perceived and practical overlaps in dynamic, facilitative and behavioural approaches. For example, Kell and Burrow, (1970), proposed a model which incorporated a dynamic theoretical influence, promoted a facilitative style and used behavioural terminology!

It is worth mentioning that some writers in this area have called for a separation of various elements of the supervision process and see 'supervision' as an activity distinct from counselling. Loganbill and Hardy, (1983), see supervision as sufficiently different from counselling as to require a model independent of counselling theory. No 'pure' model of supervision indicated by this thinking could be found, but Stoltenberg, (1981), has proposed a model which particularly separates out these two functions and this will be discussed later as it is one of several 'developmental' models of supervision.
Developmental orientation.

This perspective concentrates on developmental aspects of the supervision process. The published theory and research for these orientations is the largest with respect to the field of supervision and is thus subject to further analysis and discussion under the principal writers and issues in the area and is set out below. Osborne et al, (1990), suggest that educational psychology services use a variety of models of supervision, but the developmental model is an important one because psychologists develop over time and the nature and purpose of the support they thus require changes too. These models usually represent the supervisor-supervisee relationship as passing through a series of stages, compared to the dynamic orientation proposed by Ekstein and Wallerstein, (op.cit.). Only a few developmental models of supervision have been the subject of any research to verify their validity or reliability. The research will be discussed after presenting the models, as follows:

1. Hogan.(1964)

There is no tie in the literature on Hogan’s model to any particular underlying theory of development. His model sets out a series of stages which the supervisee passes through with advice for strategies and process and can be represented diagrammatically as follows:
### Assignment 3. V. Legg.

<table>
<thead>
<tr>
<th>Level</th>
<th>Characteristics</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dependency on the supervisor</td>
<td>Modelling, interpretation, support, awareness in the supervisor</td>
</tr>
<tr>
<td>2</td>
<td>Dependence/autonomy conflict in the supervisee</td>
<td>As above, plus ambivalence and clarification from the supervisor</td>
</tr>
<tr>
<td>3</td>
<td>The supervisee shows increased professional confidence</td>
<td>Personal/professional conflicts are explored</td>
</tr>
<tr>
<td>4</td>
<td>Supervisee shows personal autonomy and security, stable motivation, insightful awareness and awareness of the need to confront personal/professional conflicts</td>
<td></td>
</tr>
</tbody>
</table>

The purpose of supervision in this model is to foster growth of the supervisee towards independence. No indication is given of its relationship to more formal theories of development or guidance on the emergence of the 'levels' or whether they are a fixed sequence, continuous or with overlaps. Although there are sufficient criteria to attempt to evaluate the supervision process they are very general and need more specification and use of this model might be difficult to manage in a group situation.

### 2. Stoltenberg, (1981)

Stoltenberg's model is based on cognitive developmental theories. It is known as the Counsellor Complexity Model. He builds on Hogan's stages by adding to the levels optimum supervision environments. His theoretical underpinning is stated as being within a cognitive developmental framework. He also recognises that supervisees will have idiosyncratic differences in:
Assignment 3. V. Legg.

- conceptual level of understanding of the process;
- motivation to develop;
- preferred type of feedback;
- learning style, observational or discursive;
- values;

This model is sufficiently robust to have been used for research purposes, (which will be returned to later). As it allows for such a range of individual difference it is again difficult to see how it could be adapted for group use.

3. Lorenz et al. (1979)

Lorenz et al’s model is based on a combination of developmental theories. They presented a combined developmental model for supervision. This is based on four existing models: teaching supervision, counselling/therapy supervision, consultation and self-supervision. The four models are combined into a sequence described as developmental. There are in four stages which can be represented in table form as follows:

<table>
<thead>
<tr>
<th>Stage</th>
<th>Supervisee tasks</th>
<th>Supervisor tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Set goals, develop a learning contract</td>
<td>Establish non-judgemental relationship, help set goals, criteria for competency in learning contract based on: Where supervisee wants to go, how they will get there, how they will know</td>
</tr>
<tr>
<td>2</td>
<td>Specific skills in conceptualisation and counselling</td>
<td>Focus on supervisee thoughts and feelings which might prevent action</td>
</tr>
<tr>
<td>3</td>
<td>Set own goals</td>
<td>Encourage self evaluation</td>
</tr>
<tr>
<td>4</td>
<td>Supervise self</td>
<td>Emphasize and reinforce key skills eg listening, behavioural approaches</td>
</tr>
</tbody>
</table>
There is no recourse to individualisation or recognition of differential performance in various areas except for competency levels being set for goals to achieve as a result of the process of supervision. The sequence represents tasks supervisees must master to become competent professionals. Again, it is difficult to see how this underlying model could be operated in a group.


Ralph's model is based on Rogerian therapeutic principles and cognitive developmental theory. This model of supervision is unusual as it was developed from interviews with graduate psychology students and supervisors from a clinical psychology course and concentrated on the supervisee and their changes over time. The clinical psychologists on this course were trained in Rogerian principles of non-directive therapy. The outcome of the research was a measured increase in understanding and complexity of supervisees constructs and their increasing awareness of themselves and their therapeutic influence on clients. The role the supervisor should play in this process is unclear, perhaps one of general non-directive support? Ralph does not note a relationship of his views here to the more formal theories of Piaget, (1929).


Delworth et al give credit for their model to the developmental theories of Erikson, (1968). This model focuses on the integration of knowledge and skill in the helping profession. The model can be set out as follows:
<table>
<thead>
<tr>
<th>Supervisee stage</th>
<th>Characterised by</th>
<th>Area of practice</th>
<th>Supervisor role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stagnation</td>
<td>Competence, emotional awareness, autonomy, theoretical identity, purpose and direction, respect for individuals, personal motivation, professional ethics.</td>
<td>Evaluating supervisee, enhancing growth in stages, promoting transition from stage to stage, monitoring client welfare.</td>
</tr>
<tr>
<td>2</td>
<td>Confusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Integration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is suggested that supervisees will cycle through the three stages for the content issues at ever deepening levels. This will allow for individual differences and thus whilst not specifically stated in their literature it is possible to see how this framework could be used in group situations where supervision is offered to groups and amongst peers as each participant would benefit from discussion of the issues raised at their level and until the final stage is reached for each person for different issues they will need to continue to attend supervision.

An addition in this model compared to others is that it acknowledges supervisor variables, such as: genuiness, potency, optimism, courage, sense of time as a gift, sense of humour, capacity of intimacy, openness to fantasy and imagery, capacity of respect and consideration. In the literature this model also presents strategies for supervision at various stages, transition points, emotional responses, evaluation and supervisee variables as outlined above. What it does not make explicit how and which supervisees benefit from which capacities in supervisors.
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from which capacities in supervisors.


Blocher states that his model is based on an interactionist perspective. This model is worthy of note because it moves away from stages in development. Development is seen as the acquisition of new and more complex schemas to be used in understanding behaviour and interactions, and the purpose of supervision is to support this development. Another feature of particular note is that evaluation is formal within this model, based on collaboratively developed performance standards for the supervisee and goal attainment scaling. Disadvantages of this approach can be seen as the supervisor being seen as 'expert', and perhaps of less importance unless one wishes to use it for research purposes, little clarification of this in the process of supervision is offered. It is possible to see how if the scaling process is negotiated individually, the rest of the model could be used in a group situation.

**Summary and Analysis of Literature Review on ‘Supervision’.**

All of the developmental models reviewed above are strikingly similar in their treatment of the supervisee development. Some of them give more detail as to the likely changes over time and in the individuals involved. Most of the models postulate stages to classify characteristics and processes but explanations as to why the changes occur and their sequence are less adequate. Tie to underlying theory is often loose and where it does occur is not fully pursued. Almost all of the models assume development as a continuous process beginning with the use of simpler 'constructs' or 'schemas' by a supervisee and moving to more complex and abstract conceptualisations. They all assume continuous
supervision by seemingly the same supervisor. This is not surprising as the importance of relationship factors for both supervisee and supervisor is implicit in all of the models. All of the models suggest increasing supervisee competence in areas of: intervention, assessment, interpersonal skills, client orientation, individualization, hypothesis formation and testing, theoretical underpinning, goal setting and planning, professional ethics and personal awareness. It is implicit in all of the models that supervisees will develop through increasing levels of motivation and awareness to autonomy in each skill area. To be really useful each area needs specification at the different levels of competence so as to know if a supervisee needs more supervision or other experiences to become competent. Bartlett, (1983), presents a set of criteria categorising models of supervision which is useful when trying to compare the many models of supervision claiming a developmental perspective. His criteria include:

- purpose;
- theoretical basis;
- goals;
- relationship between supervisor and supervisee;
- process;
- format;
- content;
- role expectations;
- treatment modality;
- setting;
- client population;
- evaluation of supervisor;
- evaluation of supervisee.

