

Lexical input to young children from extremely poor communities in Argentina: Effects of a home literacy program

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Abstract

The study analyzes the lexical properties of the linguistic context that children from marginalized urban neighborhoods from Buenos Aires, Argentina, are exposed to in the literacy situations generated by an at-home early literacy program. The analysis is focused on the comparison of the vocabulary that these children are exposed to daily with the characteristics of the lexical surround in the literacy settings induced by the implementation of the program. Results showed that literacy situations provided children with an enriched lexical input: a higher amount of word tokens and word types, and more unfamiliar words that represented phenomena, properties or actions not directly observable.

Keywords

early literacy, lexical input, poor communities

1. Introduction

This study analyzes the lexical properties of the linguistic context that young children from marginalized urban neighborhoods are exposed to in the literacy situations generated by an at-home early literacy program. More specifically, this study compares the characteristics of the vocabulary that children from these neighborhoods are exposed to daily with the characteristics of the lexical surround in literacy settings induced by the implementation of the family literacy program.

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The literacy program was implemented in home environments, with children from marginalized urban neighborhoods in Buenos Aires, Argentina. These populations are often called '*villas de emergencia*'.¹ The families in these neighborhoods are recent migrants or descendants of migrants from the north of Argentina and from nearby countries, mainly Bolivia, Paraguay, and Peru. Most of them are large families whose transition to the local urban environment is characterized by a hybridization of their native culture, and a daily life of destitution and extreme poverty.²

The adult residents of these neighborhoods have a very low level of education – 59.8 percent have not been educated beyond primary school – and the children are prone to failing and to dropping out in the first grades of primary school – 32.07 percent of five-to-13-year-old children have repeated grades or abandoned primary school (INDEC, National Institute of Statistics and Census, Permanent Home Survey, 2006). This fact reflects their difficulties in learning to read and write (Borzzone de Manrique, 1997; Borzzone de Manrique and Rosemberg, 2000; Diuk et al., 2000). It is also consistent with the results of studies in other countries (Neuman, 2006) and with transnational comparisons. For example, the Programme for International Student Assessment (PISA),³ records below-average reading and writing skills in other populations of children with low socio-economic and minority backgrounds.

Numerous studies conducted in the last few decades (Beals, 2001; Borzzone de Manrique and Rosemberg, 2000; Rosemberg et al., 2003; Stanovich, 1992; Weizman and Snow, 2001; Whitehurst and Lonigan, 1998) have shown that success or difficulty in literacy acquisition is linked to a series of variables that develop at a very early age in the interactions that children have in their family environment. Although early knowledge of the letter names and the establishment of phoneme–grapheme correspondences are important to the literacy process, they are not the only variables that affect its success. Other skills related to emotional-behavioral, conceptual and linguistic domains also play an important role (Dickinson et al., 2006; Neuman, 2006; Pianta, 2006).

Recent studies have shown that vocabulary development, a factor that had been underestimated until the last few years (Biemiller, 2006), plays a relevant role in learning to read and write. Vocabulary abilities are related to reading and writing performance in the first years of primary school. Some studies have found a strong correlation between vocabulary and word recognition (Snow et al., 1995). Other studies indicate that the relation between these variables is indirect: vocabulary size is associated with the quality of the phonological form of the words, which influences the development of phonological awareness as well as learning to read and write words, which is the objective of the first grade (Goswami, 2002). On the other hand, vocabulary size has direct effects in the long term, in the third and fourth grades of school. A large vocabulary allows for representations of meaning that are flexible, reliable, interrelated, and easily retrieved, constituting one of the best predictors of reading comprehension (Biemiller, 2006; Joshi, 2005; Perfetti, 2007; Protopapas et al., 2007; Sénéchal et al., 2006).

Differences in the size of children's vocabularies develop in the preschool years, before the children are able to read texts. In this phase, children's vocabularies can differ by many thousands of words (Biemiller, 2006). The differences seem to be a consequence of the opportunities offered by their environment rather than a consequence of their individual capabilities (Biemiller, 2003; Biemiller and Boote, in press).

In fact, there is evidence that at four years of age, the size of a child's vocabulary is determined to a great extent by the number of different words that their parents use, by the total number of word tokens that their parents use (Hart and Risley, 1995; Weizman and Snow, 2001; Wells, 1985), and by their parents' use of sophisticated or uncommon vocabulary (Weizman and Snow, 2001). Children's acquisition of a particular type of sophisticated words, those that refer to abstract phenomena, general categories, properties that are not directly observable, cognitive verbs or verbs of will and emotion, is closely related to the way in which adults use them when interacting with the

children (Bodin and Snow, 1994; Callanan, 1985; Danis et al., 2000; Dunn et al., 1987; Waxman and Hatch, 1992; Weizman and Snow, 2001).

Studies have shown that although the quality of the lexical surround differs between families from a same social group, the differences between socio-economic groups are very marked (Hart and Risley, 1995). That is why since the 1960s, literacy programs have been designed and implemented for poor and minority children in the United States and in other countries – Parents as Teachers, Home Instruction Program for Preschool Youngsters, Early Head Start, EASE Program among others (Britto et al., 2006; Snow, 2006). In the framework of these programs, difficulties in learning to read and write are attributed to differences in the life experiences between these children and middle-class children.

Snow (2006) claims that the programs differ in the importance that they give to literacy components that have a limited scope (such as phonological awareness and knowledge of letters), and to vocabulary and other conceptual and discursive components that have a broader scope. Programs that combine actions in child educational centers with home visits have been shown to moderately increase children's vocabulary as measured by the Peabody Picture Vocabulary Test (PPVT-3, Dunn and Dunn, 1981). The effects of these programs seem to depend on their duration and intensity (Britto et al., 2006). The implementation of the EASE program, based on the Home-school Language and Literacy project (Snow et al., 1989), has shown that even in the poorest populations, it is possible to collaborate with parents in order to generate literacy activities at home that encourage a richer use of language, extend conversations, and promote vocabulary.

In the framework of these proposals, the program *Oscarcito Desarrollo lingüístico y cognitivo de niños en contextos de pobreza* ('Oscarcito program. Linguistic and Cognitive Development of Children Living in Poverty'), is being implemented in marginal neighborhoods in and around the city of Buenos Aires, Argentina. The program was developed in response to the results of a previous observational analysis (Rosemberg, 2005a; Rosemberg et al., 2007; Stein and Rosemberg, 2007) of the interactional context of the homes in these neighborhoods, which showed that young children did not participate in situations in which stories were read nor did they possess any reading materials.

