

An Activity-Based Language Intervention Program for Kindergarten Children: A Retrospective Evaluation

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Published online: 9 October 2014
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Abstract The purpose of the present study was to examine the effect of a small-group intervention based on the naturalistic approach on 220 children from 3–5 years of age. All kindergarten children received weekly sessions delivered by a SLP in collaboration with the kindergarten teacher. These sessions included various book related activities. Two intervention groups were identified: children from middle SES neighborhoods and children from low SES neighborhoods. A control group was matched to the first group and included children from middle SES neighborhoods. Children participating in the program were pre and post tested using three language tests in order to assess basic language skills. The main finding was that children in the intervention groups showed significantly greater gains from pre- to post-test relative to children in the comparison group. The program benefited children from different SES environments. The greatest progress was in the area of vocabulary. In sum, the combination of small group setting and age-appropriate interactive activities served to provide language promoting opportunities for these children.

Keywords Kindergarten children · Language intervention · Naturalistic approach

Introduction

Socioeconomic status is a broad concept which encompasses aspects of every field of life as the parents' education and occupation, as well as economic factors such as the family's income level and the ratio between income and expenses (Ginsborg 2006). Research studies have shown that many children with socioeconomic disadvantages enter school with delay in various aspects of language abilities (Becker 2009; Ginsborg 2006; Hart and Risley 1995; Hoff and Tian 2005; Fish and Pinkerman 2003; Lock et al. 2002). For example, Le Normand et al. (2008) found that infants from low SES families began to produce single words and use word combinations at a later age relative to infants from high SES families. Other studies found that children from low SES backgrounds had a significantly smaller vocabulary compared to children from a higher status (Fish and Pinkerman 2003; Ginsborg 2006; Hoff and Tian 2005; Weizman and Snow 2001). Several researchers studied children from nursery school and up to elementary school (grades 1st–4th) and found significant differences based on family SES in children's ability to decipher words and their reading comprehension scores; these gaps grew wider as the children progressed in school (Bowey 1995; Hecht et al. 2000; Schiff and Lotem 2011). Finally, researchers found in low-SES a variety of significant risk factors for specific language impairment (Dollaghan et al. 1999; Landry et al. 2002; Montgomery 2003; La Paro et al. 2004; Santon-Chapman et al. 2002).

Even in children with biological risks for developmental language delays, environmental factors still contribute

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significantly to these delays. For example, Landry et al. (2002) examined the effect of different risk factors on language development in children from infancy and up to the age of eight. The risk factors included being born prematurely, having low birth weight, having medical complications and low SES (LSES). These researchers found that SES had a significant effect on the children's language development over the years, regardless of their medical background. Similarly, Santon-Chapman et al. (2002) found that environmental risk factors such as mother with a low education level and growing up in a single-parent family had the highest correlation with being placed in an education program for SLI children. Finally, studies indicate an incidence of 16–29 % of SLI in children of parents with low educational attainment, in contrast to 8 % or so in children of parents with high educational attainment (Dollaghan et al. 1999).

Early Naturalistic Language Interventions

Research indicates that early educational interventions during the preschool years lay the foundation for future educational and social success (Becker 2009; Kaiser and Roberts 2011; Lewis and Vosburgh 1988; Reynolds et al. 2001). Social interactions with other people play a significant role in human early language learning (Kuhl 2011; Meltzoff et al. 2009). Recent findings show that infants and young children possess powerful computational skills that allow them to automatically infer structured models of their environment from the statistical patterns they experience. However, children do not compute statistics indiscriminately. Children use social cues about what is relevant to learn from language input (Meltzoff et al. 2009).

Raizada et al. (2008) measured the complexity of maternal language across a sample of children from different SES levels and observed a correlation with structural measures of the brain in Broca's area. They found that greater gray matter in the left hemisphere language areas was related to the complexity of maternal language in conversations between the mothers and their 5-year-old children. They concluded that the SES was not by itself the variable affecting language, but was likely a proxy for the opportunity to learn. That is to say, the language input a child received—its complexity and diversity—was the factor affecting brain development in the language areas and not the SES per se.