These criteria for classification allow a comparison between models and could enable decisions about which models/orientations and/or systems within services come closest to the BPS requirements to meet the quality standards expected. If the models presented here
are compared to Bartlett’s framework it is possible to see which of them could most
easily be investigated more fully to aid any EPS which needs to develop this function to
meet the BPS quality standards. An attempt to do this is presented in table form here.

<table>
<thead>
<tr>
<th>F</th>
<th>model</th>
<th>Hogsaa’64</th>
<th>Stoltenberg’81</th>
<th>Lorenz’79</th>
<th>Ralph’80</th>
<th>Delworth’82</th>
<th>blocher’83</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>theory</td>
<td>Dynamic</td>
<td>Cognitive</td>
<td>Mixed</td>
<td>Rogerian</td>
<td>Erikson</td>
<td>Interaction</td>
</tr>
<tr>
<td>A</td>
<td>purpose</td>
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<td>Meets BPS req</td>
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<td>All?</td>
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</tr>
</tbody>
</table>

[Where * represents the presence of a feature or strong possibility of developing it and
‘specifics’ are details of environment/characteristics etc.]

Hopefully, this analysis will throw some light on possibilities for supervision in
educational psychological services and enable attempts to arrive at the Quality Standards
for supervision to be achieved more quickly in those services actively striving to achieve
this at present. However, before making decisions it may be as well to be mindful of the
outcomes of research in this area.

**Research Review**

As reported in Section 1, there is little research into specific models of supervision. Some
work has been carried out on aspects of supervision, with much of the research focused
on supervision for counsellors and counselling training. Supervision in educational
psychology services is under-researched, the main focus being on surveying practices
rather than on evaluating outcomes.
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From research into supervision in counselling and training for counsellors there is validation of the amount of increasing independence of supervisees as they receive more supervision over the course of their training, see especially Hill et al, (1983), where this finding is based on triangulation of the views of trainees, supervisors and compared against client satisfaction over time. Worthington, (1984) using a survey of trainees own perceptions of needs throughout training identified the main factors associated with development of counsellors through supervision as: independence, knowledge of infrequently taught skills, increased direct monitoring of cases and increased establishment of goals. There was no independent measurement of the accuracy of what was reported in the returns but McNeill et al, (1985), using a self-report technique found similar skills and capacities reported. These were that over time counsellors reported, increased levels of self-awareness, more knowledge of counselling skills, less dependence on the supervisor and more desire for autonomy in their work and supervision. Research from the education and supervision of teachers into practice, (often the last experience of supervision for educational psychologists in training), indicates trainers are concerned with reported versus the actual behaviour of the trainee whilst trainees are concerned about critical feedback which fails to foster the ability to solve problems related to learning. These research results were reported by Arnold, (1981), on the basis of interviews with trainees and trainers with no other means of verifying the self reports, thus decreasing the validity of the findings. Educational psychologists have benefited from developments in the training of clinical psychologists where clinical supervision has led to the development of models of a supervisory relationship based on partnership. Ruddock and Sigsworth, (1985), have
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described a Partnership Supervision Model which includes a set of procedures involving
the establishment of a training relationship, joint experience planning, observation either
of trainee by trainer or vice versa, data-collection and a joint analysis of the supervisee's
work.

The above could be described as an 'apprenticeship model'. Apprenticeship models are
set up to enable the supervisee to observe the supervisor so that they can later emulate the
'model' in their own practice. Pomerantz et al, (1987), in surveying practices in
supervision for the Division of Educational and Child Psychology, (DECP), noted that
this practice is more frequent in initial training of teachers and educational psychologists
than it is in supervisory frameworks for everyday service operation for both groups
presumably because of the time demands it requires. During an individual's work in both
educational psychology services and schools, as Pomerantz et al, (op.cit.), points out there
is a distinct lack of opportunity for live observation of a supervisor by a supervisee.

Stones, (1984), has argued that the apprenticeship approach may not in any case represent
a good model of learning as gaining concepts and skills from a random set of exemplars
is problematic. He goes on to expand on this view and emphasises the role of supervisor
as counsellor using questioning and reflecting techniques precisely because of the lack
of opportunity for live observation in training. The view of Pomerantz et al, (op. cit.), is
that what is useful in the relationship of pupil to teacher might be expected to have
application in that of teacher (psychologist)- supervisor and vice versa. However, there is
evidence from the research into counselling training both for and against this view of
transfer of skills.

Supervision usually occurs on a one to one basis in the research in this area. Group
supervision was referred to by a small number of respondents to a DECP survey of fieldwork supervision in educational psychology, Pomerantz et al, (op. cit.). Exposure to group methods of supervision seemed minimal throughout the profession at this time. There is no research into these techniques.

Counselling, teaching and clinical psychology have given rise to a number of models of supervision which can inform supervisory practice in other disciplines and elements are included in both initial training and ongoing support/development of educational psychologists and some teachers. This review of research in the area and knowledge of the various models on offer might allow us to select amongst them and design a best-fit model for individual services to move towards the quality standards of the BPS recommendations. However, much of the research has not been replicated and uses designs which have low validity and reliability. Thus the selection of models and methods of supervision within an EPS to attempt to meet the BPS quality standards still requires a leap of faith.

Scaife, (1993), recommends what she calls ‘a general supervision framework’ so that despite the inadequacies of research in the area psychologists can work co-operatively to identify a range of supervisory options to further their training and professional development. The framework enables the supervisory process to be thought of as along three dimensions: role, focus and medium. She maintains that if it is thought of in this way it will simplify the use of supervision for the purposes of training and research, but as yet there is no reported research to uphold this view. However, her recommendations have construct validity based on the literature on supervision presented here and so details follow and will be discussed again in Sections 4 and 5.
According to Scaife, (1993), the supervisor’s role is to: ‘Inform-Assess, Enquire and Listen-Reflect’, p.64.

She envisages that the supervisor will adopt different roles in these areas according to the needs of the supervisee and that the relationship between both can be complementary or reciprocal according to need and experience. The focus of supervision can be on: actions and events, knowledge, thinking and planning, feelings and personal qualities, according to the issues the supervisee(s) are raising. Flexibility of focus and roles between the supervisee(s) and supervisor is again emphasized. The medium of supervision are the methods negotiated for supervisory experiences and include: non-participatory observation, role play, bug in the ear, audio and video taping, discussion and reporting back. Scott and Spellman, (1992), found that it was uncommon at that time for trainees in clinical psychology and family therapy to have observed their supervisor and this reflects the position in educational psychology found by Pomerantz et al, (op. cit.). Live supervision is minimal in all reported surveys of supervision and training for psychologists which contrasts with the position in teacher education and professional development where live classroom observation is the most common practice - including now for performance management. There is understandable sensitivity to the needs of clients on behalf of both supervising and supervisee psychologists, but Scaife, (op. cit.), notes that in family therapy both form a ‘reflecting team’ and discuss their need to communicate with each other with clients at the beginning of sessions to make the purpose of this clear. She advises dialogue at every juncture between supervisees and supervisors so that both are comfortable with every aspect of supervision. Scaiffe’s general supervision framework can be represented diagrammatically as follows:
The approach of using a 'framework' was used in Xshire and this will be returned to after the fit of practice to theory is described in the next section.
Section 4: Integration of Theory Research and Practice.

With the loss of a key member of the EPS a focus on supervision in the Xshire service had been lost and most staff members expressed this as an activity they would like to see replaced to new members of the management team. There seemed little sense in putting a system into place which did not build on research findings and at the same time take account of the BPS quality standards for supervision. [The standards for supervision required by the BPS are set out in Appendix 4.] Given the will to do this from the entire service the only difficulty lay in putting into place a system which would serve the needs of the EPs in the service as well as the specialist teachers for children under 5 with special needs.