This analysis motivated the design and implementation of an early literacy program and provided ethnographic information about the daily lives of the children. Following a methodology developed in previous studies (Borzzone and Rosemberg, 2000; Rosemberg, 2005b), this information was used to write 'ethnographic reading books', intercultural storybooks that are used in the literacy settings that the program generates in the homes. The program articulates both investigation and educational intervention and carries out actions that are intended to promote all components of literacy.

Considering the previous studies mentioned above, the program focuses on generating linguistic environments that are appropriate for developing discourse and vocabulary. The present study analyzes the characteristics of the vocabulary that the children are exposed to in literacy settings generated by the program and compares them with the characteristics of the vocabulary that children from the same population are exposed to in spontaneous interactions at home.

2. Method

2.1. The data

This study analyzes literacy situations recorded in the homes of a group of 15 children of 4.5 years old (ages 4.2 to 4.11, eight males and seven females) that participated in the family literacy program *Oscarcito. Desarrollo lingüístico y cognitivo de niños en contextos de pobreza* ('Oscarcito.

Table 1. Information of the children and their families

	Spontaneous situations	Literacy situations
Gender		
Male	42%	53%
Female	58%	47%
Family make-up		
Parents	34% single-parent households (mother)	38% single-parent households (mother)
Number of siblings	0–1: 31% 2–3: 54% 4–7: 15%	0–1: 36% 2–3: 37% 4–7: 27%
Age of siblings	1 to 13 years old	1 to 13 years old
Family schooling level	Adults: 48% Complete or incomplete primary school; 38% incomplete secondary school; 14% complete secondary school; Children: 100% of school age children attend school	Adults: 55% complete or incomplete primary school; 38% incomplete secondary school; 7% complete secondary school. Children: 100% of school age children attend school
Child schooling		
Attend kindergarten	79%	81%
Do not attend kindergarten	21%	15%
Parent occupations	Driver, employee in a business, construction worker (bricklayer), worker in a community center, domestic employee	Employee in a business, sales in open air markets, domestic employee, construction worker (bricklayer), seamstress
Family origin		
Argentines	84%	79%
Foreigners	16%	21%

Linguistic and Cognitive Development of Children Living in Poverty’), and compares them with spontaneous interactions that were recorded in the homes of a similar group of 20 children of 4.6 years old (4.3 to 4.11; 11 males and nine females) prior to the design and implementation of the program. This second type of situation is used as a reference against which to compare the characteristics of the lexical surround in the literacy situations.

2.1.1. The children and their families. Both groups of children are from the same population. They live with their families in Buenos Aires in extremely poor communities (*‘villas de emergencia’*). The children and families who participated in the literacy program and whose literacy situations constitute the other corpus analyzed in this work are close neighbors and even family members (for example, cousins) of the children whose spontaneous interactions make up the other corpus.

For the most part, the children’s families were migrants from the north of Argentina or from neighboring countries (Bolivia, Peru, Paraguay). Although all the families spoke Spanish with their children, there were some differences in the varieties of Spanish that they used. The adults had a low level of literacy. Only one of the mothers had completed 12 years of school. The rest had seven or fewer years of schooling (see data in Table 1).

The children’s parents were either unemployed or had low-qualified and unstable occupations that offer no social benefits. It is important to point out that in the homes of these children, there

are neither story books for children nor books or magazines for adults – of the children in the sample, only two had one book (each). The writing materials that they have – pens, pencils, sheets of paper – are very limited. Usually they consist of a few school supplies that belong to the child's older siblings.

2.2. The 'Oscarcito' Early Literacy at Home Program

In light of previous studies, the program considers literacy in broad terms, referring to the integral development of the four uses of language: talking and listening, reading and writing. Independent of modality, written or oral, the literacy process involves the mastery of skills and knowledge that make it possible to recreate the world by means of language (Borzzone et al., 2004). The socio-cultural perspective (Beals and Tabors, 1995; Tharp and Gallimore, 1988, 1991; Vygotsky, 1978; Wells, 1999) emphasizes the importance of teaching new knowledge and vocabulary in exploratory conversations, in which new information is related to children's life experiences, because these verbal interactions create a zone of proximate development which facilitates learning. That is why the program develops literacy materials based on an observational study of the lives of the children in these neighborhoods and adopts the name of a child who lives in those neighborhoods – 'Oscarcito' – to reflect the socio-cultural aspect of the program's conception. The 'ethnographic books' (Borzzone and Rosemberg, 2000; Rosemberg, 2005b) constitute a strategy that attempts to promote this type of conversational environment: they integrate the linguistic forms that the child and family use and information that they likely know, as it is part of their environment, with other knowledge, discursive strategies and vocabulary that are further from their reality.

The 'Oscarcito' program has been implemented with families from four marginalized urban neighborhoods of Buenos Aires since 2006. In 2008 the program reached 400 families. The implementation of the program involves training workshops for families in child linguistic and cognitive development and the use of the intercultural children's books at home.

2.2.1. Development of intercultural children's books to be used in interactive contexts at home. En la Casa de Oscarcito ('At Oscarcito's House') is a series of 12 children's books that reflects the daily lives of the children in the 'villas'. The books take the children's point of view as actors in that reality, their interests, their interactions with objects and people, and the problems that they face in their community. The material reflects the children's culture, their life perspective and linguistic forms that they use, while at the same time giving them access to broader cultural knowledge, to the standard linguistic dialect and to unfamiliar vocabulary. In the context of what happens to 'Oscarcito', the protagonist who is a four-year-old child, and his friends and family, the books introduce a story that is further from the child's reality, and present games and other activities in order to promote the children's learning.

Each book proposes activities that help children develop different literacy abilities. Some activities focus on oral language production, such as telling personal experiences, retelling stories, while others are oriented towards understanding the written system, identifying letters, playing games with sounds to develop phonological awareness, establishing phoneme-grapheme correspondences. Activities such as establishing physical and psychological causal relationships, producing inferences, expanding vocabulary and stimulating the categorizations of objects and actions based on thematic, spatial-temporal, functional and taxonomic criteria, were included to promote language comprehension. All of these activities are designed so that the children can carry them out in the context of interaction with their mother, father, grandparents, and older siblings.

