Dr Ljubica Marjanovič Umek
Dr Urška Fekonja Peklaj

The Effect of Preschool on Children's Language Development: A Slovenian Longitudinal Study

Abstract: The purpose of this longitudinal study was to study the effect of preschool on children's language development in connection with the age at which children enrol in preschool and children's family environments. The sample included children who attended a Slovenian preschool and/or a Slovenian primary school at the last assessment. Approximately half of the children in the sample began attending preschool at the age of 1 and the other half at the age of 3. We first assessed the children when they were approximately 3 years old and they were then followed for 3 years. Children's language competence was assessed four times at one-year intervals and the quality of the children's family environment twice (when the children were approximately 4 and 6 years old). The results obtained indicate that the effect of preschool alone, or age at preschool enrolment, is low but increases in combination with the education of the children's mothers. Preschool has a statistically significant effect on the language development of children whose mothers have a low education level and who often have a less stimulating family environment. The results also show that the effect of the mother's education on a child's language development increases with the child's age.

Keywords: effect of preschool, maternal education, quality of the family environment, children's language development.

UDK: 373.2

Dr Ljubica Marjanovič Umek, Full Professor, Faculty of Arts, University of Ljubljana;
e-mail: ljubica.marjanovic@ff.uni-lj.si
Dr Urška Fekonja Peklaj, Assistant Professor, Faculty of Arts, University of Ljubljana;
e-mail: urska.fekonja@ff.uni-lj.si

SODOBNA PEDAGOGIKA 5/2006, 46–67

Introduction

Studies on the principles and dynamics of development during infancy, toddlerhood and early childhood, as well as studies on children's learning and instruction during these periods (e.g., Bruner 1996; Tomasello 2000; Watson 1996), are having an increasingly recognisable influence on shaping national policies for the starting level of the education system: preschool education. In one of his comparative analyses, Andersson (1994) especially emphasised how important it is for researchers to empirically study the effect of preschool on children's development and learning in their own countries, even though similar professional and academic studies may already exist. That is the only way to obtain valid results that also reflect the broader social context of preschools and their organisation, content and quality.

Children's language development during toddlerhood and early childhood: language structure, content and use

During toddlerhood and early childhood, there is rapid and interdependent language development in grammar (including form and content), pragmatics and comprehension. At the age of 4 or 5 children attain a level at which they can report their feelings, thoughts and perceptions to others in an understandable manner and they can also understand others' verbal messages. Bates and Goodman (2001) cite two important leaps in vocabulary development: the first at the age of 16 to 20 months and the second at the age of 24 to 30 months. Children use words in various functions; for example, to report ownership, changes of location, refusals, demands, assertions and declarations (Reich 1986). When children are approximately 2 years old they connect words into simple sentences and already use certain rules and, later, when they have acquired key grammatical rules they create increasingly more complex sentences that are semantically and linguistically correct (e.g., Karmiloff & Karmiloff-Smith 2001).

Children also develop and shape their language in this way (Halliday 1973). When they learn that various situations require various forms of language they then develop communication skills. It is only in various contexts that children can learn that they must use various responses, including refusals, acceptance, inclinations, special tones of voice and more and less formal structures of language (Karmiloff & Karmiloff-Smith 2001; Marjanovič Umek, Kranjc & Fekonja 2006). Dialogue and conversation among children intensively and gradually develop until they are 5 or 6 years old, at which point it should be emphasised that the developmental level of conversation is to a large degree also connected with the social context. Researchers (e.g., Corsaro & Eder 1990; Marjanovič Umek, Lešnik Musek & Kranjc 2001) have found that preschool children use the fullest form of conversation during play; for example, they make use of linguistic registers appropriate for children's roles during play, social transformation, language in various speaking situations and metalinguistic statements. A special form of communication that develops during early childhood is social referential communication in which the speaker describes an object or person that the listener cannot see and the speaker's message should be sufficiently convincing and relevant for the listener to form an image of the object or person comparable to that of speaker who sees the object or person (Marjanovič Umek, Kranjc & Fekonja 2006). Children's story narration also develops in early childhood as one of their pragmatic use of language. Whereas toddlers' stories are still simple (a simple stringing together of individual elements around a central element) and are generally personal or tied to descriptions of events in which they themselves are included, the stories of 4-, 5- and 6-year-olds are increasingly more structured and conventional, coherent (concerning a logical story with an understandable presentation of events, thoughts, feelings and temporal and causal connections) and cohesive (the text is grammatically connected; e.g., Broström 2002; Karmiloff & Karmiloff- Smith 2001; Marjanovič Umek, Kranjc & Fekonja 2006; Pellegrini & Galda 1982; Wray & Medwell 2002). When children narrate stories or take on various roles in symbolic play connected with representational transformation, they also develop a metalinguistic awareness and metacommunication which enables a departure from the use of language merely for describing concrete objects, persons and activities to a command of linguistic forms for their own sake (e.g., Warren-Leubecker & Carter, 1988; Wood & Attfield, 1996).

The family and preschool environment as contexts for children's language development

Theories of developmental psychology and psycholinguistics (e.g., Caron 1992; Chomsky 1986; Clark & Clark 1977; Tomasello 2000; Vygotsky 1978) and the results of empirical studies have confirmed the important role of genetic and environmental factors for language development.

In a meta-analysis of more than 100 behavioural genetic studies, Stromswold (2001, in Kovos, Hayiou-Thomas, Oliver, Dale, Bishop & Plomin 2005) determined that various areas of language development such as syntax,

semantics, phonology and articulation are partly influenced by genetic factors, but that the results which point to the effect of a shared environment on children's language competence are not so unambiguous. Similar findings were found by a group of researchers (Spinath, Price, Dale & Plomin 2004) in a study of twins aged 2 to 4 years old, showing a consistent and moderate effect of genetic factors on children's language development during this period (genetic differences explained 27% to 34% of the variation in boys' language competence and 18% to 23% for girls) as well as a statistically significant effect of a shared environment (with measures of the environment explaining 69% of the variation in language competence among 2-year-olds and 59% among 4-year-olds). They also determined that non-shared environment factors could only explain a small share of the variation seen in children's language competence: up to 5% among 2-year-olds and up to 12% among 4-year-olds. The authors determined that the effect of a non-shared environment increases with age, which could be connected with an individual's increasingly specific experiences in the environment – for example, with one's peers in the preschool environment and in the playground.

In our study we examine the effect of the family and preschool environments on children's language development and so we are especially interested in the results of certain comparative studies in which researchers determined the effect of individual variables (e.g., maternal education and children's age at preschool enrolment), or multiple variables in interaction (e.g., children's age at preschool enrolment, preschool quality, maternal education), on children's language competence.