One of the SEPs researched the needs and views of the service members using a semi-structured interview based on the techniques of Grounded Theory, Glaser and Strauss, (1967), [see Section 2 for the full account]. The findings of the interviews indicated that teaching staff were more used to traditional models and means of supervision, that is, based on one to one sessions with an experienced supervisor. They were however prepared to engage with other methods to enable them to reflect on practice and gain new insight and skills for their work. They expressed a particular interest in coaching as a method for learning new skills. It should be borne in mind that this group within the EPS will also be subject to the teacher’s performance management system into the future. This involves being observed by a more senior teacher during at least one teaching activity throughout the year. It also involves a measurement of the progress of pupils for whom advice has been given by the specialist teacher.

The EPs in the service had experienced a wider range of supervision methods and were
split in their preferences for methods which might be useful to help them reflect on practice and learn new skills. What they were more firm about was that they would prefer to undertake supervision by their peers. Xshire’s new PEP contributed his views which indicate that whilst ‘surveillance’ by management can be demotivating there is a place for the involvement of service managers in supervision because of the heightened levels of accountability required in modern public services.

The task became in reconciling the views of the teachers, EPs and managers in Xshire EPS and deciding on a best fit model and putting this into practice alongside other service activities. This is not such an easy task as analysing service member requirements of supervision since whilst there is general and researched agreement for a developmental perspective of models of supervision there is insufficient research or exposition of any particular model or total set of practices to allow any service to adopt a model and framework without much further thought and work. Many services will be in the same position as Xshire. According to Pomerantz, (1993a), who carried out a survey of the types and amounts of 'support' available to LEA psychologists and what psychologists would like to see are:

- focus on the primary task of supporting and learning;
- a degree of choice in selecting a supervisor;
- an atmosphere of trust and confidentiality;
- independence of appraisal;
- emotional issues addressed;
- promotion of reflective practice.

There are a two practical suggestions here to add to the likely framework for supervision
within a service, they are:

- independence of appraisal
- choice in selecting a supervisor

The other practical consideration is the time which can reasonably be allocated to this very important service activity. Taken all things together in Xshire it was decided to look at the various models and frameworks for supervision which exist and try to find a 'best fit' amongst them to answer service needs before going on to set the specific details of the activity. From amongst contemporary frameworks known to service members further consideration was given to:

- 'traditional' 1:1 supervision;
- 'group' supervision, both by peers and also with service managers included;
- coaching;
- mentoring.

[Outline models and notes about each of these methods are in Appendix 3.]

'Best fit' amongst these approaches to supervision could be attempted by comparing each against the criteria set out by Bartlett, (1983), for that offering the closest fit in fulfilling the requirements set out by the BPS for supervision standards in educational psychology services. Bartlett’s, (op. cit.), criteria include that the model and methods used have: a purpose, a process, specific details of environment etc., and a means of evaluation. From Bartlett’s analysis it can be seen that the likely best fit approach to supervision discussed in Xshire which would meet the BPS requirements and the views of all staff in Xshire
EPS is group supervision, whatever the methods used within it.

Training for individuals involved, recording methods and means of evaluation follow from the choices made and will be developed in use over two terms with a review of their utility after one term. This will enable supervision to happen across the service. Practically it will fit as the latter part of team meetings in locality teams every three weeks for EPs and fortnightly for teachers.

Introduction to the new system will be carried out in the summer in the manner recommended by Scaife, (1993), via workshops to enable staff to become familiar with techniques used and enter into fuller discussion across teams about their needs and vulnerabilities before ‘supervision’ time is built into service activities. The same will apply to the teachers in the service, who also work in area teams and this group supervision will be extra to the teacher performance management observation and discussion requirements placed on them.

To fully meet the BPS quality standards what will then remain is to outline a written policy for the service on supervision, and for management accountability purposes SEPs will be invited into supervision sessions by teams as required and service members will also be asked to make a note of any issues arising from these sessions which they feel management should be aware of or for action by them. In this way the supervision system fulfills staff needs and is separate from appraisal and the full time involvement of management.

As relationships between supervisor and supervisee are more important than strategies, Alderfar and Lynch,(1987), this suggests that as in Xshire, auditing needs and designing the system should be done collaboratively. Decisions will have to be made on who
presents issues and cases for ‘supervision’ per session, flexibility but characteristics of methods, frequency, recording, evaluation across the service. There is useful guidance given in the literature on some of these aspects but not all, those remaining will have to be decided according to local philosophies and circumstances. There is an intention in the BPS framework for Quality Standards in Educational Psychology Services that supervision will be monitored and evaluated, and mindful of this users should welcome any changes this brings as research shows educational psychologists needs change over time, Nolan, (1999). (Presumably the same holds true for teachers, but no research was indicated from database searches.)

In the only recently reported piece of research into supervision in an EPS Nolan, (op. cit.), found that newly qualified educational psychologists initially focus on procedures and require a high level of direction and checking that plans of action are appropriate. She also found that after approximately two years, educational psychologists needs centred on hearing new perspectives, reflecting, ensuring that one does not get stuck in a way of working, and professional development discussions.

She summarises, what is needed as:

a) a flexible system with choice;
b) dedicated time;
c) positive supervisor characteristics of listening, empathy, problem-solving, non-judgemental attitude;
d) supervisee responsibility for areas to be explored;
e) a clear framework but choice of methods to suit various problems and/or learning styles and levels of experience;
f) a recording system which is owned by the supervisee but can be shared with the service if there is an issue which needs wider resolution;

g) roles and responsibilities defined;

h) outcomes agreed for each session as well as the whole system so that it can be monitored and evaluated.

Nolan, (1999), gives the example of what was agreed in her own service and described in a service development proposal as follows:

i) a choice of support on at least a monthly basis from:
   - group support meetings or
   - peer 1:1 support
   - reciprocal 1:1 support
   - 1:1 support with a line manager
   - 1:1 support with any team member

ii) each team member to choose at least one support option;

iii) this support should not be fed into appraisal unless by request of the person receiving support;

iv) for educational psychologists in their first year with a service, there will be support with their line manager and in addition, the option of another form of support;

v) the group support could be co-ordinated by a senior educational psychologist or senior practitioner but the facilitator/leader role within sessions could be on a rotation basis;

vi) the Educational Psychology Service should explore models of supervision, possibly involving a consultant.
What has developed as a result of the investigation into supervision in Xshire to put into place a system which meets BPS standards involves everything indicated by the previous research into what is required in EPSs by Pomerantz et al. (1993a) and Nolan (1999), except, external consultancy and in Xshire the main means of supervision will be in peer groupings on a team basis using the regular meeting times only inviting in SEPs as needed, but with the opportunity to feedback to managers using a written notes from meetings which are agreed by all.

The opportunity for service members to observe each other in live practice to develop skills, which was indicated by Pomerantz, (1987), as being in limited use in EPSs is more problematical as it would need to be timetabled across an already overcrowded menu of service activities.

There do not appear to be any hard and fast answers to which models/methods and practical arrangements to make around supervision, except that a developmental model would best suit services which by their nature develop and have in them psychologists of different amount of experience who are developing over time, and presumably the same applies to teachers. However, despite there being little systematic research there is a lot of guidance to help direct thinking in this area as services move towards the Quality Standards for Educational Psychology Services.

What has developed in Xshire and what is proposed for the future in terms of supervision fits into the analysis of service data according to Grounded Theory, Glaser and Strauss, (1967). The purpose of the exercise was to find a commonality in systems for supervision which might allow the learning of new skills and the examination of experiences to aid a common and individual understanding to develop. This will aid quality control in what
Assignment 3. V. Legg.

individual memebers of the service understand and can do. It should help improve outputs of members and outcomes for clients by lowering uncertainties. Accountability is aided by the opportunity for SEPs to be invited into supervision sessions or them requesting to attend or that an issue be raised. A written note of concerns affecting staff when they feel managers will be able to help or should be aware of will also be kept. Roles and responsibilities are as even as possible with the SEPs not attending unless invited and the methods used within sessions are to be chosen by the group as each issue and learning styles and konwledge dictates. The whole service will be introduced to the function and any requirements during the summer term using the notion of frameworks for supervision as suggested by Scaife, (1993).