2.2.2. Child linguistic development training workshops for families. Workshops for families of four-to-five-year-old children are organized in community centers and in kindergartens located in the neighborhoods, in which the mother, father, grandparents or an older sibling participate. There are a total of 12 workshops that were between two weeks and one month apart.

Participants attended 12 workshops, in which the families were given one book of the series 'At Oscarcito's House' which is read with them, and the objectives and the instructions of the activities are explained. Each workshop presents an aspect of child development, and the best strategies for promoting that aspect are discussed. The themes addressed in the workshops are: different strategies for reading stories to children, the importance of writing and how to promote it, the importance of poetry and rhymes in the development of phonological awareness, how words are learned, dramatic play and language development, different strategies for scaffolding the production of narratives, descriptions explanations and instructions. The workshops were led by the research assistants who were trained both in literacy and in adult education, so that the content and the strategies used to transmit the content were appropriate for the subjects that participated in the situations.

In 2008, 16 groups of families in four marginalized urban neighborhoods in and around the city of Buenos Aires participated in the workshops.

2.3. Data collection

A research assistant visited the child and his or her family at home and observed the activities and exchanges that involved the book *En la Casa de Oscarcito* ('At Oscarcito's House') the week after the workshop took place. Fifteen four-year-old children whose families participated in the workshops that took place in the four neighborhoods were selected to be visited at home.

The observer took context notes of the situation and also made audio-recordings during the period in which the child and other family members interacted with the children's books, each session lasting about one hour. The literacy situation was said to begin when the child and a member of his/her family or a neighbor focused their attention and verbal or non-verbal interaction on the material – on the stories and/or on the activities – and ended when the participants stopped focusing their attention on the book and centered their interactions on another object or activity for more than 15 minutes. The only indication that the adults and the older children were given was to carry out the reading and the playing situations as if the observer were not present. The observer could respond to comments of the child or the other participants, but did not promote conversations or specific activities.

An array of participants was observed in the situations: mothers, fathers, siblings, grandparents, neighbors and friends. These joint interactions with the child were considered the object of the study, rather than restricting the study only to the interactions with the child's mother, since that would have been a fictitious situation. In fact, in only one of the recorded situations did a child interact only with his mother. The interaction patterns that were observed as the books were being read were the standard interaction patterns of these communities, in which from a very young age, the children are included in networks of relationships that are much larger than the mother-child dyad that is characteristic in middle-class families.

The total number of interactional turns was tallied over the 31 audio-recorded literacy situations. Each time that one of the participants spoke, a new interactional turn (Green et al., 1988, 1991) was identified. The total number of recorded interactional turns was 16,928 (children: 6,387; their interlocutors: 10,541).

As a basis for comparison, a corpus of 78,445 interactional turns (children: 33,549; their interlocutors: 44,896) produced in spontaneous situations of play, hygiene and meal (240 hours recorded) from the same population was considered. The data for these spontaneous situations was recorded in the homes of 20 children of the same age (ages 4.3 to 4.11) from the same neighborhoods before the program was developed and implemented. Each child was observed for 12 hours, distributed over three or four days, in interaction with his/her family members, friends, and neighbors at home. Some situations were also recorded in which the children interacted with these people in another place not far from home. As in the literacy situations, an observer took context notes and made audio recordings of all of the interactions. The observer did not promote conversation or specific activities, but responded to the participants' comments and questions in order to avoid generating a tense atmosphere that would disturb the natural setting.

Both the interactions recorded during literacy situations and the additional data from spontaneous situations were transcribed according to the CHAT format (Code for the Human Analysis of Transcripts) and using the standards stipulated by the CHILDES system (Child Language Data Exchange System), developed by Brian MacWhinney and Catherine Snow (MacWhinney, 1991; MacWhinney and Snow, 1985; Sokolov and Snow, 1994).

2.4. Analysis

All of the interactions were analyzed using the CLAN program (Computerized Language Analysis).⁴ For this study, the program was used to make the following quantitative measurements:

- 1) The total number of word tokens and word types spoken by the child and the other participants. Word tokens are defined as the particular instances or occurrences of all the types in the corpus. Word types are defined as the linguistic units in the corpus representing a defined class;
- 2) The number of turns taken by the interlocutors and by the child.

The following analysis was carried out:

- 1) A comparative analysis was made between the number of word tokens and word types used by the child's interlocutors in the literacy situations and in the spontaneous situations. To make this comparison, a one-hour exchange segment was extracted from the recordings made in spontaneous situations at home for each of the 20 children from the same population. The second hour of the 12 hour recordings was selected, assuming that after that lapse of time the participants had become accustomed to the presence of the observer.
- 2) Two indices were constructed: a) one that analyzes the number of word tokens spoken by the interlocutors in relation to those spoken by the child, and b) another that measures the relation between word types spoken by the interlocutors and those spoken by the child. Both indices are built in order to more specifically consider the lexical input that the child is exposed to in relation to the lexical properties of the infant's talk.
- 3) In order to determine to what extent child's interlocutors introduced 'new words' in the literacy situations, all the words used in these situations were compared to those of the spontaneous situations.
- 4) The 'new words' that were identified (the words that were spoken in the literacy situations and not recorded in the spontaneous situations) were analyzed considering the grammatical class to which they belonged and they were classified as to whether they represented:

- a) Abstract nouns that distinguish between notions that are not observed as physical entities and/or that imply a certain degree of generality, like hyperonyms, such as, injustice, intention, transport, laziness.
- b) Adjectives that express an assessment of permanent or temporary properties which refer to cognitive or emotional aspects that are not directly observable in a person or in a phenomenon, such as clever, attentive, starving, serious.
- c) Verbs in which the actor's intentions are implicit, actions that reflect the internal state of the individual, actions that express influence in interpersonal relationships; attitude verbs; cognitive verbs, verbs of will and emotion. Examples: obtain, avoid, hide, flee.

The data relating to the number of nouns, adjectives and verbs that represent observable or non-observable phenomena recorded in literacy situations was compared to the numbers of those that appear in spontaneous situations.