Thus, learning is enhanced and oriented by the social context of the activity in which it takes place. There is a fundamental role for ample early experience, in social settings, in which complex language is used to encourage children to express themselves and explore the world of literacy (Kuhl 2011).

Research also indicates that intervention programs that use natural activities in a social context optimize social and verbal interaction, helping those with disabilities to improve their communication and language skills (Vilaseca and Del Rio 2004). Specifically, such naturalistic approaches facilitate generalization and maintenance since they tend to rely more on language usage and meaningful practice than on repetitious tasks.

The naturalistic approach to language intervention has been categorized as contextualized intervention. Unlike decontextualized language intervention, where children are taught language skills in discrete, teacher-directed activities and with minimal topic continuity across the activities, contextualized intervention involves multiple linguistic targets; these targets are embedded within activities that involve meaningful and coherent references to people, objects, and actions (Gillam et al. 2012). Contextualized language intervention has proven effective for treating multiple language abilities in toddlers, preschoolers (Cole 1995; Pretti-Frontczak et al. 2003) and school-age children with language difficulties (Swanson et al. 2005). There is also evidence to suggest that contextualized language intervention yields greater improvements in children's language and narration skills in comparison to decontextualized language intervention or no treatment (Gillam et al. 2012).

Theoretically, language intervention in small groups has the potential to offer more natural interactive communication opportunities between the children than do "one on one" interventions. Indeed, there are studies indicating that language intervention in small groups results in significant language learning among young children with delayed or impoverished language (Hadley et al. 2000; Hutchinson and Clegg 2011; Justice et al. 2005; Nielsen and Friesen 2012). For example, Hadley et al. (2000) followed a 6-month intervention that included weekly sessions whereby speech-language pathologists (SLP) and regular teachers engaged in joint curriculum planning. Vocabulary and phonological awareness instruction were embedded into ongoing curricular activities, and explicit instruction in phonological awareness was planned for a weekly 25-min small-group activity center. The researchers found superior gains in vocabulary and phonological awareness among children in the experimental classrooms compared to the gains of children in standard practice control classrooms.

Hutchinson and Clegg (2011) evaluated the effectiveness of small-group language intervention for children with impoverished language. The intervention was delivered by trained education practitioners in school settings. Results showed that, in contrast to a comparison group that did not receive the intervention, children in the intervention group made significant gains in expressive language in both length and complexity of their utterances.

Justice et al. (2005) examined the effect of storybook reading in small group sessions on novel word acquisition. Participants included 57 kindergarten students from schools in LSES areas. Results indicated that explained repeated storybook exposure had a significant effect on word learning among LSES students. In contrast, incidental exposure to novel word showed very little gains for LSES kindergarten students. It appears that adult/child story book reading interactions provide contextualized exposure to language which is natural, familiar and interesting to young children. However, gains in word knowledge were most often observed when novel words were explicitly explained in detail to kindergarten students.

Although some empirical investigations of the effectiveness of naturalistic intervention have been made, more evidence base support for the effectiveness of these interventions is needed. Unfortunately, such evidence base information is difficult to come about, for different reasons, such as limited opportunities and resources. Challenges include finding real-life environments that allow optimal research opportunities, winning cooperation from authorities, finding appropriate funding for such studies, and meeting criteria for rigorous research conditions.

Due to these limitations, there is a need for alternative modes of scientific research, such as systematic field observations, description, interpretation, retrospection and theoretical interpretation of the findings. The purpose of the present study is to provide an example of such an approach with respect to the impact of a naturalistic language intervention program for children from low to middle SES neighborhoods, as practiced in some places in Israel.

The Program

In Israel, children enter school around 6 years of age and are expected to have developed sufficient communication, language, emotional, social and motor skills to enable them to engage in the curriculum and participate in the classroom. Unfortunately, not all children reach sufficient skill levels and the variance in these skills between children in the classroom is high.

Recently, Haifa municipality decided to empower young preschool children from low to middle SES neighborhoods by developing and running a program that gives these children a better opportunity to enter school with appropriate skills. The city Municipality had set three main goals: (1) to reduce developmental gaps between children; (2) to reduce the number of children needing an additional year in kindergarten; and (3) to reduce the number of children needing special education programs. The program was developed through inter-agency collaboration between the municipality and experts from the interdisciplinary clinical center of University of Haifa.