Applying the same system for the teachers in the Xshire EPS will add to their performance management requirements as they did not feel one planned observation per year by a senior teacher would be as useful to them as a regular time to reflect and learn new skills. The performance management of EPs is not a statutory requirement as it is for teachers. However, despite the requirements of Best Value in public services to not duplicate functions the feeling in Xshire EPS is that the opportunity to spend time working with a colleague in the manner envisaged for teachers when using everyday EP skills would be beneficial. The proof of the benefit of a supervision function which has been negotiated with staff as it has been in Xshire, and is based on the available research, will be in any improvement in outputs, outcomes and staff satisfaction with the support the service offers them.
Concluding Remarks

The BPS quality standards for supervision in educational psychology services gives a clear steer on what any such system(s) is/are expected to deliver, without describing how any service should go about 'supervision'. Hawkins and Shohet,(1989), suggest that to be effective:

'supervision needs to be built into the very fabric of an organisation'

A learning or developmental culture is one in which supervision can flourish. It is important that the organisation monitors the differences in its espoused theory, what they want to do, and their 'theory in action' or what they actually do with respect to supervision. They can than plan for and decide how to fill any of the gaps that emerge. This is the notion of shared responsibility for learning and outcomes which distinguishes adult education. This will require that service areas on which skills developed further by supervision are monitored and the whole system reviewed periodically to ensure this function is working for us and is very much part of the organisation.
REFERENCES


Hogan, R. (1964) 'Issues and Approaches in Supervision'. *Psychotherapy: Theory, Research and Practice*. 1, 139-141.


Assignment 3. V. Legg.


Assignment 3. V. Legg.

Appendix 1 - Questionnaire

I'm interested in your experiences, knowledge and views of supervision. I'd be grateful if you'd discuss with me anything which occurs to you about supervision based on the questions set out below. After discussion and as a result of it, could you summarise what you think under each question as I'd like to look at and analyse your responses later?

1. Is your current professional role supervised or has it been in the past and how?

2. Can you say what professional supervision involves for you/your supervisor, or has done the last time you participated in it?

3. Did/do you get anything out of it and what is it?

4. Does anyone else gain from your supervision and how?

5. Please comment on supervision you have received in any previous roles.

6. Has supervision in any other job/role been different and how?

7. Was there a different purpose to supervision you have experienced outside your professional role(s)? Can you comment on it?

8. Given your previous experiences of supervision do you have any preferences amongst
Assignment 3. V. Legg.

methods, e.g., 1:1, in a group, by a manager, by a peer, being coached or mentored?

9. Do you know anything about 1:1 supervision, group supervision, peer supervision, coaching or mentoring?

10. Attached are brief explanatory notes/diagrams outlining methods and techniques and roles in supervision. Can you say if you have any preferences amongst these and why?
Appendix 2 - Concepts and facets raised by Psychologists

- emphasis on the positives
- interest in my improvements
- listening
- informational feedback
- action planning
- encouraging individuality and autonomy
- time to chat
- trust
- time
- personal relationship
- balance of power
- genuine interest
- background in psychology
- strong views
- good subject knowledge
- modelling
- organised
- sense of humour

Concepts and facets raised by Teachers

- listening
- genuineness
- encouragement
- trust
- organised
- empathy
- time
- supportive
- respect
- praise
- expert
- constructive criticism
- control
- expectations
- agenda
- feedback
Appendix 3 - Methods. Mentoring

From Jennings, (1994).

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Appendix 3 - Methods. ‘Traditional’ Supervision

THE GENERIC TASKS OF SUPERVISION

- To consult
- To counsel
- To set up a 'learning relationship'
- To monitor administrative aspects
- To monitor professional ethical issues
- To teach
- To evaluate

Overview of the seven tasks of supervision
Appendix 3 - Methods. Group Supervision

PEER CONSULTATION /SUPERVISION

SERVICE CONTRACT

- **Purposes**
  - Supportive / formative / restorative
  - Not usually normative – only in extremis
  - Confidential – except if serious danger

- **It is Formal**

- **Protected time**
  - Usually one hour every two weeks
  - Up to two hours every two weeks

- **It is for equivalent groups**
  - i.e. Maingrade with Maingrade
  - Senior with Senior

- **Attendance priority**
  - except in emergencies

- **Experience may be invited in.**

- **It's across base boundaries**

- **Membership**
  - people can change groups by invitation/request.
  - New people are invited or can invite themselves to join one.
  - On the basis of numbers / location?

- **Responsibility for the work lies with the consultee.**

GROUPS DECIDE FOR THEMSELVES

- **Time Management** – frequency, duration and how to divide the time.

- **The focus of the session**

- **The Role** – relationships of the participants (each session).

- **The media** – live, reporting, role-play.

- **Each member’s** wants
  - fears
  - typical defensive relations
  - what is the best response to defence
  - if to / how to / when to use feedback
  - what each is able to offer.
Appendix 3 - Methods: Coaching

Phases in the coaching process

1) **Understanding the problem situation**
   - obtaining a rich picture through open questions
   - paraphrasing sections as appropriate
   - reflecting emotions and feelings, as appropriate
   - clarifying the problem with closed questions.

2) **Summarising the problem.**

3) **Examining systemic aspects**
   - inviting comments on organizational factors which support or reduce the problem
   - identifying organizational change required.

4) **Developing critical understanding**
   - checking coherence, relevance, internal consultancy and external validation of coachee’s actions/thoughts on
     problem situation.

5) **Considering underlying personal dimensions**
   - suggesting connections/themes
   - highlighting mismatches
   - unpacking apparently hidden agendas
   - pointing out personal/professional gaps in expertise
   - identifying key conflict areas
   - attempting long shot explanations
   - inviting possible dimensions from coachee.

6) **Exploring selected dimensions**
   - reflecting on problem dimensions list
   - selecting one/two dimensions for discussion.

7) **Creating an action menu**
   - creating action possibilities menu from coachee
   - offering additional possibilities.

8) **Planning action**
   - discussing a plan of action
   - carrying out a cost-benefit analysis of this plan (if appropriate)
   - considering possible pitfalls.
   - role-playing/rehearsing/scripting (if appropriate)
   - discussing outcome and process measures.

9) **Evaluating outcomes/processes**
   - discussing what went well with the action carried out
   - considering what was learned
   - considering what to do differently next time
   - reflecting on personal/professional development needs of coachee emerging from this action.

10) **Carrying out a meta-evaluation**
    - identifying assets of coaching sessions
    - identifying areas for improvement to coaching session
    - reviewing coaching arrangements
    - reflecting on personal/professional development needs of coach emerging from the coaching session.
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A management system which:

- provides protected time and financial support for involvement in supervision;
- has a designated person/group of persons with responsibility for managing supervision within the service.
Assignment Four

Personal/Professional development.

Valerie Ann Legg
### Assignment Four

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Introduction.

The wider education system in which educational psychologists work has undergone significant change in the last fifteen years: the National Curriculum, funding delegated to schools, several Ofsted inspection frameworks, Best Value for local authorities, performance indicators for educational psychology services, expectations of the inclusion of all pupils in and increasingly specialised and diversified school system, pupil progress targets and children’s views on these. Such changes have brought increased demands on the profession and thus on initial and continuation training. There is a need to decide both what to respond to and how to respond in this increasingly diverse and complex educational arena.

Kerfoot and Imich (2000) comment that:

“One difficulty in moving forward may be that there is too much focus on more of the same.” P.88.

Which models of practice then offer the most utility in moving forward and what changes in training and educational psychology services, (EPSs), are required to enable the profession to continue to adapt and remain resilient?

This assignment is a personal account of the use of two particular means of bringing about change at the personal/professional level in an attempt to develop skills and understanding to work effectively in the changing context of educational psychology.

“- - if people want to change their environment, they need to change themselves and their actions - not someone else.” (Weick, 1979, p.152)
[Key words for the ‘Psychinfo’ database which were used to identify published theory and research into professional development for this assignment were: *360 degree feedback, professional development/psychologists, coaching.*]

Section 1. Aims and Scope of the Assignment.