3. Results

The analysis identifies and describes some of the contributions that the literacy situations made to the lexical surround of the child's home. The lexical input that children receive at home can be described both in terms of the total number of word tokens that the children hear, and in terms of the quality of the input: number of word types and familiarity, level of abstraction, and the complexity of the word types.

Figure 1 presents the data relating to the number of word tokens and the number of word types that the adults and older children produced when interacting with the child in the literacy settings generated by the program. These data were compared with the number of word tokens and word types that a child from the same population heard in spontaneous interaction with adults and older children over a same time period of one hour length.

Figure 1 shows that in the literacy settings, children had the opportunity to hear twice the number of word tokens that they heard in spontaneous interaction situations with their family and neighbors. While in the spontaneous situations the children heard an average of 1,120.79 word tokens per hour, in the at-home literacy situations the average number of word tokens was 2,473 ($t_{(49)} = 4.9, p < .001$); suggesting that there was some difference underlying between the number of words that children hear in the two situations.

Figure 1 also presents the diversity of word types that the children heard in the literacy situations and in the spontaneous interaction situations. There are also important differences between the two types of situations. In fact, the adults and older children that took part in the literacy situations used an average of 541.27 different word types and in the spontaneous interaction situations the average is 328.47 ($t_{(49)} = 5, p < .001$); suggesting that there was some underlying difference between the number of words types that children hear in the two situations.

Two indices were constructed in order to explore the relationship between the characteristics of the adults' speech and the characteristics of the child's speech: one that considers the number of word tokens produced by the child's interlocutors in relation to the number of word tokens the child produced, and the other considers the number of word types that the child's interlocutors produced in relation to those produced by the child. Table 2 presents these two indices computed with the data recorded in the literacy situations and compares them with the indices computed from the data relative to the number of word tokens and the number of word types that a child from this population hears on average in spontaneous interaction situations with adults and older children over a same amount of time.

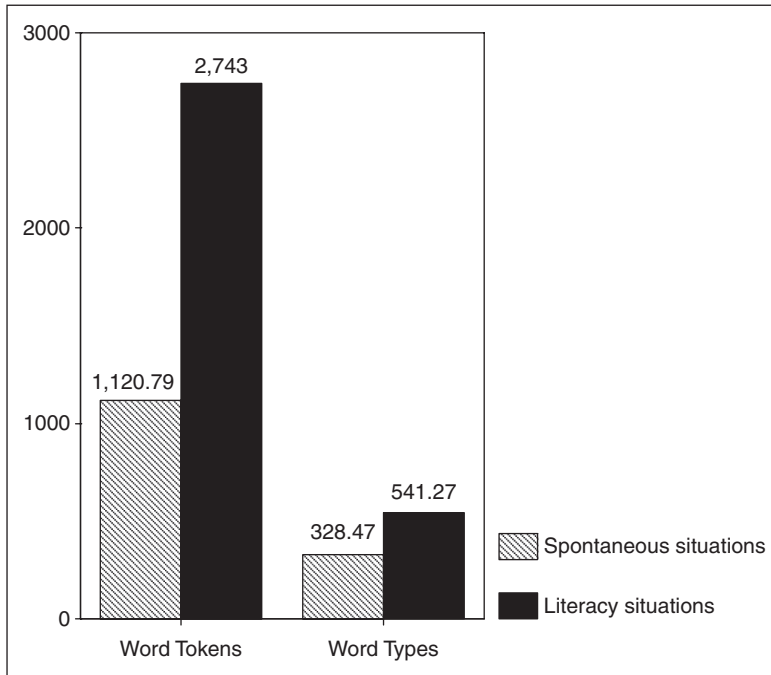


Figure 1. Average number of word tokens and word types per hour, in spontaneous situations and in literacy situations

Table 2. Average number of word tokens and word types produced by adults and older children per each word token and word type produced by the child in an hour, in spontaneous situations and in literacy situations

	Spontaneous situations	Literacy situations
Word tokens produced by adults and older children per each word token produced by the child	2.2	4.7
Word types produced by adults and older children per each word type produced by the child	2	2.9

Results in Table 2 show that in literacy situations, the children's interlocutors produced 4.7 word tokens for every word that the child produced. On the other hand, in spontaneous situations, the participation of the adults and older children that interacted with the child was more limited: they produced 2.2 words for each of the child's words ($t_{(49)} = -2.2, p = .029$); suggesting that there was some underlying difference between the adult word token/child word token ratio of the two situations. These data point to an important difference in the lexical contribution of the environment in relation to the child's language between the literacy situations and the spontaneous situations. In fact, this index reflects a greater asymmetry in the literacy situations, which constitutes the matrix for the child's linguistic development. As for the ratio of the interlocutor word types to child word types, the other participants produced a greater number of word types for each word type that

the child produced in the literacy situations (2.9) than in the spontaneous situations (2.0) but these numbers do not suggest an underlying difference ($t_{(49)} = -1.3, p = .20$).

Nevertheless, to appreciate the contribution that implementing literacy situations at home made to the child's linguistic environment, it is not enough to consider the number of word tokens and the number of word types that characterize the linguistic environment generated in the literacy situation. It is also necessary to ascertain to what extent words that were not frequently used in this population were introduced in the interactions between the participants of the situation, since those words could increase the children's lexical resources and their conceptual world.

In order to determine whether a word was 'common' or familiar to this population of children, the words used by their interlocutors were divided into two categories: the words that did not appear in the 78,445 interactional turns that were recorded in spontaneous situations in the homes of children from the same neighborhoods (437,384 word tokens and 11,689 word types) were considered unfamiliar and probably unknown, and those that appeared in the recordings were considered familiar.

The total number of word tokens and word types spoken by the adults and by the children in the literacy situations was compared to the numbers recorded in the spontaneous interaction situations. The comparison showed that of the 49,335 word tokens spoken in the situations in which the literacy program was implemented at home, 732 were new word tokens, meaning words that were not included in the spontaneous interactions (14.84 per 1,000). When considering the number of word types, the proportion increases: of the 4,021 word types that were present in the literacy situations, 429 were new words (106.7 types per 1,000). One might think that these words were not only uncommon or unknown, but might also be more complex or abstract than the words that the children heard in the course of their daily activities.