Some authors (e.g., Bornstein & Haynes 1998; Marjanovič Umek, Fekonja, Kranjc & Lešnik Musek 2003; Moynihan & Mehrabian 1978; Silven, Athola & Niemi 2003) cite a positive, albeit low or medium-high relationship (correlation coefficients were around 0.20) between the level of maternal education and children's language competence as measured by various language development scales. In one of their studies, a team of Slovenian authors (Marjanovič Umek, Podlesek & Fekonja 2005) determined that maternal education together with measured factors of the family literacy environment explain at most 9% of the variation in the language competence of 3- and 4-year-old children. Maternal education also generally correlates with the family's socioeconomic status, quality of the family environment and the mother's or parents' implicit theories on rearing children. The researchers determined that mothers with a higher education level speak with their children more frequently and use a more extensive and varied vocabulary, form complete and relatively long utterances, including many interrogative statements and frequently make metalinguistic statements (e.g., Butler, McMahon & Ungerer 2003; Fekonja 2002; Hoff 2003). Mothers with higher levels of education read to their children more often, include them in verbal interaction while reading to them and attend various cultural activities for children (Foy & Mann 2003; Marjanovič Umek et al. 2005; Roberts, Jurgens & Burchinal 2005).

In addition to the family environment or in interaction with it, the preschool also has an important effect on children's development, especially the peer groups that the children form part of. Studies in which authors have determined

the effect of preschool on children – whether their social, emotional, language or cognitive development – have generally been quite comprehensive because their results show that not only preschool itself has a positive or negative effect on children's development, but that factors such as preschool quality, age at preschool enrolment and the number of hours per week that children spend at preschool also have such effects (e.g., Melhuish 2001; Sylva & Wiltshire 1993). The results of studies in which the authors more closely examined children's ages at preschool enrolment differ somewhat: some researchers (e.g., Lamb, Sternberg & Prodromidis 1992) found that preschool quality is connected to a positive or neutral effect of preschool on children's development, whereas others (e.g., Caughy, DiPietro & Strobino 1994; Lamb 1997) especially emphasised that early preschool enrolment has a positive effect on infants and toddlers who come from families in which the parents have a lower level of education and/or whose family environment is less stimulating. Based on an extensive longitudinal study, Andersson (1989) reported that 8-year-old children who enrolled in preschool between the ages of 6 and 12 months scored higher on measures of cognitive and socio-emotional development than children who enrolled in preschool after the age of 1. Later, Andersson (1992) also confirmed the long-term positive effect of children's early preschool enrolment with the scores that the same children (included in the sample in his first study) achieved at age 13. They were more successful in school than their peers who had begun attending preschool after the age of 1. The age at which children enrol in preschool also had a statistically significant direct effect on children's social and cognitive skills when children's intelligence was controlled for. The author also critically judged that his study did not assess the quality of preschools, which was not frequently measured at the time when the longitudinal study was being planned and had begun. However, he did determine that researchers from other countries had rated Swedish preschools as being high quality (with regard to their organisation and operation). Similar results are reported by another group of Swedish researchers (Broberg, Wessels, Lamb & Hwang 1997) who found that children who began attending preschool earlier and had spent more months in preschool than their peers before the age of 40 months achieved better results in school on tests of language competence. Preschool quality – especially verbal and social interaction between the children and the teacher and a structural indicator (adult/children relations and the number of children in the group) – was also an important predictor of the success of children who had spent more than three years at preschool. Researchers also determined the effect of preschool on children's cognitive and language development as part of an extensive North American study (NICHD, 2000). This longitudinal study assessed children's language and cognitive development at the ages of 15, 24 and 36 months in relation to the preschool and family environments. The study included preschool quality, preschool type, number of hours the child spent at preschool per week and certain family environment factors (e.g., the mother's vocabulary, responsiveness and stimulation) as independent variables. The results showed that preschool type and quality correlate positively with children's cognitive

and language competence, although preschool quality is only able to explain 1.3% to 3.8% of the variability. The share of variability explained increased with the addition of variables connected to the family environment and children's sex. Families with a higher quality home environment selected higher quality preschools and preschool quality itself had an additional effect on the quality of parent-child relations. Children who did not attend preschool scored higher on measures of cognitive and language skills than their peers who had attended preschools assessed as low quality, but at the same time lower scores than their peers who had attended preschools assessed as high quality. The researchers also determined that teachers' cognitive and language stimulation in preschool and their sensitivity and responsiveness are a good predictor of children's later language and cognitive development.

An initial study of the connection between preschool quality and the language and cognitive skills of 12-month-old infants (Burchinal, Roberts, Nabors & Bryant 1996) was later continued as a four-year longitudinal study by Burchinal, Roberts, Riggins, Zeisel, Neebe and Bryant (2000). The sample included 89 children who had begun attending preschool between the ages of 1 and 10 months. The results obtained in the initial study show that infants who began attending preschool later scored somewhat higher on a language expression scale at the age of 12 months than did infants who began attending preschool at a younger age. Children's age at preschool enrolment did not correlate with the cognitive development scores and other measures of language development at 12 months. In the continuation of the study the authors assessed the language and cognitive skills of children at the ages of 18, 24 and 36 months and children's family environments at the ages of 18 and 30 months. On the basis of the results the authors also found that there are statistically significant positive correlations between preschool quality and all measures of children's cognitive and language development regardless of the children's age (correlations between 0.30 and 0.60). More detailed analyses connected to individual indicators of preschool quality are also interesting. A more favourable proportion between the number of children and adults in a group is expressed in higher communicational skills among 12-month-olds and higher teacher education is expressed in higher scores in language expression among 3-year-olds. The findings also confirm a statistically significant correlation between preschool quality and quality of the family environment. Quality of the family environment correlates statistically significantly with children's language comprehension, expression and communication skills at the ages of 12 and 24 months.

Our study, which was a longitudinal study lasting four years, focused on the effect of preschool on children's language development, specifically in connection with the age at preschool enrolment and in connection with the children's family environment (quality of the family environment with regard to the stimulation of language development and maternal education).

Method

Participants

The longitudinal study included a random sample of children who attended a Slovenian preschool at the time of the first three assessments and the first grade of primary school in various regions of Slovenia at the time of the fourth assessment. The children began attending preschool at the age of 1 (±3 months) or 3 (±3 months). The number of children changed at individual assessment times due to various factors (e.g., absence due to illness, moving, change of preschool). Below we present some of the basic characteristics of the sample at the four consecutive assessments, which took place at one-year intervals.