Several opportunities to learn about and use techniques for personal and professional development were provided during the Doctorate in Educational Psychology (D.Ed.Psy.) course at University College London, (UCL). I will focus on the need for reflection on professional practice and action research as a model for both personal and professional development. During the D.Ed.Psy. course personal areas for development were highlighted as a result of the use of 360 degree feedback and the programme also provided a model of coaching (Cameron and Monsen, 1998). Using an action research framework of plan-do-review and distillation of learning from these experiences both methods of development will be critically examined.

In Section 2 of this assignment the information gained from the 360 degree process at two points in time will be presented and professional development as a result of coaching will be discussed. In Section 3 the theoretical basis for 360 degree feedback and coaching will be presented and some of the research into these procedures critiqued. An attempt will also be made to trace each technique back to its psychological underpinnings.

In Section 4 an attempt will be made to integrate the theory and research presented for the techniques discussed. Themes in the literature on personal/professional development
(PPD) within the context of EPSs and continuation training will be analysed according to the scope they seem to offer for meeting the demands of the changing context in which EPs work. Coaching and the use of feedback in development will be discussed as examples of an 'action research' method for personal development.

My objectives for this assignment are to:

- reflect on my personal and professional development as a result of the D.Ed.Psy.;
- critically examine the methods of 360 degree feedback and coaching within an action-research framework;
- appraise the use of an action-research framework for PPD and as a general approach to EPs work which could enhance scientist-practitioner enquiry and thus evidence based practice.

Section 2. Practice and Context.

The initial use of 360 feedback on the D.Ed.Psy. course was in Jan. 1999 and involved the use of a 'standard' 360 degree instrument developed between Insight and a shire EP service for professional development purposes. This version (A) was completed by each member of the course and also by up to eight of their colleagues and/or managers within their 'home' local authority. (See appendix 1 for a summary of the information obtained).

Version A continued to evolve from the version used in 1999 and the updated version was used again by each course member with eight colleagues towards the end of the D.Ed.Psy. course in May 2002, this is referred to as version B. (Outcomes of second round of 360 degree feedback in appendix 2.)
Outcomes from the 360 degree feedback process in January 1999.

There was much to ‘celebrate’ in feedback provided but colleagues also identified areas for improvement. (See appendix 1.)

To address the areas identified I returned to colleagues completing the questionnaires and ask them to recall instances in which they felt I could have done something different in the areas identified. This was to be able to define the types of professional development contexts, behaviours and methods that might help. Their input enabled me to focus on two specific sub-skills: active listening and reflecting back for shared meaning with the speaker. These skills were targeted in coaching sessions and PPD activities. (See records on appendix 3.)

Outcomes from 360 degree feedback in May 2002.

The questionnaire used in May 2002 was the same as that used in January 1999 and was given to eight colleagues as before. There was a difference in analysis of 360 degree feedback by 2002. Levels of analysis in 2002 allowed the percentage number of respondents choosing an item for feedback to be given alongside the item, thus making it possible to see the weighting given to some behaviours compared to others. (See summary outcome data from 2002 in appendix 2.)

By the second set of feedback I had moved to a different EPS, so eight different people completed the 2002 questionnaires. There are possible advantages and disadvantages of having different raters at the end of the D.Ed. Psy. programme compared to the beginning as the second set may rate behaviours more leniently or more harshly than the first thus inflating or deflating any changes. Two different sets of raters at the beginning and end of
the D. Ed. Psy. programme imposes limitations on the interpretation of change in ratings over time.

**Coaching and personal/professional development**

The process of professional practice coaching involves an in depth exploration of not only the problem an EP might be expressing but also their personal attitudes, beliefs and perspectives and the extent to which these may contribute or reduce particular problem situations, leading to self-reflection and change. Highlighting the multifaceted nature of EP practice, Cameron and Monsen (1998) have commented that:

"Some of the personal/professional problems encountered by practitioners may be long-standing, complex, or recurring. One approach which can be used to aid the process of self-evaluation and reflection is coaching." (P.114)

My areas for improvement identified from 360 degree feedback information in 1999 were ‘active listening’ and ‘reflecting back for shared meaning’. The coaching model used in Xshire EPS during the period described was taken from Surrey EPS Professional Development materials and is outlined in appendix 3. Stages of the coaching process outlined in appendix 3 are evidenced on my PPD records and these are included in appendix 4.

Coaching is a process which allows reflection on recurrent assets and problems, the opportunity to develop greater insight into these problems and to consider possible and idiosyncratic solutions for both personal and professional development. The framework for coaching outlined above also reflects the process of action research as described by Figg and Stoker, (1998):
growth of knowledge;

- evidence to support that knowledge;

- explicit description of the process of enquiry;

- a link between new knowledge and existing knowledge

- action is required as an integral part of the (research) process;

- the researcher’s (EP’s) professional values are recognised as being a central component;

- it is ‘insider’ research, in that practitioners are researching their own professional actions;

- it is iterative, with repeat cycles of learning.

Outcomes as a result of acting on 360 degree feedback using coaching.

The same areas for improvement did not reappear again in 360 degree feedback received later in 2002. Some of the differences in later feedback could be due to ratings from a different group of colleagues or of course, the result of the improvement areas having been addressed and no longer evident, or changes in context. Methodological issues concerning 360 degree feedback will be discussed in the next section.

EP development also depends on mediating organisational attitudes and opportunities for improvement. If the context (or EP service/LEA) does not provide opportunities for techniques such as coaching to be used or professional development time is limited or skewed opportunities for development are severely restricted. This begs questions about the attitudes towards and models of professional development existing in EP services.
These points will be returned to in sections 3 and 4. In the next section, 360 degree feedback and coaching are further discussed and set in the context of research on models of continuing professional development.

Section 3. Psychological Theory and Research.

Various themes in professional development in EP services are evident in accounts of PPD in such services. The main identifiable themes and practices are:

a) individual development in the absence of user feedback;

b) a targeted approach uses context factors such as service plans or feedback from various sources;

c) both context and individual factors taken into account, particularly by the methods used to support development.

a) Individual development in the absence of user feedback.

Exploring the similarities and differences between personal and professional development for applied psychologists, Wilson (1994) outlines opportunities common to most EPs: conferences, training events, structured learning in the form of higher degrees and published research. She highlights positives and pitfalls of such opportunities but in her opinion none of them is seminal to psychologists' direct work with clients when compared to 'the accreditation of practical hands-on experience' (p.73). Wilson also stresses the need to pay attention to personal as well as professional development as personal skills and qualities are viewed as central to psychologists' relationships with clients. The author (op.cit.) argues for continued need for supervision throughout
professional life to provide a means of adjusting the psychologist's inner world to the demands of the job and of learning from others. However, personal research into supervision for the D.Ed.Psy. assignment 1 (2000) reveals widespread discontent amongst EPs.

Several means of personal/professional development are claimed to develop the person as much as developing professional skills. These are the more 'experiential' methods of learning such as live supervision, and coaching. The difference between these and traditional methods of skills based learning are that they take account of everyday context and rely more on social interaction as an integral part of learning. Fraser and Greenhalgh (2001) cite small group, problem-based learning as a good method to use with adult learners. They suggest the formal use of storytelling because knowledge is stored in memory as stories rather than as discrete facts. Regrettably there is a paucity of research into this dimension which can allow situations to be considered in their holistic complexity. Fraser and Greenhalgh (op.cit.) claim that the use of context based learning builds capability in dealing with real life scenarios in working life. Their useful list of process-oriented learning methods is included in appendix 5. [Particularly useful might be the use of a learning diary. This could be used at later points and with others to reflect on and thus deepen the learning gained from experiences recorded.]

Unfortunately development in absence of user feedback is without the perspective of the receiver of psychologists skills and thus runs the risk that it could produce a process run by psychologists for psychologists and so might result in a poor fit with external needs.
b) **Use of context/feedback to inform development**

Another means of professional development arises from appraisal/review processes. Webster (2001) surveying EP services about their use of appraisal schemes found that in fifty percent of services one of the outcomes of appraisal is professional development activities. He found that where appraisal works well two features are prevalent, supervision is provided in protected time and review/appraisal/service planning and individual training needs are dovetailed in a top-down way to enable the individual to identify ways forward and chart a professional development path. This is a very targeted approach which also takes context into account in professional development at every level. It contrasts with the situations described by Wilson (1994) in that the direction of individual learning is tied to the direction of organisational change.

