Evidence on Effective Early Childhood Interventions from the United Kingdom: An Evaluation of the Peers Early Education Partnership (PEEP)

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Abstract

Efforts to improve the educational achievement of children, especially those from disadvantaged backgrounds, are at the heart of current government policies in the United Kingdom. The Peers Early Education Partnership (PEEP) is an intervention that, since 1995, has worked directly with parents and caregivers of children from infancy to 5 years of age in a deprived area of Oxford and, recently, in other areas. This paper explores the effects of the PEEP parental education program on children's development. A longitudinal quasi-experimental design, including pretest and posttest measures, was used to compare a group of children whose parents had access to PEEP with a group of children with similar demographic characteristics whose parents did not have such access. In order to assess the effects of PEEP on children's cognitive, language, and social-emotional development, standardized tests and educational tasks were administered to the children upon entry to the intervention (at age 3) and after one and two years (at ages 4 and 5). This paper discusses the effects of two years of parental participation in PEEP on children (at age 5). Gains were found in vocabulary, verbal comprehension, understanding about books and print, number concepts, and self-esteem related to both cognitive and physical competence. Thus, working directly through groups of parents was found to be an effective way of enhancing children's cognitive and social-emotional development.

Introduction

A report by the U.K. Prime Minister's Strategy Unit, *Life Chances and Social Mobility,* concluded that despite decades of programs targeted at poor families, childhood poverty continues to adversely affect life outcomes (Aldridge, 2004, p. 16). Research indicates that early intervention is more successful than later intervention in combating disadvantage and social exclusion (Snow, Burns, & Griffin, 1998; Hills & Stewart, 2004); however, the evidence has come predominantly from the United States (e.g., Schweinhart, Barnes, & Weikart, 1993; Schweinhart, 2004). The evaluation described in this article complements this research and makes a contribution to what is referred to in the United Kingdom as "evidence-based policy and practice." This short-term longitudinal study investigated the effects of the Peers Early Education Partnership (PEEP) intervention on children's development from age 3 to age 5 when the children entered school. By investigating any differences between families who did and did not have access to the PEEP intervention, the study measured the impact of PEEP on child outcomes related to (1) literacy, (2) numeracy, (3) self-esteem, and (4) social-emotional development.

Interventions with a Special Focus on Literacy in the United Kingdom

Several projects related to early home-school partnerships have been established in the United Kingdom to support parents as children's first educators and give children a good start. Most of these interventions were based on research on parent-child interaction at home that showed how important parents are in children's early learning (Jordan, Snow, & Porche, 2000; Moran, Ghate, & Van der Merwe, 2004; Sammons, Sylva, Melhuish, Siraj-Blatchford, Taggart, & Elliot, 2002, 2003). These programs aimed to provide the necessary skills to mothers with lower educational qualifications who lived in low-income households to enable them to contribute to their children's later academic achievement.

However, parenting skills are not all that are necessary to ensure a child's academic success. In England, Scotland, and Wales, one child in five lives in a family receiving means-tested benefits, where their parents or caregivers are not working ("Centenary Report," 2004).[1] To address this problem, interventions are designed with the view that prevention is better than

cure. The ultimate goal of these programs is to promote school readiness in part by diminishing the socioeconomic status (SES) "disparities in the preschool years so that poor children enter school on a more equal footing to their more affluent peers" (Brooks-Gunn, 2003, p. 6).

Raising Early Achievement in Literacy (REAL) Project

The best-known early parent intervention in the United Kingdom was Raising Early Achievement in Literacy (REAL). This two-phase project was aimed at enhancing children's literacy on entry to school. The intervention targeted parents during the preschool period (Weinberger, Hannon, & Nutbrown, 1990). The aims of the first phase of the REAL project (1995-96) were to develop methods of working with parents to promote early literacy development and to meet some of the literacy and educational needs of the parents involved. The project also aimed to disseminate effective means of parental involvement to practitioners and to inform policy makers about the effectiveness and implications of new practices. The first phase of the Weinberger et al. project suggested four ways in which parents could help their children's literacy development:

- Offer children **O**pportunities for learning.
- Show **R**ecognition of their early literacy achievements.
- Engage in **I**nteraction with children on literacy activities.
- Provide **M**odels of literacy use (e.g., providing a model for using environmental print).

These four concepts were formulated into what became known as the ORIM framework.

The second phase of the project was a randomized control trial with a sample of 176 families with 3-year-old children from deprived areas. The program's take-up was very high, and attrition was less than 10% over the 18 months of the program. Children were assessed before and after the program with two different instruments—the Sheffield Early Literacy Development Profile (SELDP) and the British Picture Vocabulary Scale (BPVS). Analysis showed that, by the age of 5, program children were ahead on the SELDP (effect size 0.41). The program children also showed a significant improvement in the number of letters that they were able to recognize (effect size 0.30). Although the program children's scores on the vocabulary assessment were slightly ahead, this figure was not statistically significant (Nutbrown, Hannon, & Morgan, 2005). Hannon and Nutbrown (2001) concluded that "by providing parents with ways of thinking about their roles to help them to help their children's literacy development, children's literacy levels did improve."A follow-up study took place when children were 7 years old, but these results have not yet been reported.