	1st assessment	*2nd assessment*	*3rd assessment*	*4th assessment*
Sample size	116	106	155	123
Children's age	33–39 months	45–51 months	57–63 months	69–75 months
Time at preschool	0 or 2 years	1 or 3 years	2 or 4 years	3 or 5 years
Measure of language development	*Language Development Scale (LDS); Test of Story Narration with a Picture Book*	*LDS; Test of Story Narration with a Picture Book*	*Scales of General Language Development-LJ (SGLD-LJ)*	*SGLD-LJ*
Measure of quality of the family environment		*Home Literacy Environment Questionnaire (HLEQ): (3–4)*		*HLEQ: 5–6*

Table 1: Sample characteristics for individual assessments

Instruments

We used the *Language Development Scale* (*LDS*) to assess the children's language development at ages 3 and 4. It was developed based on the *RDLS III* (*Reynell Developmental Language Scale*, Edwards et al., 1997) and the *Vane-L* (Vane, 1975). It comprises two subscales: a language comprehension subscale and a language expression subscale (split-half reliability coefficient: 0.68, determined on a sample of 269 Slovenian children 3.1 years old and 0.67, determined on a sample of 298 Slovenian children 4.1 years old). The *Language comprehension subscale* includes 22 tasks used to assess children's understanding of spatial relationships, qualities and participatory roles. The *Language expression*

subscale is composed of 44 tasks used to assess the children's vocabulary, ability to conjugate verbs (third person and past), ability to decline nouns (plural and dual) and ability to repeat statements. The test administrator carried out the tasks on both subscales with the help of various materials; for example, blocks, toy cars and pictorial cues. The points within individual groups of tasks and subscales were added together so that two partial scores were obtained using the language scale representing an assessment of the child's language comprehension (22 points total) and expression (44 points total) as well as a combined score representing the sum of the scores that a child obtained on both subscales (66 points total).

We assessed the children's ability in the pragmatic use of language by using the *Test of Story Narration with a Picture Book*. We used the story *Maruška Potepuška* (Maria the Tramp; Amalieti, 1987), which has no text and has realistic illustrations that are logically connected with one another into a story. Based on the illustrations, children freely narrated the stories which we analysed from the perspective of grammatical structure and coherence. We shaped criteria for analysing the grammatical structure of the stories narrated that applied to the children's use of various parts of language and grammatical rules: the number of noun tokens, noun types, nouns types in the dual, verb tokens, verb types, verbs in the past, verbs in the future, adjective tokens, adjective types, pronoun tokens, pronoun types, multiword statements, subordinate compound statements, coordinate compound statements, interrogative statements, negative statements, imperative statements, statements in direct speech and statements in reported speech.

To analyse the coherence of the stories narrated, we used criteria that we developed for this purpose (Marjanovič Umek, Kranjc & Fekonja, 2003) and that also represented story development levels: 1. story without a structure (1 point); 2. story with a structure that simply describes people, objects or illustrations (2 points); 3. story with a structure that simply strings events together temporally (3 points); 4. story with a structure that describes the thoughts and feelings of the characters and the relations between them (4 points); and 5. story with a structure that describes cause-and-effect relations (5 points).

Because of the need to develop a standardised instrument to assess children's language development in Slovenia, by the time of the third assessment the authors (Marjanovič Umek, Kranjc, Bajc & Fekonja, 2004) had developed the *Scales of General Language Development-LJ* (*SGLD-LJ*), which are being standardised on a sample of Slovenian preschool children. Because the *SGLD-LJ* is a precise, objective and reliable instrument and, in contrast with the *LDS*, also makes it possible to assess the language development of older preschool children, we used it to assess the children's language development at the third and fourth assessments. The *SGLD-LJ* is intended for children aged 2 to 6 years old and includes three scales: the *Language Comprehension Scale*, the *Language Expression Scale* and the *Metalinguistic Awareness Scale*. The *Language Comprehension Scale* (alpha coefficient = 0.72; calculated on a sample of 78 6-year-old children) includes 93 tasks that apply to understanding

instructions, words indicating parts of the body, spatial concepts, quantities, relations between persons and objects, qualities, persons and their property, colours, understanding time sequences, negation, use of objects, actions and results of actions. The *Language Expression Scale* (alpha coefficient = 0.83; calculated on a sample of 78 6-year-old children) includes 94 tasks that apply to children's vocabulary, use of pronouns, use of words expressing qualities, expression of actions and states in the present, past and future, use of the plural and dual, use of words expressing spatial relations and quantity, negation, questions, story narration, use of hypernyms, explanation of words, use of words expressing social relations, coordination and subordination, use of direct and reported speech, declension and verbs of speaking. The *Metalinguistic Awareness Scale* (alpha coefficient = 0.90; calculated on a sample of 78 6-year-old children) includes 22 tasks that apply to children's ability to correct mistakes, differentiate between longer and shorter words and determine the last word in a sentence and the first and last sounds of a word. The entire *SGLD-LJ* includes 209 tasks, although children only solve tasks of appropriate difficulty depending on their age and their language competence. The test administrator carries out the tasks with the help of various play material and pictorial materials. Various numbers of points (1 to 5) are awarded for various tasks for correct responses and the points are added together within individual scales. This creates three partial scores: children's language comprehension (up to 99 points), language expression (up to 102 points) and metalinguistic awareness (up to 22 points), as well as a total score which is the sum of the three partial scores (up to 223 points) and represents an assessment of the children's language competence.

We assessed the quality of the children's family environment by using the *Home Literacy Environment Questionnaire (HLEQ)* which has two forms: one for children 3 to 4 years old (the *HLEQ: 3–4*) and one for children 5 to 6 years old (the *HLEQ: 5–6*). The questionnaires contain items that describe parents' behaviour and the activities that they use to stimulate children's language development. Parents use a six-point scale to mark the frequency of behaviour described that they engage in with their children. The *HLEQ: 3–4* (Marjanovič Umek, Podlesek & Fekonja, 2005) contains 33 items that are combined into five family environment quality factors: *Stimulation to use language, explanation (F1), Reading books to the child, visiting library and puppet theatre (F2), Joint activities and conversation (F3), Interactive reading (F4) and Zone-of-proximal development stimulation (F5)*. The *HLEQ: 5–6* (Marjanovič Umek, Fekonja & Bajc, 2006) contains 32 items that are combined into three family environment quality factors: *Reading and Conversation (F1)*, *Academic Skills (F2)* and *Proper Use of Language (F3)*.

Procedure

Individual test sessions for the children took place at one-year intervals. The parents of all the children gave written permission for their children to participate in the study. Each child was tested individually with the *LDS* and the *Test of Story Narration with a Picture Book* (at the first and second assessments) and with the *SGLD-LJ* (at the third and fourth assessments). Testing took place in the morning when the children were at preschool or school. Each test session lasted 30 to 40 minutes. At the second and fourth assessments we gave the *HLEQ* to the preschool teachers or first-grade teachers and they gave the questionnaires to the children's mothers, who then completed the questionnaires and returned them to the teachers.