Influences on professional development in an EP service are many and context should be taken into account as Webster (op.cit.) suggests. The complex influences of context and personal factors on personal/professional development can be represented visually after the work of Williams and Elliott-Kemp (1982), and McCall et al. (1997).
Diagram 1: Levels of Personal / Professional Development, Williams and Elliot – Kemp (1982), and McCall (1997).

Values & Attitudes

L3

L2

Interpersonal Skills

Professional Knowledge

Personal Qualities

Basic factual data etc.

L1

Job related skills

Continuous updating

Self awareness

Supportive Environment

Developmental strategies

ZONE FOR FEEDBACK

Service & LEA Context

Pro-active Stance, Personal Vision

Self awareness + Opportunities to grow = Direction to grow
Diagram 1 presents three levels of influence where at the very lowest level, level one, basic factual data and professional knowledge affect how people carry out their work. An example for EPs would be their knowledge of reading tests. At the second level interpersonal skills and personal qualities play a part as well as job-related skills and the opportunity to continuously update these. For EPs, being able to relate to a wide range of people is needed. At level three, the following factors play a part in CPD: values, attitudes, developmental strategies adopted, self-concept, and self-awareness. For EPs, appreciation of diversity is a key attitude. Superimposed on this in the centre of the page is a diagram from the work of McCall et al (1997) representing the 'zone for feedback' as they believe this is a major influence on the direction people grow in when given the opportunities.

c) Development using methods to address both context and personal factors

Various themes in professional development for EPs have been presented and wider discussion has highlighted the need to focus on the context as well as the learner. Important methods which take into account context and personal factors for PPD are 360 degree feedback and coaching. A fuller examination of each technique follows.

360 degree feedback.

The process of 360 degree feedback is also referred to as multisource or data based feedback and origins go back to the early in the last century where such methods were used to rate the abilities of workers in industry. In the 360 degree process statements are generated about job performance, colleagues and clients are used to provide feedback about the person seeking to develop.
In terms of general impact Nadler, (1995), found that 'focus' improves when data based feedback is used in an organisation and that it not only affects the behaviour of individuals with respect to their development, but also the behaviour of groups of people who share in the process in a positive way. London et al, (2001), have also shown that the recipient of feedback is more likely to act on it if they internalise it with help from another person and apply the new knowledge via goal-setting for themselves. However, there are inevitably problems with accountability of feedback as in most instances, the specific identity of ratees is confidential to avoid any over or under estimation of the value of the feedback.

One of the largest studies into the use of 360 degree feedback was done by Brutus et al, (1999) and involved over two thousand managers starting development courses. The 360 degree information was collected as a baseline for entry skills. The differential effects of further feedback during training were investigated using subsequent rounds of 360 degree information on the same instrument used by the managers themselves and their colleagues on the course. Their findings were that: ratees selected aspects of their performance rated 'low' by all to form their development goals; ratings from peers had the greatest effect overall but those of subordinates most influence low-level managers in organisations; the discrepancy between self-ratings and the ratings of others have little effect on goal selection and top level managers take less account of 360 degree feedback.

The findings of Brutus et al’s (op.cit.) indicate that ratees will select areas rated low by all which means successive rounds of feedback are needed as areas rated less low will not be addressed in earlier rounds. As ratings from various sources are differentially influential
sources should not be identified. Ratings from supervisors are the most reliable (r = 0.5) from (Conway and Huffcutt, 1997). As the discrepancy between self ratings and ratings of others seems does not seem to have any effect on goal selection this means that feedback is being acted on but may not affect the ratee’s view of him/herself thus not bringing about permanent changes in behaviour. It thus becomes necessary to accompany goal selection with situations which will give safe space for personal reflection to make sense of the feedback and enhance the chance for permanent change.

The Brutus et al study is the single largest study on 360 degree feedback and whilst the researchers thought to control for social desirability effects by not involving ratees work organisations after base lining on the 360 degree measure, feedback given later in training was provided by co-trainees on courses and thus may very well lack a 'real world' dimension and application which reduces the validity of the findings. As Brutus et al also used personality questionnaires for feedback purposes, there may be a contaminating effect by different types of instrument feedback on final outcomes. Although there were large numbers of managers involved in this study in fact the number of raters used to give the second round of feedback to ratees was quite small and this has a marked effect on the 'mean' of any feedback given, that is, a larger number of raters allows for individual quirks of liking/disliking on behalf of the raters not to significantly skew the feedback produced in each domain but a small number leads to 'personality' effects. Generally, inter-rater reliabilities from test/re-test design investigations into the use of 360 degree feedback are very low. Figures by Conway and Huffcutt, 1997, who reviewed several studies, give possible combinations as: 0.3 for subordinates, 0.37 for peers, 0.5 for
supervisors, and only 0.53 for inter-rating sources. The validity of what is measured by 360 degree feedback has been ascertained by comparing the characteristics rated with objective measures of performance and effectiveness. Comparisons are not high, varying from 0.27 in an analysis by Heneman, (1986) to 0.39 (Bommer et al, 1995).

The area of 360 degree feedback seems fraught with measurement error and low reliability and validity estimates. However, Murphy et al (2001) point out that what may be more important than these factors is to find out whether the participants themselves believe that multi-source feedback provides valid and useful information about performance. There is, as yet, no research into this aspect of using 360 degree feedback. It is likely, as research by Nadler (1995) indicates, the important effects of data based feedback are on group behaviours within organisations. He suggests that the process of seeking and giving feedback on the performance of peers, subordinates and managers increases participation in an organisation and changes power structures.

Other researchers indicate individual difference variables which affect interpretation of feedback. For example, London and Smither, (1995), found that self-image, feedback-seeking behaviours, and self-monitoring all affect interpretation of feedback and thus how it is used and affects later performance. Those inclined to focus on positive aspects of feedback are more inclined to value it and believe it can be used helpfully. Kluger and Nisi, (1996), found that two thirds of people who receive 360 degree feedback information demonstrate a positive change in performance. These researchers postulate that those who do not change may have perceived the feedback as related to self rather than to tasks they perform. London, (2002), suggests that change following feedback may
depend on a number of factors, the most important being the recipient's motivation to change. London, (2001), has produced useful lists of ways to enhance the effectiveness of 360 degree feedback and interventions to encourage accountability to use feedback. (These are reproduced in appendix 6.) What seems important in 360 degree feedback is the sense and use recipients make of it, which is mediated by internal factors and these can be prompted by the type of support offered to use the feedback. Several writers in this area indicate the importance of support to enable use to be made of feedback. (See Kluger and Nisi, 1996). One of the means of doing this which has been researched is coaching and this approach to PPD is now discussed.

Coaching.

Coaching is defined by Cameron and Monsen (1998) as an in depth exploration leading to self-reflection and change. Within educational psychology practice, this is one of only two references to coaching. However, outside the profession there is more support for analysis and acceptance of coaching as a valuable means of support and skill improvement. This is particularly evident in coaching from the areas of management, the workplace and sport.

Graham et al, (1994), researched the 'initiating' behaviours found in sports coaches rated as 'good' and applied this analysis to managers performances. On a development course, managers rated as 'good' by their co-trainees showed a similar list of behaviours to 'good' sports coaches:
Behaviours of 'good' sports coaches.  
providing feedback  
clarifying expectations  
analysing issues  
exploring the effect of actions  
action planning  
seeking commitment to action plan  
clarifying consequences  

Behaviours of 'good' managers.  
providing performance feedback regularly  
communicating clear performance objectives  
considering all information in appraisal  
observing performance in real situations  
helping with development plans  
providing help, training, guidance  
recognising and rewarding performance  
building warm, friendly relationships  

In weighting the behaviours shown by managers those rated ‘worse’ were high on relationships and low on feedback. A major weakness of this study is that the results of the managers group are based on perceptions of their co-trainees on a course as opposed to their behaviours in the workplace. However, it adds to the information about what makes a good coach and gives pointers for managers in developing people both personally and professionally. In this study behaviours which were associated with a good coach or manager could be built into organisational functioning by the adoption of methods the same as or similar to 360 degree information feedback alongside appraisal and development activities.