The PEEP Intervention

PEEP is a program for parents and their children (ages 0-5) initially developed in 1995 in an economically deprived area of Oxford but now expanding throughout Britain (http://www.peep.org.uk). In 1996, PEEP set out its aim as being to effect a positive change in the educational achievement of a community of children, especially in the field of literacy, by a series of interventions beginning at the time of the child's birth until his or her entry into school *(*PEEP, 1996, pp. 3, 6). More than 2,800 children and their families had participated in PEEP in Oxford by June 2005 (Deidre Macfarlane, PEEP Research and Outreach Coordinator, personal communication, 2005). More specifically, by this time, PEEP had the following aims:

1. To promote parents' and carers' awareness of children's very early learning and development through making the most of everyday activities and interactions.
2. To support parents/carers in their relationships with their children to enhance children's self-esteem.
3. To affirm the crucial role of parents/carers as children's first educators.

4. To support parents/carers in the development of their children's literacy and numeracy.
5. To support parents/carers so that they can encourage the development of positive learning dispositions.
6. To promote and support parents' and carers' lifelong learning.

PEEP uses the **O**pportunities, **R**ecognition, **I**nteraction, and **M**odeling (ORIM) framework developed by Hannon (1995). In PEEP, the ORIM framework is used by focusing across the curriculum, covering aspects of literacy, numeracy, and self-esteem development.

The PEEP program focuses on child development and regards listening, talking, and playing as essential to the development of emotional stability, good social skills, and satisfactory cognitive growth (PEEP, 1997). PEEP's first director, Rosemary Roberts (2001), highlighted positive self-esteem and positive dispositions to learn (perseverance, curiosity, and confidence) as essential preconditions for successful long-term learning for children.

Since its outset, PEEP has been through a process of evolution and refinement in all areas, which has culminated in the *Learning Together Programme*. Early PEEP has three levels (for babies, 1-year-olds, and 2-year-olds), and Foundation PEEP has two levels (for 3-year-olds and 4-year-olds). Each PEEP level is tailored to the developmental age of the children, and each has a distinctive curriculum (Table 1) and materials for families to use at home. The Learning Together Series complements the content and style of the Foundation Stage Curriculum for 3- to 6-year-olds and is intended as a bridge between the language and cultural norms commonly used in schools and those of the family.

Table 1
PEER Curriculum for 3-Year-Olds

Sessions	Curriculum	ORIM Focus	Thinking about...	Folder Section Heading	Folder Introductory Text
Autumn					
2 - 4	Self-concept and dispositions	Recognition and interaction	...four ways of helping children to learn	Helping children to learn	There are many ways adults help children to learn. Here are four ways: 1. giving children **opportunities** and chances to do things 2. **recognizing** when children have learned something new 3. **interaction**: doing things together 4. **modeling**: being an example
5 - 7	Oral language	Interaction and modeling	...listening to children	Listening to children	Children often understand much more than they say in words. When other people listen carefully to them, children can get better at listening carefully and saying the things they want to say. Learning to talk and to listen are the first stages of writing and reading.
8 - 10	Numeracy	Interaction and modeling	...talking about numbers in everyday life	Numbers, numbers everywhere	For young children, numbers up to 5, or even 10, are the ones that matter. These are "easy" numbers for us and can become easy for children too. Children need to play with numbers in many different ways. There are numbers all around us every day. With a bit of help, children quickly get good at spotting them—on houses, buses, birthday cards, in shops, magazines, books, etc. Playing games together and having fun with numbers will help children to do sums and other maths later on.