In each of the kindergarten classrooms, a speech-language pathologist (SLP), occupational therapist and a psychologist collaborated with the kindergarten teacher in order to evaluate children's needs and plan activities to achieve certain goals. This collaborative model assumes that no one person or profession has the knowledge and expertise to address all the functions related to child's developmental skills and needs. This interdisciplinary approach is based on a holistic perspective of child development. Thus, each member on the team, including the teacher, contributes unique knowledge and expertise to the program. Specifically, the occupational therapist focuses on enhancing motor skills and spatial abilities, the psychologist treats behavior and emotional problems working jointly with the kindergarten teacher and holding occasional counseling sessions with parents, and the SLP concentrates on the language skills of the children.

The Current Study

The language program was an activity-based intervention, founded upon the naturalistic approach, which enables the clinician to set up opportunities for children to learn through age-appropriate interactive processes in natural settings (Vilaseca and Del Rio 2004). In this program, the clinician uses activities into which he/she can incorporate modeling and reinforcement of therapy targets within contexts that are meaningful to the child (Fey 1986).

Data were collected from the children as part of the intervention program. Data were later released to the researchers by the city municipality without any personal or identifiable information regarding the kindergarten classes or the participating children. The city Municipality gave its consent for use of the data that were collected as part of the program retrospectively and anonymously in order to systematically evaluate the outcomes of this program.

The study was conducted with the approval of the Human Research Ethics Committee of the University of Haifa (approval number 198/12).

Although the retrospective nature of the current study imposed limitations on our ability to control certain methodological issues, we thought that the nature of the program and the data collected were a rare opportunity to explore a real-life environment intervention. The results of the current study may pave the way for a larger and more internally valid investigation.

Two main questions were addressed:

1. Will children who are enrolled in the program show different gains in expressive language development than children that aren't enrolled in the program?

- Will children enrolled in the program coming from different SES show different gains in expressive language development?

Methods

Participants

Forty-nine (49) kindergarten classrooms enrolled in the program. All children were found eligible and participated under informed consent that their parents gave in the beginning of the year. Due to limited time and resources, only children from ten kindergarten classrooms were evaluated using identical pre and post test batteries (the other 39 kindergarten classrooms were evaluated using only parts of the tests). Kindergarten classrooms participating in the evaluation procedure were chosen by the head of the program, taking into consideration different SES environments. As a result, the children who that passed the evaluation came from two different SES environments: low SES and middle SES neighborhoods. Thus, there were two different intervention groups: The middle SES children (MSES), the LSES children. The affiliation of a kindergarten to a certain SES was determined by the city Municipality based on internal data. As for the control group, identical pre and post tests were delivered to children from two kindergarten classes that did not participate in the program. Since all kindergarten classes from LSES neighborhoods took part in the program, there was no comparison group for kindergarten classes from these SES neighborhoods. Thus comparison kindergarten classes were matched to MSES kindergarten classes.

It follows that participants consisted of 220 kindergartners ranging in age from 3 to 5 years old. Of these, two intervention groups and one control group were identified. The intervention groups included: (1) 69 children from MSES neighborhoods and, (2) 105 children from LSES neighborhoods. The control group included 46 children from middle SES neighborhoods.

All children were from Hebrew speaking families. Table 1 describes the characteristics of the groups. ANOVA test revealed no age differences between the groups [$F(2,218) = 1.63, p > 0.05$].

To validate the SES classification made by the Municipality, SES data were collected from the Central Bureau of Statistics (2013) report. National Bureau of Statistics data for the neighborhoods housing the kindergarten provided the following comparison: average number of persons per household (LSES: 2.53, MSES: 2.7, Control: 2.65), average number of years of parental schooling (LSES: 12.63, MSES: 15.05, Control: 15.6), average monthly income in Israeli shekels (LSES: 4,237, MSES: 7,960, Control: 7,348), percent of families receiving of income support and income supplement (LSES: 11.47, MSES: 1.23, Control: 0.97). Due to the fact that the study is retrospective, data could not be collected directly from the participants' families.