Other research in the area of sport concentrates on the areas of coachee functioning. Howe (1993), provides a breakdown of areas of 'mental functioning' on which sports coaches have influence, first order areas being seen as of most concern:
**First Order - Cognitive Areas**

- Arousal management
- Confidence
- Concentration
- Attitude to competition
- Leadership

**Second Order areas - Skills**

- Relaxation
- Imagery
- Self-talk
- Rehearsal
- Goal setting
- Communication
- Awareness

All of these areas are seen as requiring psychological input from coaches to help with their management and development. Howe (op. cit.) details where research has showed coaching has led to gains in performances. (These areas are set out in appendix 7.) Howe also points out that there is very little formal training for coaches, most gaining new expertise from role models. He also comments that the cognitive skills of sports coaches, (and other coaches) is another neglected area. He believes mental and other skills require integration and the best way to achieve skilled performance is for coaching sessions to simulate real situations. Thus coaching can provide experience of behavioural mastery or cognitive control over problems and issues.

How might we use coaching for professional development in educational psychology? Annan (2002) has provided an account of coaching as a technique for peer supervision in EP services. The principal factor which diminished the team's use of and satisfaction with coaching sessions was the time required to attend the sessions! Another factor was 'stability', that is, the changing dynamics of the group attending the coaching sessions.
However, no active dissatisfaction with coaching is reported and it is suggested that a more carefully structured evaluation might be a starting point to continue with what all of the EPs in the service found valuable. Apart from Cameron and Monsen (1998) this is the only reference to the use of coaching within EP services to be found in the literature.

Cameron and Monsen, (1998), link a coaching framework to consultation within EP services and to the use of coaching with Critical (Accessible) Dialogue, a conversational technique which aims to enhance interpersonal communication by making thinking and reasoning as explicit and accessible as possible. The use of Critical Dialogue enables the coach and coachee to rapidly develop trust and shared understanding which enhances reflectiveness and problem management.

From a Rogerian perspective, London, (2002), argues that change as a result of feedback and support would result from the individuals' need to reduce the gap between the way they see themselves and the way they experience the world. Thus, 360 degree feedback could help if those receiving the information are helped to process it meaningfully and change is supported by, and consistent with organisational goals and culture. Coaching establishes a process that provides components needed for individual change in line with organisational goals. Coaching can help focus the feedback on organisational objectives. Consultation, coaching and critical dialogue used together give a very persuasive framework in which it is possible to use coaching strategies outlined by Howe (1993) and link these with goal setting and action planning, based on feedback, in a plan-do-review cycle for improvement.
Literature and research into 360 degree feedback and coaching has been presented in this section. In summary, themes evidenced in the literature on professional development for educational psychologists are those of: individual development, use of feedback and context factors to inform development, and methods of development which take into account both context and personal factors. Whilst personal development is important, (Wilson, 1994), if carried out in the absence of user feedback a lack of fit to what is really needed may occur. There is also a paucity of research into methods of promoting personal development within EP services except for 'supervision', and this research is not carried out from the end users perspective or the efficacy of various models/methods compared. Where user feedback and/or context factors are used to inform development goals Webster (2001) has demonstrated that EP services are evaluated more highly so this is a definite way forward. 360 degree feedback provides a useful and accountable model of providing information to work on for development but research into this area shows that the techniques are fraught with measurement error and produces only low reliability scores.

What seems more important are those internal factors mediating the use of feedback and the means of support which enables recipients to incorporate the implications into their everyday practice. This point is well made by Csikszentmihalyi (1993), when he reflects that, "The self is made up mainly of information about goals and feedback." (p. 237). The very use of feedback also brings about changes in an organisation which Nadler (1995) suggests is because it increases participation in the organisation. Coaching is one process which uses context factors and feedback to support reflection and change.
Cameron and Monsen (1998) have provided a consultation framework which seems worthy of further research.

It is clear that different forms of support are needed for professional development but there is no comparative research on the efficacy of different models or methods of support. Research on what works best and why would require a comparative study with internal evaluation of what the EPs received, as well as an evaluation of outcomes on efficacy amongst clients and customers.

**Section 4: Integration of Theory, Research and Practice.**

**360 degree feedback information**

Despite the constraints outlined above it felt reassuring to note that there had been a general shift ‘upwards’ in all ratings so that by 2002 every behaviour fell within ‘areas to be celebrated’. Within these areas the lowest scores were given for ‘dealing with difficult situations calmly and constructively’. This outcome came as a surprise because it had been an area for celebration in 1999. This could be due to different raters in 2002 but it may also reflect a change in my responses to context in having moved to a management post where the frustrations of dealing with the wider organisation of a local authority occasionally showed through.

Despite generally low levels of inter-rater reliability in studies of 360 degree feedback, (see Conway and Huffcutt (1996), in my particular case fifty percent of the raters concurred on the main areas needing improvement. As predicted by Brutus et al, (1999), I took more account of the ratings of peers as they see more direct work with children and
schools. Ratings from my managers showed less consistency in any case than the ratings of peers. The trend for managers to rate an individual more highly is also evidenced in my data. This may be a result of their lack of experience of my everyday practice but also that one’s ‘best face’ is shown to them. As there is no published research into the use of 360 degree feedback in EP services, it is not possible to comment on whether the pattern of rating in services would correspond with that found in other sectors.

Anecdotal experience of the use of 360 degree feedback in two EP services points to possible lack of rigour with which the model might be applied, one service choosing to ‘grow their own’ model and reduce the number of raters per service member, thus reducing the reliability and validity of feedback. Possibly this situation could be avoided by the use of materials and software commercially produced for 360 degree feedback of information purposes in EP services?

**Coaching**

Cameron and Monsen (1998) explain that the techniques used in coaching help to identify personal dilemmas and beliefs and thus bring about change. I found that coaching on the areas identified by 360 degree information powerful in bringing about change and would therefore seek to encourage it's use and research into the effects it produces in EP services.

Howe (1993) indicates how coaching taps into ‘psychological skills’ and expressed the view that coaches and coachees need more training in the range of psychological skills used. These include: relaxation with imagery, preparation using imagery, using 'frames of reference', sensitisation to useful cues, self-talk, expectancy of outcomes, goal setting, use
of informational feedback, eliminating negative thoughts and encouraging participation. Perhaps an improvement to the Cameron and Monsen framework for coaching would be the 'tagging' of the psychological skills identified by Howe as they are used, so as to give EPs direct experience within a meta cognitive framework of when and how to use such techniques? This might also stimulate EPs to consider which elements of their own practice work and generate additional research at the client effectiveness level.

There are pragmatic problems to address in the use of 360 degree information and coaching within EP services. Most EP services do not encourage much joint work between EPs to allow 360 degree information or coaching to be based on shared experiences in real work situations. Again, if such changes in working practices were effected it would also be interesting to research at the client level whether there are real or perceived benefits.

Fraser and Greenhalgh, (2001), have written about the growing concern from several professions that current complexities of change, the push for continuous improvement, responsiveness and accountability also demand methods of CPD which build capability and not just competence. Capability is seen as a characteristic enabling an individual to adapt to change rather than just use a skill or competence to get a narrowly defined job done. These authors suggest that education and training providers should offer an approach and a process which enables individuals to develop sustainable abilities appropriate for a continuously evolving organisation, that is, enable individuals to ‘learn to learn’. They criticise traditional education and training for their focus on competence instead of enhancing capability:
"Education for capability must focus on process (supporting learners to construct their own learning goals, receive feedback, reflect and consolidate) and avoid goals with rigid prescriptive content." (P. 323.)

In their view, capability is built by feedback on performance, the challenge of unfamiliar contexts, and the use of non-linear methods of learning which can allow for the learning of how things are interconnected as it is often more useful than learning about the pieces. Such an understanding of the interactions and relationships will then allow for better application to new contexts.

Wolfendale, (1994), provides an overview of how changing perspectives of adult learners who are seen to benefit more from context-based learning and social interaction, as above, can be used within training and professional development in educational psychology. She maintains that the key shift in thinking about learning is the active involvement of psychologists in their own professional development as was the case in using 360 degree feedback at UCL and selecting appropriate methods of development to follow up for areas to develop. She advocates an emphasis on learning core transferable skills at: personal, social, group, organisational levels; along with problem-solving, decision-making and technical skills. Wolfendale has added the notion of learning style as an important personal factor in PPD and sequencing of competencies as a result of discussion between an EP and their tutor or coach. This thinking, and the research on approaches on which it is based, has informed the production and use of a competency framework across all professions within psychology and continued professional
development (CPD) logs as running records of personal/professional development over time, (Adler and Harris, 2002).