Spring					
13 - 15	Self-concept and dispositions	Recognition and interaction	...how children feel about themselves, and why this makes a difference	Children's friendships	How children feel about themselves is important for learning. Children who feel good about themselves do so for a variety of reasons. One reason is when other people enjoy being with them. Children who feel good about themselves are more likely to want to learn.
16 - 18	Oral language	Interaction and modeling	...encouraging conversations with children	Talking with children	One way children learn to think about things and find out more about the world is through talking. Children are full of questions (although they may not always ask them). At times, they really need an answer from us, but often they can find out their own answers. When a child asks a question, it can help to think about what he really wants. Sometimes a child might need attention or help rather than an answer to the question. Talking with children can really help their learning.
19 - 21	Numeracy	Interaction and modeling	...using "maths language" during everyday situations	Talking maths	Many 3-year-olds love making "collections" of people and objects. They often enjoy matching things and sorting them into groups. Children can be helped to compare one thing with another. They are beginning to understand that when we talk about numbers, size, and measures, we are usually comparing one thing with another. We also need to compare in order to match and sort things. Children need lots of play and talk for their understanding about these things to grow and develop. It helps to talk together about matching one thing with another, about sizes and amounts, groups of things, and the words we use to describe the position of things.
Summer					
24 - 26	Self-concept and dispositions	Recognition and interaction	...how an awareness of play patterns makes a real difference	Making the most of play patterns	Children often have favorite ways of playing. Sometimes they seem to need to do things in the same way again and again. Underlying the ways in which children like to play are their schemas...the "mental frameworks" of children's thinking. Patterns come and go over time and develop into more-complex combinations. In some children, one or more of these patterns can seem very strong; and in other children, they are harder to notice. Children can understand with their whole bodies what "inside" and "outside" mean, and this helps their thinking and their language to develop, along with their confidence.
27 - 29	Oral language	Interaction and modeling	...helping children's developing language	Things to talk about	Parents and caregivers can offer lots of opportunities for children's talking. Children get better and better at talking when they have lots of things to talk about. They need someone to talk with who listens, joins in, and tries to understand. Going out, having picnics, and making books together are three good opportunities to encourage talking.
30 - 32	Numeracy	Interaction and modeling	...the importance of a sense of order	What comes next	The order of things is very important for young children. They like the idea of things happening in the right order because knowing what comes next helps them feel secure. Developing a sense of order also helps children's later

					understanding of science and maths.

What follows are two extracts from the Foundation PEEP curriculum for 3-year-old children. The first quote refers to different ways that parents can encourage talking with their children:

> One way children learn to think about things and find out more about the world is through talking. Children are full of questions (although they may not always ask them). Parents and carers can offer lots of opportunities for children's talking. Children get better and better at talking when they have lots of things to talk about. They need someone to talk with who listens, joins in, and tries to understand. Going out, having picnics, and making books together are three good opportunities to encourage talking (Table 1).

The following extract refers to the ways children can become familiar with the number system through daily activities:

> For young children, numbers up to 5, or even 10, are the ones that matter. These are "easy" numbers for us, and can become easy for children too. Children need to play with numbers in many different ways. There are numbers all around us every day. With a bit of help, children quickly get good at spotting them—on houses, buses, birthday cards, in shops, magazines, books, etc. Playing games together and having fun with numbers will help children to do sums and other maths later on (Table 1).

From birth to school, all families living in the area where PEEP operates [four neighborhoods—Blackbird Leys, Greater Leys, Littlemore, and Rose hill (catchment area)] are offered PEEP materials and the opportunity to attend group sessions or receive home visits. In addition, PEEP is incorporated within a number of preschools and primary schools, providing a group leader or trained teacher one day a week whose role is not only to offer PEEP-style activities to the children but also to promote the welcome already offered to the parents.

PEEP group sessions take place at a variety of easily accessible locations throughout the community. These are either based in the PEEP Center or at local playgroups, schools, and family centers. All sessions contain the same fundamental elements:

- **Circle time**: Music, rhyme, and rhythm are deeply embedded within the curriculum and are seen as "a powerful interactive medium in relationships" (PEEP, 2003). All families are offered audiotapes and a songbook containing the songs and rhymes used in the program.
- **Talking time**: An opportunity is provided for adults to discuss information and ideas, to share experiences, and to offer support.
- **Story time**: Daily sharing of books is a fundamental aspect of the curriculum and is modeled in every session.
- **Book sharing**: Books are available for parents to share with their children during the group sessions and to take home.
- **Home activities**: Practical suggestions are provided for games and activities that are closely related to and support the curriculum.
- **Borrowing time**: A library of play packs that contain a book and other stimulating materials are offered on a weekly basis.

Throughout PEEP sessions, PEEP leaders model for parents the different ways of reading books to their children by paying particular attention, for example, to (1) varying the tone of their voices, (2) reading the title of the story and the names of authors and illustrators, (3) following the text with their finger, and (4) asking questions for comprehension while they are reading the

story. Parents are also encouraged to read to their children as much as possible, and families are provided with a story pack on a weekly basis.

Overview of the Study

This short-term longitudinal study investigated the impact of Foundation PEEP (known during the data collection period as PEEP for 3- and 4-year-olds) on the children's development from age 3 to age 5 (the statutory age at which children start school in the United Kingdom). The aim of the study was to discover whether the PEEP curriculum for 3- and 4-year-olds, when implemented in PEEP group sessions and supplemented in playgroups and nursery classes of the targeted schools in the project's catchment area, would lead to (1) improvement in children's educational achievement, especially in literacy and numeracy, and (2) improvement in children's prosocial behavior and self-esteem.