To make a more in-depth analysis of the words that appeared in the interactions between adults and older children and young children in the literacy situations but did not appear in the spontaneous situations, the grammatical class to which these word types belong was considered. In the same way, it was considered whether the words represented phenomena, properties of phenomena or actions that can be directly observed or not. These data are presented in Figure 2 and in Table 3 and are compared with the data recorded in spontaneous situations.

Figure 2 shows that of the words types that were observed in the literacy situations and did not appear in the spontaneous situations, 42.4 percent were nouns, 17.7 percent were adjectives and 39.8 percent were verbs. The relative number of each of these classes of words is very different from that recorded in spontaneous interaction situations in the same population (nouns: 31%, adjectives: 11.36%, verbs 57.64%). The statistical analysis suggests an association between these two factors – type of word and type of situation – $\chi^2_{(2)} = 83.54, p < .001$.

In the analysis of these word types that considers whether they represent observable or non-observable phenomena, there were also important differences in the lexical input of the literacy situations, in comparison to the lexical input that the children of these populations usually received.

Table 3 shows that in the literacy situations, 13.2 percent of the 'new' nouns referred to non-physical entities or represented a certain degree of generality, as do hyperonyms, while only 6.67 percent of the nouns recorded in the spontaneous situations fall into that category. The statistical analysis suggests an association between these two factors – type of word and type of situation ($\chi^2_{(1)} = 18.34, p < .001$). In the case of the adjectives that were only used in the literacy situations, the percentage was even greater, with 32.89 percent of them representing either permanent or temporary internal properties of individuals or phenomena that are not observable. On the other hand, in the spontaneous interactions at home, only 20.25 percent of the adjectives fit that characterization; the statistical analysis suggests an association between these two factors – type of word and type of situation ($\chi^2_{(1)} = 10.46, p < .01$). Some 16.37 percent verbs of those that only appear in the

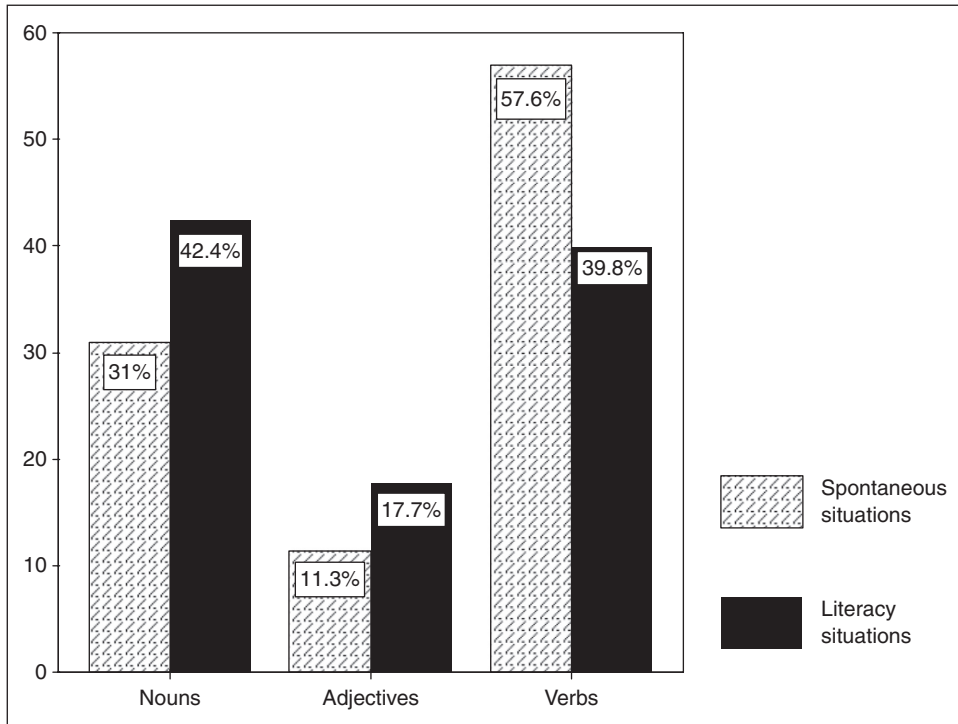


Figure 2. Percentage of nouns, adjectives and verbs, in spontaneous situations and in literacy situations

Table 3. Percentages of word types that represent observable or non-observable phenomena in spontaneous situations and in literacy situations

	Nouns		Adjectives		Verbs	
	Literacy situations	Spontaneous situations	Literacy situations	Spontaneous situations	Literacy situations	Spontaneous situations
Word types that represent observable phenomena	86.8%	93.33%	61.11%	79.75%	83.63%	91.96%
Word types that represent non-observable phenomena	13.2%	6.67%	32.89%	20.25%	16.37%	8.04%
	100%	100%	100%	100%	100%	100%

literacy situations referred to actions which implicitly convey the intention of the actor, the internal states of the individual, the setting up and influence of human relationships; attitude verbs, intellectual perception, will, and feelings. Of the verbs recorded in spontaneous interactions, only 8.04 percent alluded to actions of this type. Once again, the statistical analysis suggests an association between these two factors – type of word and type of situation ($\chi^2_{(1)} = 14.49, p < .01$).

4. Discussion

The results of this study show that the lexical surround of children from urban marginalized populations in Buenos Aires, Argentina in literacy situations generated by a family literacy program is richer than the lexical surround that is typical of their spontaneous play, meal and hygiene situations in which these children usually participate. In fact, it was observed that the characteristics of the lexical input that low-income children were exposed to varied in quality and quantity, depending on whether the setting was spontaneous or literacy situations generated by the 'Oscarcito' literacy program. In the spontaneous settings, word quantity and diversity, as well as the sophistication – complexity and abstraction – of the words that the children heard, were much lower than those recorded in other studies with middle-class samples (Hart and Risley, 1995).

It is worth noting that the number of word tokens in the spontaneous settings is higher than the one reported by Hart and Risley (1995) for three-year-old North American children from poor families: 600 words per hour in average welfare families. As Weizman and Snow (2001) suggested, the difference may be attributed to the fact that in our sample, as in the Weizman and Snow, children were older. On their part, the number of word tokens in spontaneous settings is half of the average number found in the mothers' sample in the Weizman and Snow study (2001).

