

Research Article

Lexical, Morphological, and Syntactic Characteristics of Verbs in the Spontaneous Production of Italian Children

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Received 7 June 2011; Revised 17 November 2011; Accepted 5 December 2011

Academic Editor: Johanna G. Barry

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This study investigates from a developmental point of view the lexical, morphological, and syntactic characteristics of verb production during the first stages of language acquisition. The spontaneous productions of children with different mean length of utterance (MLU) were analysed, examining the relative production of different types of verbs (transitive, intransitive, and mixed), the arguments expressed or omitted in the utterances containing a verb, the morphological inflections produced by the children for each verb, and the generalisation of the syntactic construction with which specific verbs were produced. Data are interpreted in support of the hypothesis that children have a limited abstract knowledge of verbs in the early period of multiword utterance production and that the process of abstractness and generalisation develops gradually on the basis of linguistic experience.

1. Introduction

Verbs are not present in the first linguistic utterances of children acquiring various languages, and reference to actions or status is very often performed by means of adverbial phrases. Verbs enter into children's lexicon when the size of their vocabulary is quite large [1–3] and it is well established that the mechanisms by which verbs are learned are more complicated and unclear than the mechanisms by which nouns are learned. On the other hand, the role of verbs is crucial in the development of syntax because verbs are required for children to begin to speak about who does something to whom, where, and when (i.e., sentences are constructed explicating the argument structure of verbs) [4]. But what knowledge do children possess about verbs when they begin to use them? The debate on this question has opposed the nativist approach [5, 6], which conceptualises children's linguistic knowledge as relating to large abstract categories, assuming that the linguistic units to which syntactic rules apply (e.g., verbs) are more abstract than those involved in the final utterance (i.e., the specific word describing, e.g., a particular action). At the other extreme are theories claiming that children's syntactic knowledge, in the early phase of

language development, is verb specific (or item specific) and that no knowledge is transferred from one verb to another or from one pattern to another. These include the theories of Tomasello, Lieven, Pine, and their associates [7, 8]. In this theoretical approach, the abstract category “verb” emerges by means of a process of generalisations and abstraction after the acquisition of many different specific verbs and the experience with their argument characteristics (see also [9] for a demonstration of the emergence of verb category by means of a process of self-organisation in neural networks).

A challenge to theories that posit an early abstract knowledge of the nature of verbs is the fact that the syntactic structure of early multiword utterances containing verbs is very primitive in children worldwide. As a solution for this contradiction, Valian [6] proposed that children in the very first stage of language acquisition linguistically express less than what they have in their minds. This argument was also adopted in the first systematic studies of single-word utterances, which hypothesised that the communicative meaning behind a child's single-word utterance is more complex than the naming of an object and can be recognised through its extralinguistic context (see, e.g., [10]). Valian [6] proposed that even if children's linguistic competence

was complete from the very beginning of their life, the length of the utterances they can produce is restricted by limited processing capacities (“performance limitation” [PL] hypothesis). A contrasting hypothesis states that what appears in early verbal productions is children’s knowledge about language structures at that time (“competence limitation” [CL] hypothesis). This last hypothesis is at the core of the theories of language acquisition that are based on the constructivist approach to development [4, 11].

Information regarding the most omitted elements in early sentences is crucial to this debate. The PL hypothesis assumes that children tend to avoid producing ungrammatical utterances even in the early stages of language development. On the other hand, the CL hypothesis states that children’s early knowledge of syntax is tied to individual lexical items rather than abstract knowledge of grammar and that children develop verb-argument structure initially around individual verbs and individual frames, operating without abstract categories or abstract representation of the transitive and intransitive verb frames [7, 12].

Studies interested in early syntactic development have primarily focused on the following two topics: subject and object omission, in particular, comparing acquisition in pro-drop and non-pro-drop languages.

2. Subject Production

Children’s use of subject noun phrases is particularly suited for obtaining information about the nature of the elements that are omitted in early sentences, and, in particular, comparing languages that require an overt subject in tensed clauses (e.g., English) with languages that allow null subject (e.g., Italian).

In English, of the following phrases, (1) is grammatical while (2) is not allowed:

- (1) I am a good kid,
- (2) *Am a good kid.

In contrast, in Italian, both (3) and (4) are allowed:

- (3) *Io sono bravo tato* [I am good kid],
- (4) *Sono bravo tato* [(I) am good kid].

Few studies have evaluated subject use in children, particularly in regard to null subject languages. With regard to Italian language, Valian [6] compared spontaneous speech produced by American English- and Italian-speaking children. The results showed marked differences between American children (ranging in age from 1.10 to 2.08 years and in mean length of utterance (MLU) from 1.53 and 4.38), who expressed subjects in a percentage varying from almost 70% (in the youngest group) to 96% of the utterances they produced, and five Italian children, who included subjects in approximately 30% of their utterances that contained a verb. These data were interpreted as a confirmation of young American children’s knowledge that their language requires subjects.