Participants

The intervention sample consisted of children whose parents (predominantly mothers) attended a PEEP group session for 3- and 4-year-olds; namely, children who had access to the PEEP project in the period April 1, 1998, to March 31, 1999. Because children and their mothers had already been invited to join the PEEP intervention, random assignment to groups was neither ethical nor feasible. The PEEP attendance register was used to generate a population list of children who satisfied two criteria: (1) attending PEEP group sessions for 3-year-olds and (2) having their third birthday during the recruitment period. Of the 104 children who satisfied the criteria, 73 were recruited after their mothers agreed to participate (consent rate of 71%).

To eliminate any possible effects of the program in the comparison area (program leakage) that would have made direct comparisons between the PEEP group and the comparison group impossible, a comparison group was recruited in a nearby town in Oxfordshire where PEEP did not operate. Census data were used to confirm the area as "demographically matched" to the PEEP catchment area (Smith, 1998). The comparison group was recruited from a random sample of six playgroups of all those available in the area.

Of the six playgroups invited to participate, five agreed to do so. The same cohort procedure used to recruit children in the PEEP groups was employed to recruit children in three cohorts from the playgroups in the comparison area. Of the 97 families approached in the comparison area, only six declined to participate (consent rate of 94%).

From the original 156 children, 149 formed the final sample for the second stage of the study at age 5 (4% attrition). Although 149 children were assessed, there were two sets of twins in the study—one in each area. During the analyses, the scores of one of each of the sets of twins were randomly excluded, giving a total of 147 children; 64 were in the intervention group and 83 were in the comparison group (Table 2).

Table 2
Recruitment and Retention in the Study

	Intervention Group	%	Comparison Group	%
Approached	104	100	97	100
Left PEEP	24	23	N/A	N/A
Non-eligible	2	1.9	0	0
Withdrawn	5	4.8	0	0
Declined	0	0	6	6
Recruited to Study	73	70	91	94

Assessed at Pretest and Posttest at Age 4	70	96	86	94.5
Assessed at Posttest at Age 5	64	88	83	91

There were no significant differences between the groups' average age at pretest assessment. The age for the PEEP group was 39.9 months (*SD* = 2.75), and the age for the comparison group was 39.3 months (*SD* = 1.33). The average age at posttest for the PEEP group was 62.9 months (*SD* = 2.61), and for the comparison group, the average age was 61.5 months (*SD* = 2.54). A significant difference was found in the age of the children at time of posttest assessment at age 5; this difference was taken into account in the multiple regression models.

Design

To study the effectiveness of PEEP, a quasi-experimental design was chosen that included one pretest and two posttest measures collected over a period of 2 years. The individuals were not assigned randomly to groups, but the groups were matched on demographic characteristics with pretest scores obtained before the families received the intervention.

The pretest and posttest design of the study afforded the opportunity to measure the contribution to developmental progress of two groups of children experiencing different types of preschool learning (intervention versus comparison). Thus the research investigated the "value added" by the PEEP experience to children's rate of progress between two points in time.

Procedures

Parents gave written consent and agreed to be interviewed about their personal and family demographic characteristics, their child's preschool attendance, and the types of home activities that they shared with their child. Children were assessed by a trained researcher in their preschool or school. The study met with the guidelines of the British Psychological Society (BPS, 2004) and the British Educational Research Association (BERA, 2004).

Child Measures

A range of instruments assessing language, literacy, numeracy, social-emotional development, and self-esteem were used. These are summarized in Table 3.

Table 3
Instruments Used to Assess Cognitive and Social-Emotional Development*

PRETESTS: Summer 1998 – Summer 1999 (Children 3.0 to 3.3 years)		**POSTTESTS: Autumn 2000 – Summer 2001 (Children 5.0 to 5.3 years)**	
Tasks Administered	**Administered by**	**Tasks Administered**	**Administered by**
Cognitive Tasks Nonverbal Reasoning Skills (BAS) • *Block Building* • *Picture Similarities* **Language and Literacy Tasks** Verbal Skills (BAS)	Researcher	**Literacy Tasks** • *Verbal Comprehension* (BAS) • *Vocabulary* (BPVS) • *Phonological Awareness* (Bryant & Bradley, 1995) • *Letter Identification* (Clay, 1972)	Researcher

• *Verbal Comprehension* • *Naming Vocabulary* Writing Skills (Gorman & Brooks, 1996) • *Writing Sample*		• *Concepts about Print* (Clay, 1979) • *Writing Skills* (Gorman & Brooks, 1996)	
Social Skills and Emotional Development (ASBI) • *Compliance/Conformity* • *Prosocial* • *Confidence/Independence* • *Antisocial*	Teacher Playgroup Leader	**Numeracy Task** (BAS) • *Early Number Concepts*	Researcher
		Self-Esteem (PSPCYC) • *Cognitive Competence* • *Physical Competence* • *Maternal Acceptance* • *Peer Acceptance*	Researcher
		Social Skills and Emotional Development (ASBI) • *Compliance/Conformity* • *Prosocial* • *Confidence/Independence* • *Antisocial*	Teacher