Materials and Procedure

Pre- and Post-Intervention Language Measures

Three subtests were taken from the Goralnik Test for children 3–6 years old (Goralnik 1995). This test is widely used in Israel for evaluation purposes. Each of the subtests have formal norms for Hebrew speaking kindergarten children.

The use of the three subtests instead of full language test was a compromise between the head of the program and the Municipality, which restricted the time allocated for assessments.

For each child, the raw score in each subtest was converted to a standard score, thus providing every child with three standard scores representing three language skills. These allowed us to examine the intervention's gains beyond the typical development.

The three subtests were:

- Vocabulary* the vocabulary subtest requires children to name fifteen familiar objects (i.e. truck, orange, button etc.). Each item receives one point.
- Syntax* the sentence repetition subtest consists of six sentences of increasing length and syntactic complexity. In this subtest the following linguistic structures were examined: one compound sentence made of two simple sentences with gender/number-verb agreement, one simple sentence including an expanded verb, and three complex sentences that include a dependent

Table 1 Age and gender characteristics of the groups

Group	SES	Number	Boys/ girls	Mean age months (SD)	Age range in months
Intervention 1	Middle SES	68	33/35	48.79 (6.00)	37–58
Intervention 2	Low SES	105	63/42	47.23 (6.25)	36–58
Control	Middle SES	46	26/21	47.02 (6.34)	36–58

clause. The child was asked to repeat the sentence that pertains to an illustration. Each sentence received either six points for complete repetition, three points for one mistake and 0 points for more than two mistakes.

3. *Narrative* on the story telling subtest, children were required to generate an oral narrative based on a set of six pictures. This subtest evaluates five elements of the narrative that are connected to the cohesiveness and connectivity of the text: the beginning, sequence of events, syntactic connections, expansions and syntactical structures. Stories were transcribed via a recorder. In the few cases where the recording wasn't clear (the child was soft-spoken or unintelligible) real-time transcription of the child's speech was used.

The children were tested before and after the training program by SLPs and by third-year SLP students from the University of Haifa as part of their professional training. All examiners received training prior to administering the tests. In addition, the SLP students also practiced the administration of the test battery on children not included in the current study. All tasks were administered individually in one session lasting 20 min. The children were given short breaks between subtests. The tests were divided among children using a counter-balance procedure. Pre-tests were carried out in October; and post-tests 7 months later. Identical pre and post tests were delivered to all of the children. Two independent SLPs who were blind to group assignment scored the tests with high agreement between them (90 %).

The Language Intervention

Intervention took place in small groups of children, delivered by SLPs once a week over a course of 7 months. During this period, all clinicians involved in the implementation of the intervention program participated in biweekly guidance sessions. In these sessions the intervention goals and procedures were introduced and discussed, and the clinicians could consult with their peers.

Israeli kindergarten classrooms typically consist of 30–35 children. Based on the language pre-test battery (Goralnik 1995), the children were divided into small, language-homogenous groups of five to six students.

Most activities stemmed from three story books, chosen during the year. Language intervention goals (see Appendix 1) were integrated into all activities, by means of an interactive process.

Criteria for book selection were based on Justice et al. (2005), and included the following four guidelines: books must contain colorful illustrations, employ vocabulary

appropriate to 3 and 4 year olds, avoid being excessively long, and be narrative in genre.

A total of six sessions were devoted to each book (for an example see Appendix 2). During the first two sessions relating to each book, the SLP read the book to the children accompanied by illustrations and demonstrations, and explained particular words from the book that were likely to be unfamiliar to the children. A variety of related activities then occurred, lasting four sessions; e.g. making a fruit salad, germinating a bean, playing at building a farm, creating a poster showing things belonging inside or outside a house, creating and acting a play etc. Also, during the year activities relevant to upcoming holidays were conducted (a total of eight holidays). For example: the children gave each other directions how to masquerade for 'Purim' or how to build a tower for 'Passover', made a cheese-cake for 'Shavuoth' or created Flags for Independence Day.