The test administrators had a brief conversation with the children's parents, asking them about the mother's level of education (number of years of formal education completed) and the age at which the child enrolled in preschool. The test administrators were psychology students who had participated in a special training programme to use these instruments.

The use of statistical methods

The effect of maternal education, age at preschool enrolment and quality of the home literacy environment on the children's language competence was established using ANOVA. The differences between the arithmetic means of individual groups were tested using Scheffe's post-hoc test. The correlation between the quality of the home literacy environment and language competence and maternal education was assessed using Pearson's coefficient »*r*«.

Results

The effect of age at preschool enrolment, maternal education and the quality of the family environment on the children's language development was calculated using an ANOVA. Mothers were sorted into three groups depending on their education: a low education level (up to 11 years of formal education); a medium level of education (12 years of formal education); and a high level of education (more than 12 years of formal education). We defined the quality of the family environment as low (the lower third of ranked scores on the *HLEQ*), medium (the middle third of ranked scores on the *HLEQ*) and high (the upper third of ranked scores on the *HLEQ*).

First assessment

	Maternal education	*Age at preschool enrolment*	*M*	*SD*	*Analysis of variance*
LDS score	1	1 year	39.27	9.66	$df_1 = 1$; $F_1 = 0.33$; $p_1 = 0.57$; $\eta^2_1 = 0.00$
		3 years	38.68	2.70	
		Total	39.13	8.51	$df_2 = 2$; $F_2 = 4.37$; $p_2 = 0.01$; $\eta^2_2 = 0.07$
	2	1 year	42.11	6.87	
		3 years	43.28	6.43	$df_3 = 2$; $F_3 = 0.25$; $p_3 = 0.78$; $\eta^2_3 = 0.00$
		Total	42.62	6.60	
	3	1 year	43.31	7.51	$df_4 = 110$; *MSE* = 53.02
		3 years	45.27	5.69	
		Total	44.33	6.63	
Story development level	1	1 year	49.51	17.01	$df_1 = 2$; $F_1 = 0.09$; $p_1 = 0.34$; $\eta^2_1 = 0.01$
		3 years	43.92	17.60	
		Total	48.16	17.05	$df_2 = 2$; $F_2 = 1.36$; $p_2 = 0.26$; $\eta^2_2 = 0.03$
	2	1 year	51.26	21.67	
		3 years	53.73	24.04	$df_3 = 2$; $F_3 = 0.70$; $p_3 = 0.50$; $\eta^2_3 = 0.01$
		Total	52.28	22.29	
	3	1 year	60.05	24.31	$df_4 = 102$; *MSE* = 437.35
		3 years	50.70	19.79	
		Total	55.38	22.42	

Table 2: Differences between the children's scores on the LDS and Test of Story Narration by the children's age at preschool enrolment and maternal education at the first assessment

Note. Maternal education: 1 – low, 2 – medium, 3 – high; F_1... effect of age at preschool enrolment; F_2... effect of maternal education; F_3... interaction effect between maternal education and age at preschool enrolment; *MSE*... mean square error.

The results obtained indicate a statistically significant medium-high effect of maternal education on the scores of 3-year-old children on the *LDS*. Scheffe's post-hoc tests show that the children of mothers with a high education level achieve statistically significantly higher scores on the *LDS* than the children of mothers with a low education level ($MD = 5.20$; $p = 0.01$), whereas the differences between the groups of children of mothers with high and medium levels of education ($MD = 1.70$; $p = 0.59$) and medium and low levels of education ($MD = 3.49$; $p = 0.16$) are not statistically significant.

Further analyses showed that in the group of children who enrolled in preschool at the age of 1 the children of mothers with low, medium and high levels of education achieved comparable scores on the *LDS* ($F = 1.57$; $p = 0.21$) and also narrated stories at comparable developmental levels ($F = 1.66$; $p = 1.20$). In contrast, in the group of children who enrolled in preschool at age 3, the children's scores on the *LDS* differed statistically significantly with respect to maternal education ($F = 4.30$; $p = 0.02$). Specifically, the children of those mothers with a

high education level expressed significantly higher language competence than the children of those mothers with a low education level ($MD = 6.58$; $p = 0.02$).

Second assessment

	Maternal education	*Age at preschool enrolment*	*HLEQ: 3–4*	*M*	*SD*	*Analysis of variance*
LDS score	1	1 year	1	46.65	6.69	$df_1 = 1$; $F_1 = 3.81$; $p_1 = 0.05$; $\eta^2_1 = 0.04$ $df_2 = 2$; $F_2 = 3.54$; $p_2 = 0.03$; $\eta^2_2 = 0.07$ $df_3 = 2$; $F_3 = 0.08$; $p_3 = 0.44$; $\eta^2_3 = 0.02$ $df_4 = 2$; $F_4 = 0.28$; $p_4 = 0.76$; $\eta^2_4 = 0.01$ $df_5 = 2$; $F_5 = 0.69$; $p_5 = 0.50$; $\eta^2_5 = 0.02$ $df_6 = 4$; $F_6 = 0.86$; $p_6 = 0.49$; $\eta^2_6 = 0.04$ $df_7 = 88$; *MSE* = 31.66
			2	48.86	6.26	
			3	47.00	12.17	
			Total	47.71	6.97	
		3 years	1	47.83	3.75	
			2	52.63	6.32	
			3	53.50	0.00	
			Total	50.94	5.27	
	2	1 year	1	47.90	6.39	
			2	49.95	3.44	
			3	48.50	5.68	
			Total	49.14	4.54	
		3 years	1	50.50	4.92	
			2	49.17	11.75	
			3	54.13	5.23	
			Total	51.45	6.92	
	3	1 year	1	50.57	6.02	
			2	55.42	3.43	
			3	51.00	5.63	
			Total	52.02	5.46	
		3 years	1	55.63	3.77	
			2	54.13	2.75	
			3	51.55	3.72	
			Total	53.23	3.64	
Story development level	1	1 year	1	69.42	26.51	$df_1 = 1$; $F_1 = 2.49$; $p_1 = 0.12$; $\eta^2_1 = 0.02$ $df_2 = 2$; $F_2 = 3.20$; $p_2 = 0.05$; $\eta^2_2 = 0.07$ $df_3 = 2$; $F_3 = 1.09$; $p_3 = 0.34$; $\eta^2_3 = 0.02$ $df_4 = 2$; $F_4 = 0.04$; $p_4 = 0.96$; $\eta^2_4 = 0.00$ $df_5 = 2$; $F_5 = 0.01$; $p_5 = 0.99$; $\eta^2_5 = 0.00$ $df_6 = 4$; $F_6 = 0.74$; $p_6 = 0.56$; $\eta^2_6 = 0.03$ $df_7 = 88$; *MSE* = 595.83
			2	69.93	36.24	
			3	58.13	6.88	
			Total	68.24	29.41	
		3 years	1	51.80	15.60	
			2	67.45	19.78	
			3	43.40	0.00	
			Total	58.57	18.29	
	2	1 year	1	62.04	13.12	
			2	77.24	22.07	
			3	82.67	33.05	
			Total	73.92	22.09	
		3 years	1	57.45	26.03	
			2	65.47	1.85	
			3	77.40	16.58	
			Total	66.89	19.15	
	3	1 year	1	76.20	20.44	
			2	89.03	33.65	
			3	80.14	27.12	
			Total	81.26	26.41	
		3 years	1	74.50	25.85	
			2	76.62	16.29	
			3	69.42	16.53	
			Total	72.96	17.68	