*ASBI: Adaptive Social Behavior Inventory
BAS: British Ability Scales II
BPVS: British Picture Vocabulary Scale
PSPCYC: Pictorial Scale of Perceived Competence and Acceptance for Young Children

Instruments Used at Pretest (Age 3)

Cognitive, Language, and Literacy Outcomes

- Two subscales (Block Building and Picture Similarities); British Ability Scales II (BAS) by Elliott, Smith, and McCulloch (1996).
- Verbal Comprehension; British Ability Scales II (BAS) by Elliot, Smith, and McCulloch (1996). The verbal subscale assesses understanding of language.
- Naming Vocabulary; British Ability Scales II (BAS) by Elliot, Smith, and McCulloch (1996). This test was designed to measure a child's receptive vocabulary for standard English.
- Young Children's Writing by Gorman and Brooks (1996).

Social-Emotional Outcomes

- Adaptive Social Behavior Inventory (ASBI) by Hogan, Scott, & Bauer (1992). The questionnaire addresses preschool social competence. It focuses on four areas—compliance/conformity, prosocial behavior, confidence/independence, and antisocial behavior.

Assessment of Preschool Quality

- The Early Childhood Environment Rating Scale—Extension (ECERS-E) Language Subscale by Sylva, Siraj-Blatchford, and Taggart (2004). The ECERS-E subscales include the following areas—language, mathematics, science and the environment, and diversity. The language subscale was used in this study. Each subscale comprises a range of items describing quality of the specific type of provision. All items are rated on a 7-point scale from 1 (inadequate) to 7 (excellent).

Instruments Used at Posttest (Age 5)

Literacy and Numeracy Outcomes

- Phonological Awareness by Bryant and Bradley (1985). Two of the three subscales were used: testing of rhyme and alliteration.
- Verbal Comprehension from the British Ability Scales II (BAS) by Elliot, Smith, and McCulloch (1996). The test assesses understanding of language.
- Young Children's Writing by Gorman and Brooks (1996).
- British Picture Vocabulary Scale II (BPVS) by Dunn, Dunn, Whetton, and Burley (1997). The test was designed to measure a child's receptive vocabulary for standard English.
- Concepts about Print by Clay (1979). The test was designed to assess children's knowledge of the nature and function of written text.
- Letter Identification by Clay (1972). The test was designed to assess which letters the child knows.
- Early Number Concepts from the British Ability Scales II (BAS) by Elliott, Smith, and McCulloch, (1996). The test is a scale with verbal, pictorial, and quantitative content.

Social-Emotional Outcomes

- Adaptive Social Behavior Inventory (ASBI) by Hogan, Scott, and Bauer (1992). The questionnaire addresses preschool social competence. It focuses on four areas—compliance/conformity, prosocial behavior, confidence/independence, and antisocial behavior.

Self-Esteem Outcomes

- The Pictorial Scale of Perceived Competence and Acceptance for Young Children (PSPCYC) in reception grades by Harter and Pike (1981) was used. It aims to assess the young child's

perceptions of his or her competence and acceptance by others. The scale is divided into two domains (competence and acceptance) and into four subscales—cognitive competence, physical competence, peer acceptance, and maternal acceptance.

Comparability between Groups at Two Different Levels

Throughout the study, great care was taken to assure the comparability of the two groups. Demographic characteristics in this study were collected on two different levels—first, at the level of the child and the family and, second, at the level of the preschool settings. This strategy was important in order to rule out the possibility of greater developmental progress in children caused by a more favorable home or preschool environment in either group.

Demographic Comparability

The parental interview examined four broad areas: (1) child characteristics (health, development, behavior, and home activities); (2) parental education and occupation; (3) family demographics; and (4) preschool attendance. The two groups were overwhelmingly similar in all four areas. This means that families were generally comparable, thus justifying the choice of the comparison group. Statistically significant differences between the PEEP group and the comparison group were found only on three characteristics: (1) the PEEP group contained more single mothers, (2) the PEEP group received more social security benefits, and (3) the children in the PEEP group attended more hours of playgroup per week. These differences between the groups were controlled statistically in the analyses that follow.

Comparability of Playgroups: Preschool Provision when Children Were 3 to 4 Years Old

Interviews were conducted with all the playgroup managers during May 1999. The areas covered in the interviews were characteristics of the center; characteristics of the workforce, programs, and activities; and collaboration with parents. Table 4 summarizes the similarities and differences between playgroups in the two areas.