All activities included planning, experiencing and reconstructing. In the planning phase the SLP introduced the activity to the children (usually with pictures). Also, the clinician talked with the children about the activity and encouraged them to describe either the materials needed (as in building a farm), the sequence of actions that related to the activity (as in germinating a bean) or the semantic category that related to the activity (e.g. the 'fruit' category in making fruit salad).

In the experiencing phase all children took part in the activity. For example: When building a farm the children actually built the houses for the toy animals and when making fruit salad the children cut the fruits.

Finally, in the reconstructing phase the clinician used pictures to allow the children to retell and describe the activities they experienced. In addition, the teacher was asked to enable spontaneous play with products of objects that related to the current activity.

During the activity the SLP emphasized relevant specific verbs and nouns, encouraged conversations between the children and used a variety of scaffolding techniques such as: using questions to clarify, giving forced alternatives, asking for sentence completion, relating known to unknown knowledge, and rephrasing.

Results

Comparing the MSES Children and Control Groups

The first goal of the study was to examine if children enrolled in the program showed different gains in expressive language development than children not enrolled in the program. Since comparison kindergarten classes were matched to middle SES kindergarten classes, in order to

Table 2 Means, standard deviations, *t* tests and effect size values for the MSES and control groups

	MSES Mean (SD)	Control Mean (SD)	<i>t</i> test	ES
Pretest				
Vocabulary	−0.41 (0.98)	−0.64 (1.35)	0.56 NS	0.19
Syntax	0.39 (0.95)	−0.05 (1.26)	1.62 NS	0.39
Narrative	−0.46 (1.61)	0.01 (2.01)	1.23 NS	0.26
Posttest				
Vocabulary	0.66 (1.14)	−0.27 (1.13)	4.30***	0.82
Syntax	0.63 (1.04)	0.15 (1.29)	2.00*	0.41
Narrative	0.04 (1.41)	−0.52 (1.66)	1.89 NS	0.36

* $p < 0.05$; *** $p < 0.001$; NS = Not Significant $p > 0.05$; Effect size ≥ 0.80 is considered large; 0.50 is considered medium; 0.20 is considered small

examine the effect of the program we compared the two groups from the middle SES (i.e. MSES group and control).

Descriptive statistics for MSES and control groups are presented in Table 2. Preliminary *t* tests demonstrated no preexisting differences between these groups at pretest for all variables.

In order to evaluate the impact of a language intervention program for each of the variables, two factor RM-MANOVAs examined main effects of Groups (MSES X control) \times Time (pretest \times posttest). Also, the difference between the groups for each of the variables was expressed in terms of effect size (ES). While a *p* value can inform the reader whether an effect exists, the *p* value will not reveal the size of the effect. An effect size is a measure that describes the magnitude of the difference between two groups. The effect size was calculated by taking the difference in means between two groups and dividing that number by their combined (pooled) standard deviation (Cohen 1988). Effect size ≥ 0.80 is considered large; 0.50 is considered medium; 0.20 is considered small.

Vocabulary Gain

Results of this analysis showed a significant main effect of Group [$F(1, 112) = 9.03, p < 0.01$]. Post Hoc *t* tests showed that the control group scored significantly below the intervention group on vocabulary only in the post-test. This difference is with a large effect size (>0.80) (see Table 2).

Results also showed a significant main effect of Time [$F(1,112) = 38.22, p < 0.001$] and significant Group \times Task interaction [$F(1,112) = 8.91, p = 0.01$].

Post Hoc paired sample *t* tests revealed that the vocabulary scores of the intervention group in the post-test were significantly higher compared to their scores in the pretest

Table 3 Means, standard deviations, *t* tests and effect size values for the two intervention groups

	MSES Mean (SD)	LSES Mean (SD)	<i>t</i> test	ES
Pretest				
Vocabulary	−0.41 (0.98)	−1.07 (1.10)	3.25**	0.63
Syntax	0.39 (0.95)	−0.19 (1.14)	2.18*	0.55
Narrative	−0.46 (1.61)	−1.05 (1.22)	2.58*	0.41
Posttest				
Vocabulary	0.66 (1.14)	−0.24 (1.26)	4.69***	0.75
Syntax	0.63 (1.04)	0.37 (1.01)	1.59 NS	0.25
Narrative	0.04 (1.41)	−0.90 (1.33)	4.08***	0.69

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; NS = Not Significant $p > 0.05$; Effect size ≥ 0.80 is considered large; 0.50 is considered medium; 0.20 is considered small

($t = 9.21, p < 0.001$). For the control group, no significant difference was found ($t = 1.62, p > 0.05$).