Table 3: Differences between children's scores on the LDS and the Test of Story Narration with a Picture Book with regard to the children's age at preschool enrolment, maternal education and the quality of the family environment at the second assessment

Note. Maternal education: 1 – low, 2 – medium, 3 – high; quality of the family environment: 1 – low, 2 – medium, 3 – high; F_1... effect of age at preschool enrolment; F_2... effect of maternal education; F_3... effect of the quality of the family environment; F_4... interaction effect between age at preschool enrolment and maternal education; F_5... interaction effect between age at preschool enrolment and quality of the family environment; F_6... interaction effect between maternal education and quality of the family environment; age at preschool enrolment; *MSE*... mean square error.

The results of the second assessment showed a statistically significant but slight effect of the children's age at preschool enrolment on the 4-year-old children's scores on the *LDS*. Four-year-old children who started preschool at age 3 ($M = 49.63$; $SD = 6.06$) displayed a somewhat higher language competence than those children who started preschool at age 1 ($M = 52.30$; $p = 4.98$). However, the effect of age at preschool enrolment on story narration was not statistically significant. Maternal education had a statistically significant medium-high effect on 4-year-old children's scores on the *LDS* and on the development level of stories that they narrated with a picture book. Scheffe's post-hoc tests show that the children of mothers with a high level of education achieved statistically significantly higher scores on the *LDS* than the children of mothers with a low level of education ($MD = 4.10$; $p = 0.01$), whereas the differences between the groups of children of mothers with high and medium levels of education ($MD = 2.59$; $p = 0.16$) and medium and low levels of education ($MD = 1.50$; $p = 0.58$) were not statistically significant. Further analyses showed that in the group of children who enrolled in preschool at the age of 1 maternal education has a statistically significant effect on the children's scores on the *LDS* ($F = 3.28$; $p = 0.04$). In this group, the children of mothers with a high level of education scored statistically significantly higher than the children of mothers with a medium level of education. However, in the group of children who enrolled in preschool at the age of 3 maternal education did not have a statistically significant effect on the scores obtained on the *LDS* ($F = 0.83$; $p = 0.44$). Maternal education did not have a statistically significant effect on the children's story narration in the group of children who enrolled in preschool at age 1 ($F = 1.42$; $p = 0.25$) or in the group of children who enrolled in preschool at age 3 ($F = 0.90$; $p = 0.16$).

Quality of the family environment did not have a statistically significant effect on the 4-year-old children's language competence. However, the results did show a statistically significant correlation between maternal education and certain individual factors of the quality of the family environment, specifically with *F1: Stimulation to use language, explanation* ($r = 0.23$, $p = 0.02$), *F2*: *Reading books to the child, visiting library and puppet theatre* ($r = 0.34$, $p = 0.00$) and *F4*: *Interactive reading* ($r = 0.25$, $p = 0.01$), as well as with overall scores on the *HLEQ: 3–4 years* ($r = 0.29$, $p = 0.00$). Children's scores on the *LDS* showed a statistically significant positive correlation with *F2*: *Reading books to the child, visiting library and puppet theatre* ($r = 0.22$, $p = 0.02$) and the scores on the test of story narration with *F4*: *Interactive reading* ($r = 0.20$, $p = 0.04$).

Third assessment

	Maternal education	*Age at preschool enrolment*	*M*	*SD*	*Analysis of variance*
SGLD-LJ score	1	1 year	89.43	19.26	$df_1 = 2$; $F_1 = 5.14$; $p_1 = 0.01$; $\eta^2_1 = 0.11$ $df_2 = 1$; $F_2 = 0.04$; $p_2 = 0.85$; $\eta^2_2 = 0.00$ $df_3 = 2$; $F_3 = 1.76$; $p_3 = 0.18$; $\eta^2_3 = 0.04$ $df_4 = 88$; *MSE* = 214.00
		3 years	84.25	8.21	
		Total	87.54	16.08	
	2	1 year	95.56	12.03	
		3 years	94.45	9.57	
		Total	95.13	10.96	
	3	1 year	95.20	17.67	
		3 years	103.42	13.16	
		Total	99.48	15.86	

Table 4: Differences between the children's scores on the SGLD-LJ with regard to the children's age at preschool enrolment and maternal education at the third assessment

Note. See note for Table 2.

The results show a statistically significant medium-high effect of maternal education on the children's scores on the *SGLD-LJ*.. Scheffe's post-hoc tests show that the children of mothers with a high education level displayed statistically significantly higher language competence than the children of mothers with a low education level (*MD* = 11.94; p = 0.02). Although the interaction effect between the children's age at preschool enrolment and maternal education is not statistically significant, the differences between the *SGLD-LJ* scores of 5-year-old children of mothers with various levels of education who had already been in preschool for 4 years were lower than those of children who had been in preschool for 2 years. An analysis of variance conducted separately for both groups of children shows that 5-year-old children of mothers with a high level of education that enrolled in preschool at the age of 3 scored statistically significantly higher on the *SGLD-LJ* than did children from the same group whose mothers had a low education level (*MD* = 19.17; p = 0.00). The scores of children who had attended preschool for four years did not differ statistically significantly with regard to maternal education.

Fourth assessment

	Maternal education	*Age at preschool enrolment*	*HLEQ: 5–6*	*M*	*SD*	*Analysis of variance*
SGLD-LJ score	1	1 year	1	190.23	9.65	$df_1 = 1$; $F_1 = 0.39$; $p_1 = 0.53$; $\eta^2_1 = 0.00$ $df_2 = 2$; $F_2 = 12.61$; $p_2 = 0.00$; $\eta^2_2 = 0.19$ $df_3 = 2$; $F_3 = 0.89$; $p_3 = 0.41$; $\eta^2_3 = 0.02$ $df_4 = 2$; $F_4 = 0.67$; $p_4 = 0.51$; $\eta^2_4 = 0.01$ $df_5 = 2$; $F_5 = 0.27$; $p_5 = 0.78$; $\eta^2_5 = 0.00$ $df_6 = 4$; $F_6 = 0.65$; $p_6 = 0.63$; $\eta^2_6 = 0.02$ $df_7 = 105$; *MSE* = 114.46
			2	194.58	17.54	
			3	194.62	11.80	
			Total	192.31	12.22	
		3 years	1	199.20	10.89	
			2	195.00	18.67	
			3	178.83	9.78	
			Total	192.71	15.14	
	2	1 year	1	191.00	9.77	
			2	191.43	7.89	
			3	190.25	7.41	
			Total	191.00	8.56	
		3 years	1	193.17	11.14	
			2	194.17	11.78	
			3	198.12	11.82	
			Total	194.97	11.03	
	3	1 year	1	205.17	6.43	
			2	202.67	12.31	
			3	198.81	11.07	
			Total	201.87	10.17	
		3 years	1	200.37	8.45	
			2	208.00	4.12	
			3	203.97	10.49	
			Total	203.95	9.02	

Table 5: Differences between the children's scores on the SGLD-LJ with regard to the children's age at preschool enrolment, maternal education and the quality of the family environment at the fourth assessment

Note. See note for Table 3.