Table 4

Summary of Similarities and Differences between Playgroups Serving 3-Year-Olds

Center Characteristics	Same child:staff ratio Care for the same age group (3- to 4-year-olds) Similar space available Majority registered with the Pre-school Learning Alliance A few similarities in important aims of playgroups Comparison group fees more expensive
Characteristics of the Workforce	Similar managers' child care qualifications Similar age range of staff members No male staff members in either group Additional help available in both areas Similar patterns of staff training

	More part-time staff in comparison playgroups and more full-time staff in PEEP playgroups Comparison members of staff better qualified
Centers' Programs and Activities	Overall agreement in the majority of important aspects of child care Available daily plans Planning of activities carried out by all staff together approach in the majority of playgroups Similar patterns of assessment procedures Similar guidance for the planning of literacy activities Use of DLO* in majority of PEEP playgroups and DLO and experience used in majority of comparison playgroups
Centers and Parents	Very similar patterns of parents/staff contact Similar settling-in procedures Similar type of information available to parents Similar patterns of regular meetings with parents Similar patterns of parental involvement in the playgroups, with the comparison playgroups even stronger PEEP provides parental education

*DLO = Desirable Learning Outcomes (government's curriculum for early years).

In all aspects of the interviews, many similarities and a few differences were found between the two areas. When comparing the center characteristics between the two areas, the majority of the indicators were similar; for example, the playgroups had the same child-to-staff ratio and they were looking after the same age group of 3- to 4-year-old children. Managers were asked to rate the importance (high, low, or mid) given to different aspects of child care and education within their setting. Managers from both areas viewed *attention, warmth, health, safety, licensed child care, communication with parents, and children getting along together* as being of the highest importance. Agreement was also found on *parents being able to drop in, supporting parents, appreciation of cultural differences, and close staff/parents relationships* in the mid band of importance. Agreement in the lower band of importance was found for *religion, nutrition, sharing parents' values, and regular child development evaluation*.

Comparing the characteristics of the workforce, we found similar patterns of managers' child care qualifications, age of staff members, and staff training; however, the comparison playgroups contained more part-time staff, and their staff members were better qualified.

In addition, information was collected on the levels of parental involvement. Very similar patterns of parental/staff contact were reported. The playgroups were also similar in that they were available less often for parents to visit whenever they wished.

Comparability of Nursery Classes: Preschool Provision when Children Were 4 to 5 Years Old

The comparability check was conducted in two ways—first by carrying out the literacy subscale of the ECERS-E (Sylva, Siraj-Blatchford, & Taggart, 2004) observation schedule and second by interviewing the nursery class teachers and asking them to rate the importance of seven different aims for their nurseries. There were no significant differences between the nurseries' ECERS-E scores in the two areas, and the qualitative interviews were similar in both communities.

Results

The analysis in this study followed different stages. First, children and their families were matched on demographic information, and their preschool settings were compared. Second, the performances of the two groups of children at pretest (at age 3) were tested to see whether they were comparable. Finally, their posttest scores were compared. In this paper, only the results of 2 years participation in the PEEP intervention will be presented; namely, the analysis of scores at age 5 after taking into account children's pretest scores at age 3. To see the full report, see Evangelou and Sylva (2003). There is no gender separation in the analysis because dividing the sample into smaller groups might have produced spurious differences. Effects of the whole group are reported because they provide answers to the research questions.

Methods of Analysis

Tests were performed to establish whether there was a statistically significant difference in the mean scores between the PEEP and comparison groups. A *t*-test was applied if the variable was normally distributed, and a Mann-Whitney test was applied if it was not.

Analysis of Pretests Scores

British Ability Scale (BAS) subscale scores, as well as total scores (Table 5), were analyzed for all items. No statistically significant differences were found between the groups with regard to measures of cognitive development at pretest.

Table 5
Pretests Measures (Means) of Cognitive Development

BAS Subscales	Intervention *n* = 70	Comparison *n* = 86
Verbal Comprehension	14.63 (3.34)	13.85 (3.46)
Vocabulary	17.45 (3.50)	17.08 (3.49)
Total Verbal Score	32.08 (6.21)	30.93 (5.98)
Block Building	5.25 (3.08)	4.84 (2.96)
Picture Similarities	14.13 (4.56)	13.47 (4.25)
Total Nonverbal Score	19.38 (6.22)	18.30 (5.77)
Total BAS Score	51.46 (11.18)	49.23 (10.17)

In addition, no significant differences were found between the two groups in any of the four subscales of the ASBI measuring prosocial behavior (Table 6).

Table 6
Pretests Measures (Means) of Social-Emotional Development

	Intervention	Comparison

ASBI Factors	*n* = 70	*n* = 86
Compliance/Conformity	16.29 (3.56)	15.88 (4.35)
Prosocial	19.40 (4.02)	19.65 (4.52)
Confidence/Independence	11.26 (3.06)	10.99 (2.81)
Antisocial	5.14 (1.80)	5.52 (2.01)

What is clear from the above is that on entry to the study, children from both groups began at approximately the same level. This finding complements the findings of the demographic analysis (which preceded this section), showing that the families and children in both groups were well matched.