The difference may be due to the fact that our sample was made up of children who were from more disadvantaged environments and whose mothers had completed, in average, only seven years of school and not twelve as in the Weizman and Snow study (2001). The number of word tokens increased in the literacy settings, reaching similar values to those observed by Weizman and Snow (2001).

In the literacy settings, a significant increase in the number of word tokens, word types and in the word quality was observed, in comparison to the spontaneous settings. In fact, not only the number of words increased, but there were also words that did not appear in the spontaneous settings. Among these new words, there was a greater number of complex words, that is, words that referred to non-observable phenomena. The use of this kind of words in the literacy settings becomes relevant in the light of other studies which identified a strong correlation between vocabulary knowledge and exposure to uncommon and sophisticated words (Dickinson et al., 1993; Weizman and Snow, 2001).

The enrichment of the lexical input observed in the literacy settings may be attributed to different factors. The children's books *En la Casa de Oscarcito* ('At Oscarcito's House') introduced a varied vocabulary and some unfamiliar words, particularly in the story that they contain. The vocabulary of the story is also used in the activities and in the 'retelling' that the children did together with the adults. Many studies have shown that reading stories promotes the development of linguistic and cognitive abilities (Borzzone, 2005; Bus, 2002; De Loache and De Mendoza, 1987; Ninio and Bruner, 1978; Sulzby and Teale, 1987; Whitehurst and Valdez-Menchaca, 1992).

The quantitative and qualitative improvement of the lexical surround in literacy settings could also be attributed to the fact that a member of the child's family or a close person took part in an intensive series of workshops in which the books were presented, or to some aspect of child linguistic development was discussed with the families and related to the difficulties they had with the materials. This study leaves questions open for future experimental studies that could determine the relative effect of the workshops with parents and the effects of the literacy materials, as well as the effects that each has on the children's receptive and productive vocabulary.

It has been reported that some intervention programs that focus on parents have moderate effects on child vocabulary development, depending on their duration and intensity (Britto et al., 2006). Although the present study does not measure the program's impact on the children's vocabulary development, the empirical evidence that this study provides about the increase of the quantity and

quality of the vocabulary in the children's surround is in itself relevant when considered in the light of studies mentioned above (Hart and Risley, 1995; Weizman and Snow, 2001), as they demonstrate the relationship between the quality and quantity of vocabulary that children hear with their knowledge of vocabulary.

With respect to the proportion of words that the adults and older children used in relation to the quantity and diversity of words produced by the young children, a difference was observed between the spontaneous settings and the literacy settings. The ratio of adult word tokens to child word tokens is significantly greater in the literacy situations. Although the ratio of adult word types to child word types was greater in the literacy situations, that difference turned out to be less important. Teaching and learning processes require a certain degree of asymmetry between the adult and the child (Rosemberg and Borzone, 2001, 2004; Pianta, 2006), but also require a certain amount of redundancy (repetition) of the words used by the adult, which allows the child to focus on new words and interpret their meaning (Tomasello, 2003, 2008). It may be assumed that these aspects that characterize literacy situations strengthen them as a matrix of teaching and learning processes.

The instructional aspect that the literacy situations seem to assume may account for the higher proportion of nouns within the new words identified in these situations. The greater use of nouns indicates that naming is the predominant function of the utterances in the literacy situations. This use of language is typical of early linguistic development, when adults introduce names of entities to provide categories for the children, so that they can share and give linguistic forms to their perceptions of the world (Nelson, 1996).

In interaction situations that involve the youngest children, adult and older child utterances are particularly relevant when they reformulate, explain and expand the meanings of the new words that refer to abstract phenomena, general categories, properties that are not directly observable, and cognitive verbs or verbs of will and emotion (Bodin and Snow, 1994; Callanan, 1985; Dunn et al., 1987; Waxman and Hatch, 1992; Weizman and Snow, 2001). That is why we are currently studying the strategies that adults and older children use when they introduce these kinds of words in the same literacy situations.

The results of this study corroborate other works (Britto et al., 2006; Snow, 2006), showing that it is possible to improve literacy practices of very impoverished families in ways that improve the opportunities offered by the children's surround to develop the literacy skills and knowledge that are requisites in for pedagogical practices of schools.

In fact, a large and sophisticated vocabulary provides high-quality lexical representations, that is, detailed knowledge about word form and meaning. This knowledge contributes to the increase and the stability of the relationships between the orthographic, phonological, semantic and morpho-syntactic identities of the lexical representations. These relationships facilitate lexical access during the processing of written texts (Perfetti, 2007). They also contribute to the establishment of conceptual relationships between lexical items that improve text comprehension (Bast and Reitsma, 1998; Sénéchal et al., 2006) and may constitute the link between these two levels of reading skills (Protopapas et al., 2007). Early intervention programs that improve the lexical input to the child may be a way to shorten the linguistic and cognitive development gap that separates children from different socioeconomic backgrounds.

Notes

1. These '*villas de emergencia*' are characterized by precarious housing, which has mostly been built from wood and salvaged materials, and insufficient or inexistent infrastructure services. Although most of the neighborhoods have drinkable water connections, they all lack sewer and natural gas lines. In many cases they are electrified with clandestine connections to the grid, since the inhabitants do not have the resources

- to pay for the service. The neighborhood is accessed by narrow dirt- or cement-floored corridors. In the city of Buenos Aires, 116,000 people live in ‘*villas de emergencia*’ and in the outskirts of the city, another 1,114,500 people live in these conditions (*source*: Statistics of the City Government of Buenos Aires).
2. Destitution line: establishes whether a household has sufficient income to cover basic nutrition, satisfying minimum calorie and protein needs. Households that are not able to meet these needs are considered destitute.
 3. <http://www.pisa.oecd.org>.
 4. The CLAN program (Computerized Language Analysis) was specially designed to codify and quantitatively analyze transcribed child language. It allows processing such as: calculating the variety of vocabulary and the mean length of utterances (MLU), searching for words, identifying co-occurrence of words and phrases, and morpho-syntactic analysis, among other things. The Child Language Data Exchange System was written by Leonoid Spektor at Carnegie Mellon University (<http://childes.psy.cmu.edu/>).