The results of the fourth assessment show a statistically significant and high effect of maternal education on 6-year-old children's language competence. Scheffe's post-hoc tests show that the children of mothers with a high education level achieve statistically significant higher scores on the *SGLD-LJ* than the children of mothers with a medium (*MD* = 10.53; $p = 0.00$) or low (*MD* = 10.66; $p = 0.00$) level of education, whereas the differences between groups of children of mothers with medium and low levels of education are not statistically significant (*MD* = 0.13; $p = 0.99$). However, the differences between the groups of children of mothers with high and low levels of education are statistically significant

both in the group of children who enrolled in preschool at age 1 (MD = 9.56; p = 0.02) as well as in the group of children who enrolled in preschool at age 3 (MD = 8.98; p = 0.04). The same is true of the children of mothers with high and medium levels of education, who also differed from one another in the group of children who entered preschool at age 1 (MD = 10.87; p = 0.00) as well as at age 3 (MD = 8.98; p = 0.04).

The effect of the quality of the family environment on the children's language development at age 6 was not statistically significant. The results obtained show that maternal education has a statistically significant positive correlation with *F1: Reading and Conversation* (r = 0.19, p = 0.04).

In all four assessments, maternal education was a more significant indicator of the children's language development than were the children's ages at enrolment in preschool or the quality of the family environment.

Discussion

Similar to the results of a number of foreign studies of the effect of preschool on children's development (e.g., Lamb et al., 1992; Peisner-Feinberg et al., 2001), our results also show that the effect of preschool alone on children's language development is very small or, in other words, insignificant from the perspective of children's language development whether the children enrolled in preschool at the age of 1 or 3. We discovered a negative but low effect of preschool only in the second assessment, when the children were approximately 4 years old, but this only applied to one measure of language development. The results obtained are probably connected less with the effect of preschool than with the instrument (the *LDS*), which turns out not to have been the most sensitive for the given ages of the children or to have contained tasks that were somewhat too easy. With other measures of language development (e.g., children's story narration), the variability of scores was greater and the effect of preschool was no longer negative.

Some researchers (e.g., Lazarus, 1991) have assessed that the early enrolment of infants and toddlers in preschool – especially because of the greater number of children per adult in comparison to the mother-infant dyad – is not the most stimulating for their language development. In contrast, the results of the majority of more recent studies (e.g., Andersson, 1992; Broberg et al., 1997; NICHD, 2000) point to a positive and long-term effect of children's early enrolment in preschool on cognitive and language development, although generally in connection with the quality of the preschool and the family environment. In our study we also expected a positive, rather than a merely neutral, effect of preschool on the children's language development, especially because we assessed the quality of Slovenian preschools as relatively high at the structural level and because the preschool curriculum (*Kurikulum za vrtce*) facilitates a high-quality educational process. As the results of other studies (e.g., NICHD, 2000) show, quality at the process level is just as important as

quality at the structural level. If we wished to directly compare our results with the results of studies (e.g., Broberg et al., 1997; Burchinal et al., 2000; NICHD, 2000) that have found a statistically significant positive effect of preschools on children's language development, we would also need to assess process quality in Slovenian preschools in greater detail. At the same time, the results of our study, similar to those of the studies cited above, indicate that the effect of preschool on children's language development is also connected with other factors, especially with parental education and the quality of the family environment. To a certain extent, preschool contributes to lowering the effect of maternal education on children's language competence and provides the children of mothers with a low education level with a higher quality environment and more stimulation for their language development. Maternal education has a statistically significant effect on the language competence of 3- and 5-year-old children who enrolled in preschool later (at age 3) but not on the group of children who entered preschool early (at age 1). Based on the results we obtained, we can conclude that preschool enrolment primarily stimulates the language development of the children of mothers with a low level of education or can make up for certain deficiencies in language development connected with a lower quality family environment.

In all four assessments of the children's language competence, maternal education was a more significant factor of the children's language development than were the children's age at preschool enrolment or the quality of the family environment as measured with the *HLEQ* at the second and fourth assessments. The results showed a significant, medium-high to high effect of maternal education on the children's language competence that increased with the children's age. The children of mothers with a higher education level expressed higher language competence than the children of mothers with a lower level of education. The results obtained are comparable to the results of a number of other studies (e.g., Bornstein & Haynes, 1998; Marjanovič Umek, Fekonja, Kranjc and Lešnik Musek, 2003; Moynihan & Mehrabian, 1978; Silven et al., 2003) in which the authors determined that maternal education is a significant factor of children's language development. A Slovenian study (Marjanovič Umek et al., 2005) states that maternal education and the quality of the family environment can explain 9% of the variability in language competence among 3- and 4-year-old children.

However, maternal education generally also correlates with the quality of the family environment (e.g., Butler et al. 2003; Fekonja, 2002; Foy & Mann, 2003; Hoff, 2003). This positive correlation is to some extent a consequence of the fact that mothers with a higher education level also have a higher socioeconomic status, which enables them to offer their children more materials and activities (e.g., more children's books and toys, more frequent visits to puppet shows) that support children's language development. Mothers with a higher level of education also have greater knowledge and higher expectations regarding child development (Bee et al., 1982), which influences the characteristics of their verbal interaction with their children and more frequent inclusion in activities that stimulate children's language development. The results support these

findings because they point to a statistically significant positive correlation between maternal education and the quality of the family environment. Specifically, better educated mothers reported that they offered their children more stimulation for language development than mothers with a lower level of education. Mothers with a high education level reported that they more often stimulate their 4-year-old children to use language and explain things (e.g., they complete and expand children's statements, create grammatically correct sentences when speaking with children and discuss how they spent their days with their children), read together and visit the library and puppet shows (e.g., they read to their children whenever asked, talk with their children about puppet shows and movies that they have seen and purchase picture books and other books as gifts for their children) and include their children in the process of reading together (e.g., they allow children to interrupt and ask questions while they are reading and they talk about the content of the book while reading with children). Better educated mothers also reported that they more often included their 6-year-old children in conversation and reading together.