Analysis of Posttest Scores

Tests were performed to establish whether there was a significant difference in the mean scores of the PEEP and comparison groups (Tables 7 and 8). For every outcome at posttest, ANCOVAs were performed using "group" as the between-subject factor and pretest as the covariate. In order to select the covariates to be included in each final regression model, the first step was to carry out univariate analysis showing the relationship between each item in the demographic characteristics and children's posttest scores. Particular care was taken to include in the univariate analysis the items that had shown significant statistical differences between the two groups at the start of the study (demographic characteristics): There were more single mothers in the PEEP group, more benefits were received in the PEEP group, and the PEEP children attended more hours of playgroup.

Table 7
Posttests Measures (Means) of Cognitive Development

BAS Subscales	Intervention *n* = 64	Comparison *n* = 83
Verbal Comprehension	21.16 (3.43)	19.68 (2.20)
Vocabulary	49.80 (10.48)	44.10 (8.84)
Phonological Awareness	15.65 (4.93)	13.57 (5.74)
Small Letters	19.52 (7.35)	17.71 (7.97)
Capital Letters	19.41 (7.97)	16.36 (8.77)
Concepts about Print	13.69 (3.69)	10.45 (4.61)
Writing Sample	4.39 (.77)	4.18 (.65)
Early Number Concepts	24.64 (3.44)	21.47 (4.55)

Table 8
Posttests Measures (Means) of Social-Emotional Development

Social-Emotional Behavior Factors	Intervention *n* = 63	Comparison *n* = 82
Compliance/Conformity	18.46 (2.53)	18.46 (2.73)
Prosocial	21.92 (4.08)	22.60 (3.50)
Confidence/Independence	13.27 (1.72)	13.26 (1.74)
Antisocial	5.17 (1.36)	5.02 (1.37)
Self-Esteem Factors	**Intervention *n* = 64**	**Comparison *n* = 83**

Cognitive Competence	22.59 (1.54)	21.87 (3.15)
Physical Competence	21.50 (2.08)	20.70 (3.19)
Peer Acceptance	21.59 (2.72)	20.77 (3.69)
Maternal Acceptance	19.86 (3.05)	19.33 (3.70)
Total Self-Esteem	85.70 (6.00)	82.66 (11.75)

During the analysis of posttest scores at age 5, two additional characteristics were taken into account—free school meals (a measure of poverty) and the age of each child at the time of the assessment. These were collected because they could potentially affect children's performance. There were no significant differences in the number of children receiving free school meals between the two groups. A significant difference was found in the age of the children at time of assessment at age 5 (range of months within PEEP = 14 and within comparison = 8), and this was taken into account in the analysis.

The results at age 5 were analyzed by controlling for pretest (age 3), and this analysis explores the gain in children's development from 2 years' participation in the PEEP program for 3-year-olds (ages 3 to 5). This kind of analysis is known as value-added analysis. The factors, which proved significant, are listed in Table 9.

Table 9
Model of Analysis for Posttest at Age 5 (Effect of 2 Years in PEEP)

Outcome	Predictors	Covariates
Verbal Comprehension	Intervention/Comparison Group	BAS Language Total Pretest Gender Single Mother Age at Posttest
Vocabulary	Intervention/Comparison Group	BAS Language Total Pretest Gender Age at Posttest
Concepts about Print	Intervention/Comparison Group	BAS Language Total Pretest Gender Age at Posttest
Early Number Concepts	Intervention/Comparison Group	BAS Maths Total Pretest Gender Single Mother Age at Posttest

Cognitive Competence Physical Competence	Intervention/Comparison Group	Gender Benefits Received Age at Posttest

The next step was to use all the items that showed a statistically significant association for each outcome and to carry out multiple regression analysis to see whether they continued to be significant in each model after the PEEP-comparison group variable was entered as a predictor. At the end, the model was finalized as shown in Table 9.

Multiple regressions were used so that influential factors in educational outcomes, which could potentially confound the analysis of the variables of primary interest, were controlled for as covariates. The above and subsequent analyses explored the interactions between differences in children's outcomes and whether children benefited by belonging to the intervention group (PEEP).

Table 10 shows that PEEP children made significantly more progress than the comparison group children in verbal comprehension, vocabulary, concepts about print, numeracy, and cognitive and physical competence over the course of two years. In Table 10, beta values indicate effect sizes, that is, the advantage of belonging to the intervention group expressed in standard deviations. Children in the intervention group had a mean advantage of .26 standard deviations in their verbal comprehension, .16 in their vocabulary, .22 in their understanding of books and print, and .26 in their numeracy scores. In their self-esteem measures, they had a mean advantage of .20 in cognitive competence and of .18 in physical competence. These effects were over and beyond that of gender, single-mother status, pretest scores, and age at posttest, when these were identified as significant in univariate analyses and therefore controlled for in the final model.