References

- Bast J, Reitsma P (1998) Analyzing the development of individual differences in terms of Mathew effect in reading: Results from a Dutch longitudinal study. *Developmental Psychology* 34(6): 1373–1399.
- Beals DB (2001) Eating and reading: Links between family conversations with preschoolers and later language and literacy. In: Dickinson DK, Tabors PO (eds) *Beginning Literacy with Language: Young Children Learning at Home and School*. Baltimore, MD: Brookes, 75–92.
- Beals DB, Tabors PO (1995) Arboretum, bureaucratic and carbohydrates; Preschoolers’ exposure to rare vocabulary at home. *First Language* 18: 57–76.
- Biemiller A (2003) Using stories to promote vocabulary. Paper presented at the symposium on Fostering Early Narrative Competency: Innovations in Instruction, International Reading Association, Orlando, FL.
- Biemiller A (2006) Vocabulary development and instruction: A prerequisite for schooling learning. In: Dickinson DK, Neuman SB (eds) *Handbook of Early Literacy Research, Vol. 2*. New York: The Guilford Press, 41–51.
- Biemiller, A. & Boote, C. (2006). An Effective Method for Building Vocabulary in Primary Grades. *Journal of Educational Psychology*, 98 (1), 44–62.
- Bodin L, Snow CE (1994) What kind of a birdie is this? Learning to use superordinates. In: Sokolov JL, Snow CE (eds) *Handbook of Research in Language Development Using CHILDES*. Hillsdale, NJ: Lawrence Erlbaum Associates, 77–109.
- Borzzone AM (2005) La lectura de cuentos en el jardín infantil: un medio para el desarrollo de estrategias cognitivas y lingüísticas [Story book reading in the kindergarten: A means to the development of linguistic and cognitive strategies]. *Psyche* 14(1): 193–207.
- Borzzone AM, Rosemberg CR (2000) *Leer y escribir entre dos culturas. El caso de las comunidades collas* [Reading and Writing within Two Cultures]. Buenos Aires: Aique.
- Borzzone AM, Rosemberg CR, Diuk B, Silvestri A, and Plana D (2004) *Niños y maestros por el camino de la alfabetización* [Children and Teachers through the Literacy Path]. Buenos Aires: Red de Apoyo Escolar.
- Borzzone de Manrique AM (1997) *Leer y escribir a los 5* [Reading and Writing at 5 Years Old]. Buenos Aires: Aique.
- Borzzone de Manrique AM, Rosemberg CR (2000) Culturas orales y alfabetización. Un desafío para la escuela [Oral cultures and literacy. A challenge for the school]. *Lectura y vida* 2: 18–25.
- Britto PR, Fuligni AS, and Brooks-Gunn J (2006) Reading ahead: Effective interventions for young children’s early literacy development. In: Dickinson DK, Neuman SB (eds) *Handbook of Early Literacy Research, Vol. 2*. New York: The Guilford Press, 311–332.
- Bus AG (2002) Joint caregiver-child storybook reading: A route to literacy development. In: Neuman SB, Dickinson DK (eds) *Handbook of Early Literacy Research*. New York: The Guilford Press, 179–191.

- Callanan M (1985) How parents label objects for young children: The role of input in the acquisition of categories hierarchies. *Child Development* 56: 508–523.
- Danis A, Bernard JM, and Leproux C (2000) Shared picture-book reading: A sequential analysis of adult–child verbal interactions. *British Journal of Developmental Psychology* 18: 369–388.
- De Loache JSL, De Mendoza OAP (1987) Joint picturebook interactions of mother and 1 year old children. *British Journal of Developmental Psychology* 5: 111–123.
- Dickinson DK, Cote L, and Smith MW (1993) Learning vocabulary in preschool: Social and discourse contexts affecting vocabulary growth. In: Daiute C (ed.) *The Development of Literacy through Social Interaction. New Directions for Child Development* 61. San Francisco, CA: Jossey-Bass, 67–78.
- Dickinson DK, McCabe A, and Essex M (2006) A window of opportunity we must open to all: The case for preschool with high-quality support for language and literacy. In: Dickinson DK, Neuman SB (eds) *Handbook of Early Literacy Research, Vol. 2*. New York: The Guilford Press, 11–28.
- Diuk B, Borzone AM, and Rosemberg CR (2000) El fracaso escolar entre los niños de sectores pobres: una alternativa pedagógica intercultural [School failure within low-income children: An intercultural pedagogical alternative]. *Revista Cultura y Educación* 11: 311–324.
- Dunn J, Bretherton I, and Munn P (1987) Conversations about feeling states between mothers and their young children. *Developmental Psychology* 23: 132–139.
- Dunn LM, Dunn LM (1981) *Peabody Picture Vocabulary Test, Revised*. Circle Pines, MN: American Guidance Service.
- Goswami U (2002) Early phonological development and the acquisition of literacy. In: Dickinson DK, Neuman SB (eds) *Handbook of Early Literacy Research*. New York: Guilford Press, 111–125.
- Green J, Kantor R, and Rogers T (1991) Exploring the complexity of language and learning in classroom contexts. In: Jones B, Idol L (eds) *Educational Values and Cognitive Instruction: Implications for Reform*. Hillsdale, NJ: Erlbaum.
- Green J, Weade R, and Graham K (1988) Lesson construction and student participation: A sociolinguistic analysis. In: Green J, Harke JO (ed.) *Multiple Perspective Analysis of Classroom Discourse*. Norwood, NJ: Ablex Publishing Corporation, 11–47.
- Hart B, Risley T (1995) *Meaningful Differences in the Everyday Lives of American Children*. Baltimore, MD: Brookes.
- INDEC (2006) National Institute of Statistics and Census, Permanent Home Survey, June, Argentina.
- Joshi RM (2005) Vocabulary: A critical component of comprehension. *Reading & Writing Quarterly* 21: 209–219.
- MacWhinney B (1991) *The CHILDES Project: Computational Tools for Analyzing Talk*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- MacWhinney B, Snow CE (1985) The child language data exchange system. *Journal of Child Language* 12: 271–295.
- Nelson K (1996) *Language in Cognitive Development: The Emergence of the Mediated Mind*. New York: Cambridge University Press.
- Neuman SB (2006) The knowledge gap: Implications for early education. In: Dickinson DK, Neuman SB (eds) *Handbook of Early Literacy Research, Vol. 2*. New York: The Guilford Press, 29–40.
- Ninio A, Bruner J (1978) The achievement and antecedents of labelling. *Journal of Child Language* 5: 1–15.
- Perfetti C (2007) Reading ability: Lexical quality to comprehension. *Scientific Studies of Reading* 11(4): 357–383.
- Pianta RC (2006) Teacher-child relationships and early literacy. In: Dickinson DK, Neuman SB (eds) *Handbook of Early Literacy Research, Vol. 2*. New York: The Guilford Press, 149–162.
- Protopapas A, Sideridis GD, Mouzaki A, and Simos PG (2007) Development of lexical mediation in the relation between reading comprehension and word reading skills in Greek. *Scientific Studies of Reading* 11(3): 165–197.