Syntax Gain

Results of this analysis showed a significant main effect of Group [$F(1, 112) = 11.01, p < 0.05$]. Post Hoc *t* tests showed that the control group scored significantly below the intervention group on sentence imitation only in the post-test (see Table 2).

No other significant effects or interactions were indicated.

Narrative Gain

Results of this analysis did not reveal significant main effect of Group [$F(1, 112) = 0.003, p > 0.05$] or time [$F(1,112) = 0.08, p > 0.05$]. However, there was significant Group \times Task interaction [$F(1,112) = 7.62, p < 0.01$]. Post Hoc paired sample *t* tests revealed that the narrative scores of the intervention group in the post-test were significantly higher compared to their scores in the pretest ($t = 2.44, p < 0.05$). For the control group, no significant difference was found ($t = 1.54, p > 0.05$).

Two Intervention Groups: A Comparison Between Different SES

The second goal of the study was to explore whether children participating in the program from different SES showed different gains in expressive language development. Descriptive statistics for MSES and LSES groups are presented in Table 3. Preliminary *t* tests demonstrated differences between these groups at all pre and post tests except for the post syntax test. These differences are with a medium to large effect sizes (see Table 3).

For each of the tests, two factor RM-MANOVAs was conducted, examining main effects of Groups (MSES \times LSES) \times Time (pretest \times posttest).

Vocabulary Gain

Results of this analysis showed a significant main effect of Group [$F(1, 171) = 11.15, p < 0.001$]. Post Hoc t tests showed that the LSES group scored significantly below the MSES group on the vocabulary subtest in both pre and post tests (see Table 3). Results also showed a significant main effect of Time [$F(1, 171) = 113.46, p < 0.001$] with no significant Group \times Task interaction. For both groups, vocabulary scores in the post-test were higher compared to scores on the pre-test.

Syntax Gain

Results of this analysis showed a significant main effect of Group [$F(1, 171) = 5.24, p < 0.001$]. Post Hoc t tests showed that the LSES group scored significantly below the MSES group only in the pretest (see Table 3). Results also showed a significant main effect of Time [$F(1, 171) = 13.61, p < 0.001$] with no significant Group \times Task interaction. For both groups, syntax scores in the post-test were higher compared to scores on the pre-test.

Narrative Gain

Results of this analysis showed a significant main effect of Group [$F(2, 240) = 17.38, p < 0.001$]. Post Hoc t tests showed that the LSES group scored significantly below the MSES group in both pre and post tests. Results also showed a significant main effect of Time [$F(1, 240) = 5.07, p < 0.05$] with no significant Group \times Task interaction. For both groups, narrative scores in the post-test were higher compared to scores on the pre-test.

Discussion

This study examined the influence of a small-group intervention based on the naturalistic approach, on the language abilities of children aged 3–5 years old. All kindergarten children received weekly sessions delivered by SLP in collaboration with the kindergarten teacher. These sessions included book reading accompanied by various activities related to the book. The intervention was part of a program carried out by the Municipality. The Municipality gave its consent for use of the data retrospectively in order to explore the outcomes of the program. Two intervention groups were identified: one group included children from middle SES neighborhoods and the second group included

children from LSES neighborhoods. A control group was matched to the first MSES group and included Hebrew speaking children from middle SES neighborhoods that did not participate in the intervention program.

The main finding of this study was that children in the intervention groups showed significantly greater gains from pre- to post-test relative to children in the comparison group. Gains observed in the intervention groups were impressive when considering that the language learning rate among these children accelerated beyond the typical developmental rate in order to demonstrate standard score gains.