Table 10
Advantage of the Intervention Group at Age 5 (Effect of 2 Years in PEEP)

	Verbal Comprehension	**Vocabulary**	**Concepts about Print**	**Early Number Concepts**	**Cognitive Competence**	**Physical Competence**
R^2	21 %	36 %	31 %	34 %	7.1%	4.5 %
Adjusted R^2	18 %	34 %	29 %	31 %	4.4 %	1.8 %
Beta	.26	.16	.22	.26	.20	.18
B	1.5	3.3	2.0	2.3	1.0	1.0
P	$p < 0.01$ (99 %)	$p < 0.05$ (95 %)	$p < 0.01$ (99 %)	$p < 0.01$ (99 %)	$p < 0.05$ (95 %)	$p < 0.05$ (95 %)

Discussion

This study contributes to the literature on evaluations in early childhood, especially those related to raising literacy in the United Kingdom among disadvantaged children. It also addresses the need described by Hannon and his colleagues: Few studies of preschool involvement programs have taken literacy development as the principal concern and, in so far as it has been a concern at all, a restricted pre-reading, skills-based approach rather than an emergent literacy approach has generally been taken (Hannon, Weinberger, & Nutbrown, 1991, p. 80).

It is also hoped that the study provides some evidence for national and international policy on the benefits to children of early parenting interventions. In particular, this study demonstrates

the value of a partnership approach to working with parents, an explicit curriculum, and intensive staff training.

Children whose parents had attended PEEP groups when their children were age 3 to 5 years made significantly greater progress in the following areas of development—verbal comprehension, vocabulary and concepts about print (understanding about books and print), numeracy development, and two measures related to self-esteem.

Vocabulary

Talking with and to the children is very important in the PEEP curriculum (Table 1). Through opportunities for talking, singing, and sharing books, children may expand their vocabulary. Research studies have shown that children's vocabulary scores at age 4 are strongly related to progress later on in school (Tizard, Blatchford, Burke, Farquhar, & Plewis, 1988). The vocabulary results remained significantly higher for the PEEP group both one and two years after the pretest at age 3.

Concepts about Print

Children in the PEEP intervention had significantly higher scores at age 5 on their understanding of books and print than children in the comparison group. This finding is also consistent with the aims and practice of the PEEP curriculum. Research supports the importance of concepts about print to later attainment in reading. Tizard et al. (1988) found that scores of concepts about print at age 4 correlated (r = .27) with reading at age 7 and were a significant predictor of reading achievement at ages 7 and 11, after two and four years, respectively, in school.

Early Numeracy Skills

Although PEEP primarily aims to foster literacy development, it also aims to help parents provide their children with a good understanding of numbers up to 10. Children in the PEEP intervention for 3-year-olds made significant gains in their early numeracy skills. Research evidence on the importance of early number concepts comes from the work of Nunes and Bryant (1996). According to Nunes and Bryant, mathematics is an activity that is socially defined (this view is in line with the view that this study presents with regard to literacy as a social activity), and how children approach mathematical problems is dependent on the way they define and respond to the social situations in which these mathematical problems are presented.

Self-Esteem

Issues of self-concept and self-esteem cover a large part of the PEEP curriculum for 3-year-olds. What follows is an example of the importance given to how children feel about themselves and why this is important for learning in PEEP: *How children feel about themselves is important for learning. Children who feel good about themselves do so for a variety of reasons. One reason is when other people enjoy being with them. Children who feel good about themselves are more likely to want to learn* (Table 1). Because PEEP focuses on ways to foster children's self-esteem gains in cognitive and physical competence, scores for the PEEP children appeared consistent with the program.

Measuring constructs such as self-esteem with 5-year-olds is a difficult task. However, the instrument chosen was used successfully in similar studies in Europe and the Middle East. These studies focused on the effects of different approaches to early childhood education and reported measured gains in children's self-esteem (Hadeed, 1994; Nabuco, 1997). The findings of these studies are relevant in that they used the Harter and Pike (1981) assessment with a group of children of a similar age.

Implications for Policy

The main research question of this study was whether PEEP for 3-year-olds improved children's developmental outcomes. Using a quasi-experimental design, this evaluation has shown the significant impact of PEEP on children's literacy, numeracy, and self-esteem. The positive findings for PEEP help strengthen the case for interventions aimed at parents as educators of their children.

This study has important implications for policy. It provides support, based on firm evidence, for funding of parental programs that, like PEEP, offer parents a curriculum to guide their support to children at home. Working directly with parents of 3- to 5-year-old children has been proved to be an effective way of improving children's cognitive development and self-esteem. The results demonstrate the important role that parents can play in their children's development and how they can be assisted in doing so.

No one study on its own can shape political or practical debate and change current practices. Future research needs to address how to retain participants in two-generational programs that require a large commitment to be effective. Also needed is long-term follow-up (Moran, Ghate, & Van der Merwe, 2004, p. 59).

Notes

1. Adam and Brewer (2003) explain different types of financial assistance for families: "This financial support can vary in a number of ways: it can be universal (paid to all families with children), means-tested (paid only to families with low incomes), or contributory (paid only to families that have previously paid National Insurance contributions...").

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