- Rosemberg CR (2005a) Investigación y promoción del desarrollo lingüístico y cognitivo infantil en contextos de pobreza extrema. Un proyecto en barrios urbano- marginales de conurbano de Buenos Aires, Argentina [Research and children linguistic and cognitive development in extremely poor environments. A Project in poor urban neighborhoods of Buenos Aires, Argentina]. Paper presented at the Conference of Education and Human Development, Universidad de Alcalá de Henares, España.
- Rosemberg CR (2005b) Los libros de lectura etnográficos en la enseñanza de la lectura: Una estrategia para recuperar la mirada de niños de grupos culturales minoritarios [Ethnographic storybooks in the teaching of reading abilities. A strategy to reflect the view of children from minority groups]. Paper presented at the International Reading Association Symposium, San Antonio, EEUU.
- Rosemberg C, Borzone AM, and Diuk B (2003) El diálogo intercultural en el aula: un análisis de la interacción en situaciones de enseñanza con niños de poblaciones suburbanas pobres [The intercultural dialogue in the classroom: An analysis of the interaction in teaching situations with poor sub-urban population]. *Cultura y Educación* 15(4): 339–423.
- Rosemberg CR, Borzone AM (2001) La enseñanza a través del discurso: estrategias de contextualización y descontextualización de significados [Teaching through discourse: Contextualization and decontextualization of meaning strategies]. *Cultura y Educación* 13(4): 407–424.
- Rosemberg CR, Borzone AM (2004) Del jardín de infantes a la escuela primaria ¿Continuidad o ruptura en las matrices interactivas de la enseñanza y aprendizaje? [From the kindergarten to the primary school. Continuity or rupture within the interactional matrices of teaching and learning?]. *Revista Infancia y Aprendizaje* 27: 211–246.
- Rosemberg CR, Stein A, and Terry M (2007) Contextos de crianza y desarrollo lingüístico y cognitivo en barrios urbano marginados de Buenos Aires, Argentina. Presented at the XXXI Congreso Interamericano de Psicología – Por la integración de las Américas, México.
- Sénéchal M, Oulette G, and Rodney D (2006) The misunderstood giant: On the predictive role of early vocabulary to future reading. In: Dickinson DK, Neuman SB (eds) *Handbook of Early Literacy Research, Vol. 2*. New York: The Guilford Press, 173–182.
- Snow CE (2006) What counts as literacy in early childhood? In: McCartney K, Phillips D (eds) *Handbook of Early Child Development*. Oxford: Blackwell, 274–294.
- Snow CE, Dickinson DK, and Tabors PO (1989) The home-school study of language and literacy development. Available at: <http://gseweb.harvard.edu/~pild/homeschoolstudy.htm> (accessed 21 December 2007).
- Snow CE, Tabors PO, Nicholson PA, and Kurland BF (1995) SHELL: Oral language and early literacy skills in kindergarten and first-grade children. *Journal of Research in Childhood Education* 10: 37–48.
- Sokolov JL, Snow C (ed.) (1994) *Handbook of Research in Language Development Using CHILDES*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Stanovich KE (1992) Speculations on the causes and consequences of individual differences in early reading acquisition. In: Gough PB, Ehri LC, Treiman R (eds) *Reading Acquisition*. Hillsdale, NJ: Lawrence Erlbaum Associates, 307–342.
- Stein A, Rosemberg CR (2007) La interacción en torno a la escritura en hogares de niños de barrios urbano marginados de Buenos Aires. Presented at the III Coloquio Argentino de la IADA, La Plata, Argentina, 28–30 May.
- Sulzby E, Teale WH (1987) *Young Children's Storybook Reading: Longitudinal Study of Parent-Child Interaction and Children's Independent Functioning (Final Report for the Spencer Foundation)*. Ann Arbor: University of Michigan.
- Tharp RG, Gallimore R (1988) *Rousing Minds to Life: Teaching, Learning and Schooling in Social Context*. New York: Cambridge University Press.
- Tharp, R.G. & Gallimore, R. (1991). "The instructional conversation: Teaching and learning in social activity." Washington, DC: National Center for Research on Cultural Diversity and Second Language Learning.

- Tomasello M (2003) *Constructing a Language: A Usage-Based Theory of Language Acquisition*. Cambridge, MA: Harvard University Press.
- Tomasello M (2008) The roles of prototype constructions in early language development. Presented at the Language, Communication and Cognition International Conference, University of Brighton, Brighton, 4–7 August.
- Vygotsky L (1978) *El desarrollo de los procesos psicológicos superiores* [The Development Higher Psychological Processes]. México: Grijalbo.
- Waxman S, Hatch T (1992) Beyond the basics: Preschool children label objects flexibly at multiple hierarchical levels. *Journal of Child Language* 19: 153–166.
- Weizman ZO, Snow C (2001) Lexical input as related to children's vocabulary acquisition: Effects of sophisticated exposure and support for meaning. *Developmental Psychology* 17: 265–279.
- Wells CG (1985) *Language Development in the Preschool Years*. New York: Cambridge University Press.
- Wells G (1999) *Learning and Teaching 'Scientific Concepts': Vygotsky's Ideas Revisited*. Available at: <http://www.oise.utoronto.ca/~gwells/scient.concepts.txt>.
- Whitehurst GJ, Lonigan CJ (1998) Child development and emergent literacy. *Child Development* 69(3): 848–872.
- Whitehurst GJ, Valdez-Menchaca MC (1992) Accelerating language development through picture book reading: A systematic extension to Mexican day care. *Developmental Psychology* 28(6): 1106–1114.