Other theorists in this area would argue that building capability is still overly reliant on the development of the individual and does not focus sufficiently on the workplace and its changing demands and challenges. Bryans and Smith, (2000), maintain that training focusses on a narrow range of skills but that 'development' is a more dangerous notion since it moves the focus of concern to the individual from the organisation. They caution against adopting a too-personal view of development, this might direct attention away from contextual issues and what is needed are ways to fundamentally tie together the organisation and it's members so that development is seen as a single process of relationships. Their view is that anything learned outside an immediate context stands less chance of transferring to it. Bryans and Smith, (op.cit.), acknowledge the social nature of learning, that is, knowledge is created by people in combination with each other and so lives in social relationships. Webster (2001) has already demonstrated that the most effective EP services use a model of CPD direction in which the development of the individual and the organisation are tied to each other.

Farrell et al, (1998), analyse the increasing complexity of the work of EPs and the changes in their professional role and context which are drivers towards longer initial training. Currently PPD doctorates are mostly carried out in the workplace and in the future the greater proportion of new three year doctoral training for EPs will also be based in the workplace.
Successful adult learning is seen as resting on provision of methods which aid development in the workplace. Dixon, (1994), also emphasises the social nature of the process of learning. His view is that the learning organisation should create contexts in which private meaning structures become public and then collective because they are then accessible and add to knowledge. This makes 'knowledge' a collaborative enquiry and consensus agreement. This has implications for time to work and meet together in EP services and links to training courses.

Perhaps in the move to three year training the profession should be asking a different set of questions about the nature of learning and 'knowledge'? In their analysis of this question Figg and Stoker, (1998), argue powerfully for the valuing of all experience, a constructivist standpoint, whilst paying heed to the nature and need for 'traditional' or positivist methods. They advocate action research as a method of enquiry which will accommodate the range of EP work from both standpoints and allow examination of professional issues. Quoting Reason and Heron, (1995):

"It is a fully participatory process in which people engage together in cycles of action and reflection. In doing so they have an opportunity to develop their critical awareness of the theories and ideas they bring to their action in the world. ---in the process of enquiry, both theory and practice are developed." P.57

Figg and Stoker, (op.cit.), go further and invite us to consider the model of collaborative action research in education described by Tikunoff, (1979):
Collaboration is viewed as teachers, researchers— working with parity— to identify, inquire into and resolve problems and concerns of classroom teachers. Such collaboration recognises and utilises the unique insights and skills provided by each participant." P.62

They ask if it would assist EPs if we used such a model in our regular engagement with teachers and parents?

Section 5. Concluding Comments

Although there is general awareness of the need for PPD there is little quality research into the methods and models required to bring this about. In particular, there is a paucity of research into the goodness of fit between training, PPD and increasingly complex work contexts. More links in training between the various branches of applied psychology are needed, for example, from organisational psychology.

Research carried out in the USA among school psychologists, (see Fowler and Harrison 2001) indicates the need for training for PPD as work becomes more complex. The new competency framework and continued professional development (CPD) logs currently being piloted by the BPS might help in providing directions in which development can be charted and also facilitate research into pathways and methods of attaining competencies and satisfaction with CPD routes and methods of training.

However, bearing in mind the ideas explored by Fraser and Greenhalgh (2001) perhaps the aim should be to develop capability as well as competence. This approach would necessitate an increase in the time available for personal reflection within EP services and
for group learning opportunities. Similarly, a CPD log may not be enough to distil all of
the learning possible from ongoing practice as an EP and it could perhaps be
supplemented by a learning journal with methods of reflecting on the experiences and
learning from these developed further over time, perhaps modelled on the framework
proposed by Cameron and Monsen, (op.cit.). As more EPs pursue doctoral courses, they
could evolve to become 'fieldwork' mentors for those undergoing initial professional
training to decrease the current perceived lack of links between workplace context to new
skills and knowledge gained from courses?

Much research and thinking presented in this assignment points up the opportunities
gained by social learning, that is, much learning is context based and vested in social
relationships. However, structures and work demands in most EP services often provide
barriers working against the effects of social learning. If such opportunities can be
increased research into the effects on EPs and their clients is required.

Coaching and feedback help in the process of development but cannot be isolated from
the social nature of the endeavour in both cases. Both should be conducted on an iterative
basis and need support from colleagues, coaches and trainers to help psychologists reflect
and learn from their practice. Both, properly conducted, can be seen to fall within the
model of action research. Action research and the potential knowledge base gained from
it are seen as having considerable applicability to increase skills and the evidence based
practice of EPs.
References


PERFORMANCE SUMMARY
Colleagues' View

The top five celebration areas are:

1. is clear about what elements of conversation and work are confidential
2. always checks that there is parental consent before s/he will discuss or work with individuals
3. deals with difficult situations calmly and constructively
4. de-escalates conflict well
5. keeps people informed

The top five areas to be fixed are:

1. responds sensitively to the needs of others
2. works with people to identify possible solutions to their concerns
3. is aware of the impact of his/her behaviour on others
4. listens well and responds appropriately
5. works with individuals and groups to identify practical ways of addressing their concerns
PERFORMANCE SUMMARY
Participant’s View

The top five celebration areas are:

1. develops effective working relationships
2. listens well and responds appropriately
3. understands theories of assessment/intervention frameworks
4. works with people to identify possible solutions to their concerns
5. works with individuals and groups to identify practical ways of addressing their concerns

The top five areas to be fixed are:

1. deals with difficult situations calmly and constructively
2. makes sure s/he understands the context within which others work
3. responds sensitively to the needs of others
4. checks that they have understood accurately what has been said
5. does not jump to conclusions or make assumptions
Overall Areas for Celebration

VAL LEGG

On this page you will find those statements that are rated highest on both importance and Performance by your colleagues and yourself.

Feedback from Colleagues

<table>
<thead>
<tr>
<th>Index(%)</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.54</td>
<td>understands theories of assessment/intervention frameworks.</td>
</tr>
<tr>
<td>87.24</td>
<td>helps people to identify and make links between all the factors which contribute to the problem situation.</td>
</tr>
<tr>
<td>86.78</td>
<td>follows through on commitments.</td>
</tr>
<tr>
<td>85.12</td>
<td>practice is based on appropriate knowledge of theory and research.</td>
</tr>
<tr>
<td>85.12</td>
<td>makes relevant and helpful suggestions.</td>
</tr>
</tbody>
</table>

Feedback from Self

<table>
<thead>
<tr>
<th>Index(%)</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.00</td>
<td>always checks that there is parental consent before s/he will discuss or work with individual children.</td>
</tr>
<tr>
<td>83.33</td>
<td>makes sure s/he understands the context within which others work.</td>
</tr>
<tr>
<td>83.33</td>
<td>responds sensitively to the needs of others.</td>
</tr>
<tr>
<td>83.33</td>
<td>takes others' concerns seriously.</td>
</tr>
<tr>
<td>83.33</td>
<td>de-escalates conflict well.</td>
</tr>
</tbody>
</table>

*Celebration Index is [Mean Importance] x [Mean Performance] represented as a percentage: the higher the index, the more reason to celebrate.
Surrey EPS Professional Development Model and Stages in Coaching. Appendix 3

1. Understanding the problem situation;

2. Summarising the problem;

3. Examining systemic aspects, that is, identifying different systems which may be operating in a situation, for example, home and school; and the relationships amongst the people within and between systems;

4. Developing critical understanding, that is, having examined the systems which may be involved in a situation arriving at new understanding of the situation;

5. Considering underlying personal dimensions, that is, the coachee’s feelings, attitudes and belief systems which may also be operating in understanding and dealing with the problem situation;

6. Exploring selected dimensions, that is, the coachee selects one or two themes from the preceding discussion for further analysis with the rationale that these might be the most useful in terms of actions;

7. Creating an action menu;

8. Planning action;

9. Evaluating outcomes/process, that is, an evaluation of the action plan,( would take place at the next session).

10. Carrying out a meta-evaluation, that is, discussion of the coaching approach itself aimed at acknowledging the positive features of the approach, reviewing the contract and fine-tuning the process where appropriate.