These findings are consistent with previous studies which found that small-group language intervention can be effective in enhancing language skills of children with impoverished language (Hadley et al. 2000; Hutchinson and Clegg 2011; Justice et al. 2005). The current study expands upon previous findings since the children enrolled in our program were 3–5 years old, whereas in other studies children were 5–7 years old. Developmental models emphasize the importance of experience in early developmental stages (new-born to 6-years-old). A system of early intervention services and supports for children and families at risk has become firmly established in many countries all over the world (Guralnick 2011). The assumptions are that, during the early years of life, the brain is rapidly developing and is shaped by experiences and interactions. Children learn through routines and everyday activities. Thus, the earlier the intervention program, the more it can effectively minimize, and in some cases, prevent developmental delays in children as well as decrease the need for special education and related services when a child enters school. Such early interventions is also critical for optimal neural plasticity (Bryck and Fisher 2012).

Another important finding was that our program benefited children from different SES environments. The greatest progress in all children that participated in the program was in the area of vocabulary. A number of intervention studies have shown that children respond to word-learning opportunities (Neuman et al. 2011). Justice et al. (2005) used pretest-post-test comparison group research design in order to examine the influence of small-group storybook reading sessions on vocabulary acquisition. They found that children in the treatment group made significantly greater gains in elaborated words relative to children in the comparison group. Justice et al. emphasize the importance of supporting early vocabulary achievements and point out three general guidelines for facilitating vocabulary: (1) using both contextual exposure to the novel word and explicit decontextualized definition of the word; (2) exposure to words as well as to using them in a word learning process; (3) exposing to words across diverse contexts.

The present language intervention clearly used this mixed-method approach. Using books invited direct and indirect use of words, sentence structures and discourse. In the present intervention, the SLP used the same book for at least a month, with repeated readings accompanied by different activities enabling the child to use the words in different settings. The SLP reported that children seemed to enjoy the materials and activities, and also cooperated readily in all tasks.

In line with other studies (Hart and Risley 1995; Hoff and Tian 2005; Fish and Pinkerman 2003; Lock et al. 2002; Schiff and Lotem 2011) the current study has demonstrated that many children from the LSES group exhibited lower language skills than children from the middle SES group. These gaps in language may be attributed to qualitative and quantitative differences in the language of parents from different SES strata. Researchers have shown that parents from a lower socioeconomic status tend to have fewer conversations with their children and have more verbal interactions that focus around instrumental language, such as giving instructions and focusing on the here and now, and that are characterized by a limited vocabulary and simple morpho-syntactic structures (Hoff and Tian 2005; Dickinson and McCabe 2001; Nittrouer 2002). The study conducted by Hoff and Tian (2005) showed that vocabulary gaps between children who belong to different socioeconomic strata disappeared when the variables of the richness and volume (measured by mean length of utterance) of mothers' speech were factored into the equation. Furthermore, it was found that parents from a LSES tend to be less aware of the importance of language development at an early age and therefore are less likely to create an environment that encourages the development of literacy in children. Environmental variables, such as the number of books in the house, a parental model of literacy and reading activities, visits to the library and other intellectually stimulating environments were found to be influential components in the child's literacy development (Hoff and Tian 2005; Dickinson and McCabe 2001; Nittrouer 2002).

In the current program the children participated in weekly sessions that enable them to practice their expressive and receptive language skills in various of activities and interactions. Examination of the LSES group mean standard scores at the end of the year was encouraging, since in vocabulary knowledge they received normative data (± 1 SD) to their age group. Also, in the syntax test the children from the LSES showed significant improvement during the year and by the end of the year there were no longer differences in syntax between the LSES and the middle SES group. At the same time, the improvement in narrative skills in the LSES was less impressive. It may be that these children from LSES were focused on building their lexicon and exploring the rules in which words are

arranged into sentences and could not yet demonstrate higher, more integrated language skills as needed in telling a story about a sequence of pictures.

Methodological Limitations

Some methodological limitations must be taken into consideration. First, the lack of LSES control group limits our ability to interpret our findings. Future research should be carried out in order to examine to what extent children from LSES enrolled in the program improve in their expressive language development relative to LSES children that are not enrolled in the program.