The results are comparable with the findings of several authors whereby various aspects of the quality of the family environment are connected with children's language development (e.g., Harris, 1993; Marjanovič Umek et al., 2005; Snow, Burns & Griffin, 1999). The main effect of the quality of the family environment on children's language development was not statistically significant, but the 4-year-old children of mothers who reported that they read to their children more often, visited the library and puppet shows and more often included them in the process of reading together narrated stories at higher developmental levels. The results indicate that the correlation between maternal education, children's language competence and the quality of the family environment decreases somewhat with age. In comparison with 4-year-old children, maternal education correlates with 6-year-old children in only one factor of the quality of the family environment and children's scores on the *SGLD-LJ* with no factors. Perhaps the characteristics of the family environment have an increasingly smaller effect on children's language and other development with children's age because children are increasingly frequently involved in interaction with their peers and spend ever more time with them. Spinath, Price, Dale and Plomin (2004) have determined that the influence of shared-environment factors on children's development is increasingly connected with factors that are characteristic of an individual (e.g., preschool group). At the time of the second assessment, all children had attended preschool for at least 1 year and at the time of the fourth assessment 3 years; the effect of preschool on children's language development, especially the effect of peer group communication and teacher/child communication, was probably increasingly recognisable (Nelson, 1996; Wray & Medwell, 2002), which contributed to reducing the effect of the quality of the family environment on the children's language development. In the self-assessments that the *HLEQ* is based on, one must bear in mind that these probably include socially conditioned responses, which Sénéchal, LeFevre, Thomas and Daley (1998) drew attention to in particular. For older preschool

children, mothers' assessments are even less objective because mothers believe they ought to already be engaging in the majority of activities included in the items on the *HLEQ*. As a result, the variability in assessments is even smaller and there is also a lower correlation with children's language competence.

Even though (as the results of our study also show) preschool has a statistically significant effect on stimulating the language development of children who come from lower quality family environments, there is too little recognition (at least in our opinion) of the effect of preschool on the language development of children who come from more stimulating family environments. Only additional analyses can reveal the possible weak points that create obstacles and the less effective stimulation of the language development of children who come from more stimulating family environments and whose mothers have a high level of education. If, similar to the results of certain studies from Slovenia and abroad (e.g., Loeb, Fuller, Kagan & Carrol, 2004; Marjanovič Umek, Zupančič, Fekonja & Kavčič, 2003), there is primarily a failure to achieve the highest levels of quality at the process level (e.g., the insufficiently differentiated use of language or the use of language in various situations by professionals, relatively rare use of metalanguage, insufficiently frequent responsive and engaged communication with children, too little stimulation of children's language use in various activities and in various manners, too little emotional involvement in narration etc.), then it is necessary to invest additional effort in conveying current knowledge about child language development and learning and the self-assessment of professional work in preschool groups, as an ongoing process of internal development. It appears that preschools are close to achieving a positive effect in which all children can share, regardless of relatively large differences in language development and regardless of the environment that they come from. In our view, in order to achieve this goal it is still necessary to take some important (albeit, perhaps, small) steps in order to achieve higher quality, especially at the process level.

References

Amalieti, M. (1987). Maruška Potepuška [Maria the Tramp]. Ljubljana: Feniks.

Andersson, B. E. (1989). Effects of public day-care: A longitudinal study. Child Development, 60(4), 857–866.

Andersson, B. E. (1992). Effects of day-care on cognitive and socioemotional competence of thirteen year-old Swedish schoolchildren. Child Development, 63, 20–36.

Andersson, B. E. (1994). Public policies in early childhood education. European Early Childhood Education Research Journal, 2, 19–32.

Bates, E., Goodman, J. C. (2001). On the inseparability of grammar and the lexicon: evidence from acquisition. In: M. Tomasello & E. Bates (eds), Language development. The essential readings (pp. 134–162). Oxford: Blackwell Publishers Ltd.

Bee, H. L., Barnard, K. E., Eyres, S. J., Gray, C. A., Hammond, M. A., Spietz, A.L., Snyder,

C. & Clark, B. (1982). Prediction of IQ and language skill from perinatal status, child performance, family characteristics and mother-infant interaction. Child Development, 53, pp. 1134–1156.

Bornstein, M. H., Haynes, O. M. (1998). Vocabulary competence in early childhood: Measurement, latent construct and predictive validity. Child Development, 69(3), pp. 654–671.

Broberg, A. G., Wessels, H., Lamb, M. E., Hwang, C. P. (1997). Effects of day care on the development of cognitive abilities in 8-year-old: A longitudinal study. Developmental Psychology, 1, pp. 62–69.

Broström, S. (2002). Children tell stories. European Early Childhood Education Research Journal, 1, pp. 85–98.

Bruner, J. (1996). What we have learned about early learning. European Early Childhood Education Research Journal, 1, pp. 5–16.

Burchinal, M. R., Roberts, J. E., Nabors, L. A., Bryant, D. M. (1996). Quality of center child care and infant cognitive and language development. Child Development, 2, pp. 606–620.

Burchinal, M. R., Roberts, J. E., Riggins, R., Zeisel, S. A., Neebe, E., Bryant, D. (2000). Relating quality of center-based child care to early cognitive and language development longitudinally. Child Development, 2, pp. 339–357.

Butler, S., McMahon, C., Ungerer, J. A. (2003). Maternal language style with paralinguistic twin infants. Infants and Child Development, 12(2), pp. 129–143.

Caron, J. (1992). An introduction to psycholinguistics. New York, London, Toronto: Harvester Wheatsheaf.

Caughy, M. O., DiPietro, J. A., Strobino, D. M. (1994). Day-care participation as a protective factor in the cognitive development of low-income children, Child Development, 65, pp. 457–471.

Clark, H. H., Clark, E. (1977). Psychology and language. New York: Harcourt Brace Jovanovich, Inc.

Chomsky, N. (1986). Knowledge of language. Its nature, origin and use. Westport, CT: Praeger.

Corsaro, W. A., Eder, D. (1990). Children's peer cultures. Annual Review of Sociology, 16, pp. 197–220.

Edwards, S., Fletcher, P., Garman, M., Hughes, A., Letts, C., Sinka, I. (1997). The Reynell developmental language scales III. Manual. Windsor: NFER-Nelson Publishing Company Ltd.

Fekonja, U. (2002). Otrokov govor: različni pristopi k ugotavljanju govornega razvoja [Children's language: Various approaches to determining language development]. Unpublished master's thesis. Ljubljana: Filozofska fakulteta.

Foy, J. G., Man, V. (2003). Home literacy environment and phonological awareness in preschool children: Differential effects for rhyme and phoneme awareness. Applied Psycholinguistics, 24, pp. 59–88.

Halliday, M. A. K. (1973). Explorations in the functions of language. London: Edward Arnold Publishers Ltd.

Harris, J. (1993). Early language development. London: Routledge.

Hoff, E. (2003). Causes and consequences of SES-related differences in parent-to-child

speech. In: M. H. Bornstein, R. H. Bradley (eds), Socioeconomic status, parenting and child development (pp. 147–160). Mahwah, NJ: Lawrence Erlbaum Associates.

Karmiloff, K. & Karmiloff-Smith, A. (2001). Pathways to language. Cambridge, MA: Harvard University Press.

Kovos, Y., Hayiou-Thomas, M. E., Oliver, B., Dale, P. S., Bishop, D. V. M., Plomin, R. (2005). Genetic influences in different aspects of language development. The etiology of language skills in 4.5-year-old twins. Child Development, 76(3), pp. 533–761.

Lamb, M. E. (1997). Nonparental child care: Context, quality, correlates. In: W. Damon, I. E. Siegel & K. A. Reninger (eds), Handbook of child psychology: Vol. 4. Child Psychology in Practice (pp. 73–134). New York: Wiley.

Lamb, M. E., Sternberg, K. J., Prodromids, M. (1992). Nonmaternal care and security of infant-mother attachment: A reanalysis of the data. Infant Behavior and Development, 15, pp. 71–83.

Lazarus, R. S. (1991). Emotion and adaptation. New York: Oxford University Press.

Loeb, S., Fuller, B., Kagan, S. L., Carrol, B. (2004). Child care in poor communities: Early learning effects of type, quality and stability. Child Development, 75(1), pp. 47–65.

Marjanovič Umek, L., Fekonja, U., Bajc, K. (2006). Vprašalnik družinskega okolja – spodbujanje govornega razvoja: 5–6 let [Family environment questionnaire – stimulation of language development: 5–6 years]. Internet material. Ljubljana: Katedra za razvojno psihologijo.

Marjanovič Umek, L., Fekonja, U., Kranjc, S., Lešnik Musek, P. (2003). The impact of reading children's literature on language development in the preschool child. European Early Childhood Education Research Journal, 11, pp. 125–135.

Marjanovič Umek, L. , Kranjc, S., Bajc, K., Fekonja, U. (2004). Lestvice splošnega govornega razvoja-LJ (LSGR-LJ) [Scales of General Language Development-LJ (SGLD-LJ)]. Internet material. Ljubljana: Katedra za razvojno psihologijo.

Marjanovič Umek, L., Kranjc, S., Fekonja, U. (2003). Developmental levels of the child's storytelling, ERIC, 12 pp.

Marjanovič Umek, L., Kranjc, S., Fekonja, U. (2006). Otroški govor: razvoj in učenje [Children's language: Development and learning]. Domžale: Založba Izolit.

Marjanovič Umek, L., Lešnik Musek, P., Kranjc, S. (2001). Communication in symbolic play. European Early Childhood Education Research Journal, 1, pp. 87–102.

Marjanovič Umek, L., Podlesek, A., Fekonja, U. (2005). Assessing the home literacy environment. European Journal of Psychological Assessment, 21(4), pp. 271–281.

Marjanovič Umek, L. Zupančič, M., Fekonja, U., Kavčič, T. (2003). Kurikulum za vrtce: učinki na področju komunikacije in socialnoemocionlanega razvoja otrok [Preschool curriculum: Effects on children's communication and socio-emotional development]. Sodobna pedagogika, 5, pp. 51–63.

Melhuish, E. C. (2001). The quest of quality in early day care and preschool experience continues. International Journal of Behavioral Development, 1, pp. 1–15.

Moynihan, C., Mehrabian, A. (1978). Measures of language skills for two- to seven-year-old children. Genetic Psychology Monographs, 71, pp. 960–980.

Nelson, K. (1996). Language in cognitive development: The emergence of the mediated mind. Cambridge, UK: Cambridge University Press.

NICHD Early Child Care Research Network (2000). The relation of child care to cognitive

and language development. Child Development, 71, pp. 960–980.

Peisner-Feinberg, E., Burchinal, M., Clifford, M., Culkin, M., Howes, C., Kagan, S., Yazejian, N. (2001). The relation of preschool childcare quality to children's cognitive and social developmental trajectories through second grade. Child Development, 72(5), pp. 1543–1553.

Pellegrini, A. D., Galda, L. (1982). The effects of thematic-fantasy play training on the development of children's story comprehension. American Education Research Journal, 3, pp. 443–452.

Reich, P. A. (1986). Language development. Upper Saddle River, NJ: Prentice-Hall.

Roberts, J., Jurgens, J., Burchinal, M. (2005). The role of home literacy practice in preschool children's language and emergent literacy skills. Journal of Speech, Language and Hearing, 48, pp. 345–359.

Sénéchal, M., LeFevre, J., Thomas, E., Daley, K. (1998). Differential effects of home literacy experiences on the development of oral and written language. Reading Research Quarterly, 32, pp. 96–116.

Silven, M., Ahtola, A., Niemi, P. (2003). Early words, multiword utterances and maternal reading strategies as predictors of mastering word inflections in Finnish. Journal of Child Language, 30(2), pp. 253–279.

Snow, C. E., Burns, M. S., Griffin, P. (1999). Language and literacy environments in preschool. Champaign, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.

Spinath, F. M., Price, T. S., Dale, P. S., Plomin, R. (2004). The genetic and environmental origins of language disability and ability. Child Development, 75(2), pp. 445–454.

Sylva, K., Wiltshire, J. (1993). The impact of early learning on children's later development. European Early Childhood Education Research Journal, 1, pp. 17–41.

Tomasello, M. (2000). Do young children have adult syntactic competence? Cognition, 74, pp. 209–253.

Vane, J. R. (1975). Vane evaluation of language scale (Vane-L). Brandon, VT: Clinical Psychology Publishing, Co.

Vygotsky, L. S. (1978). Mind and society. The development of higher psychological processes. Cambridge, MA: Harvard University Press.

Warren-Leubecker, A., Carter, B. W. (1988). Reading and growth in metalinguistic awareness: Relation to socioeconomic status and reading readiness skills. Child Development, 59(3), pp. 728–768.

Watson, R. (1996). Rethinking readiness for learning. In: D. R. Olson & N. Torrance (eds), The handbook of education and human development (pp. 148–172). Cambridge, MA: Blackwell Publishers Ltd.

Wood, E., Attfield, J. (1996). Play, learning and the early childhood curriculum. London: Paul Chapman Publishing Ltd.

Wray, D., Medwell, J. (2002). Literacy and language in the primary years. London: Routledge-Falmer.