Second, the definition of the SES groups was given according to neighborhoods in which the children live. This was done because of the retrospective nature of the study, which prevented us from obtaining SES information through questionnaires.

Another limitation is the use of only subtests rather than the complete test of language ability. This gave us a partial picture of a child's language abilities but could not provide information such as language age. This limitation was imposed upon us due to time and cost constraints. A more comprehensive language test is surely more suitable for research purposes but will certainly be less cost effective in terms of time and money needed for the intervention program.

Lastly, since there was no follow up, it is still unclear as to whether the gain shown by the study groups compared to that of the control group will last in the long run, and whether the intervention will affect in any way academic achievements in school.

Clinical Implications

In the present study young children aged 3–5 years old benefited from intervention that was provided by SLPs in small group settings during their regular kindergarten day. A large proportion of children in areas of significant social disadvantage show delayed language abilities and SLPs play a major role in helping them develop sufficient language skills to enable them to engage with the curriculum and enhance their participation in kindergarten and later on in school. It seems that the combination of small group setting and age-appropriate interactive activities promote language learning for these children. In Israel, most SLPs provide language intervention on a "one-to-one" basis to children with specific language impairments or special needs. The small group language intervention that was used in the present program seems promising and cost effective in comparison to "one-to-one" approach. Nevertheless, for some children who have additional needs an individual treatment might be more appropriate.

Appendix 1

Language intervention goals include the following:

- (a) Pragmatics: children will engage in conversations (listen, respond, initiate) with peers and adults while playing. During the interaction, children will request, ask questions and convey feelings.
- (b) Semantics: children will produce nouns, verbs and adjectives from daily content areas based on content and vocabulary in selected literature.

Children will understand and produce spatial concepts (on, above, under, in), concepts of quantity (more, less, few, many) and size (big, little).

- (c) Morphology: children will produce nouns, verbs and adjectives in singular/plural and male/female (the Hebrew language marks male/female in verbs and adjectives).

Children will match verbs and adjectives for gender and number (examples: “he walks”, “she sits”, “all are blue” “the birds are white”).

- (d) Syntax: children will formulate utterances with simple structure (SVO = subject + verb + object), as well as more complex sentences, such as adding adjectives/adverbs or using the conjunction “and” to connect two utterances. Children will be exposed to complex sentences containing coordinating conjunctions such as *but*, *for*, *or* and *if* (example: “If you sit quietly, you’ll get a sticker”), as well as to compound sentences containing two dependent (subordinate) clauses, as in “The boy ate the ice cream his mother bought him”. Children will use prepositions (in Hebrew, prepositions either are separate words or are a letter attached to the beginning of a word) such as *in*, *to*, *with*.

Appendix 2

Here are the activities that followed the reading of the book *The Mouse and The Apple* by Stephen Butler (2004). This book, well known to English speakers, was translated into Hebrew (other books were originally written in Hebrew and are only familiar in Israel). These three activities followed the reading of the book over a period of 6 weeks:

Week	Activity
1–2	Reading the book accompanied by illustrations and demonstrations.
3	Making fruit salad.

Week	Activity
	After discussing the subject of “fruit” (What is the fruit in the story? What other fruits do the children know and like? What are the attributes of each fruit: shape, color and taste?), each group cut three different kinds of fruits: banana, orange and apple. While cutting up the fruit, the SLP emphasized relevant specific verbs such as peeling, mixing etc. Each group put the salad in a big communal bowl. At the end of lunch break every child received a personal serving of fruit salad. Pictures of the activity were used to sequence the recipe.
4	Building an animal farm. Each child was asked to choose an animal and its home, and take the animal that he chose from the toy animal box that was available in the classroom. The farm itself was built from recycled materials. Each group of children participated in a pretend play with the SLP. The teacher was then asked to enable spontaneous pretend play, with the animals in the farm, for 1 week.
5–6	Show following the story. After four sessions of shared story book reading and activities, the children began to prepare a show to follow the story. Each child chose a character from the story “The Mouse and The Apples”, received a “crown” with a figure of the character he had chosen and the group put on the show. In the next session, the children practice the show in small groups and than the entire class presented the story; this time, with all the children playing their parts.

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