Although Valian’s work [6] did not contain information about MLU of the Italian sample, other data [13] confirm

that Italian children’s subject use in the second and third year of life is rare, with an increase in subject use as a function of MLU (from 9% to 24.5% of spoken utterances).

Rizzi [14] also discussed extensively subject omission in the early phase of language acquisition, within the perspective of the Principle and Parameters model of Universal Grammar. His conclusions, based on examples of spontaneous productions of children, acquiring different languages, were that early subject drops even in nonnull subject languages and this phenomenon appears to be a sort of developmental universal. While the analysis of the productions of children acquiring nonnull subject languages is extremely relevant to the question of how and when the null subject parameter is correctly fixed, data about omissions of subjects in Italian children are not conclusive with regard to this debate. In Italian children, in fact, it is difficult to distinguish between the possibility that young children have correctly parameterised their native language as a null-subject language and the possibility that they are able to extract information about adults’ use of subjects and to conform to them. Some useful information, however, can be obtained from the analysis of the expression of subjects with different types of verbs. According to the theory of full competence from the very beginning, when Italian children’s language is limited to two-word utterances, they should prefer to use subjects with intransitive verbs (for which no obligatory argument is required) than with transitive verbs (for which the direct object expression is necessary to produce grammatical correct sentences). In the study of Lorusso et al. [13], Italian children more frequently expressed the subject with unaccusative verbs (in linguistics, an unaccusative verb is an intransitive verb whose syntactic subject is not a semantic agent), rather than with transitive and unergative verbs (an unergative verb is an intransitive verb distinguished semantically by having an agent subject). Their analysis of subject position in relationship to the different classes of verb, suggested a preference for the preverbal position with transitive and unergative verbs. These authors interpreted these results as evidence of children’s sensitivity to different characteristics of verbs, but the generalizability of these last results is questionable due to the fact that no information is supplied on the number of sentences on which these results are based.

Serratrice [15] compared the PL hypothesis against a theory based on pragmatic factors by analysing the morphological cases in which Italian children omitted or expressed the subjects of their sentences. In the Italian language, all person/number combinations are unambiguously identified by the verb ending. Therefore, in the present indicative paradigm, a PL account should predict that children will omit third person subjects more frequently than first or second person subjects, as “from a processing point of view, third person subjects are more demanding, because they tend to be longer and structurally more complex than a monosyllabic first or second person pronoun” [15, p. 443]. Serratrice’s alternative account was based on the assumption that children acquiring Italian are sensitive to the pragmatics of the distribution of null and overt subjects in their language, and that uninformative referents

TABLE 1: Characteristics of Group 1 and Group 2.

	Group 1	Group 2
MLUw-mean (range)	1.79 (1.50–1.97)	2.37 (2.03–2.98)
Age	2; 03.04 (1; 11.24–3; 00.14)	2; 05.17 (1; 11.27–3; 00.16)
Gender		
Females	10	11
Males	14	10
Mother's education*		
18 years of education	10	9
13 years of education	9	9
8 years of education	5	3

*18 years of education correspond to graduate school, 13 years of education correspond to high school, and 8 years of education correspond to elementary and junior school.

TABLE 2: The transcribed corpora-raw data.

	Total	Group 1	Group 2
Utterances	11965	6372	5593
Prelinguistic utterances	2782	1623	1159
Linguistic utterances	9183	4749	4434
Utterances with verb	3653	1569	2084
(i) Verbs in single word	717	402	315
(ii) Verbs in words combination	1506	607	899
(iii) Copulas	1196	521	675
(iv) Complex utterances	234	39	195

would be significantly associated with null subjects and informative referents would be significantly associated with overt subjects. The highest informativeness value of the overt expression of a third person subject, compared with that of first or second person subjects, was supported by her analysis of the overt expression of subjects in the spontaneous production of six Italian children who were observed at different stages of linguistic development.

Results of these few studies focusing on Italian subject omission cannot be considered conclusive because they include a small number of participants and analysable sentences or do not permit comparisons across studies (even from a cross-linguistic point of view) because groups are formed on the basis of different characteristics (vocabulary size, age, or MLU).

3. Direct Object Production

According to Valian [6], at the beginning of the process of language acquisition, children should prefer to use intransitive verbs, which can be used grammatically in one-word utterances, over transitive verbs, with which the omission of the direct object produces ungrammatical utterances. Moreover, when using transitive verbs, children should complete their argument structure with their obligatory direct object. Valian's data [6] confirmed the prediction as when MLU increased, the proportion of intransitive verbs decreased. Furthermore, the production of a direct object

with transitive verbs was very large, even in the youngest group (93%). The author concluded that children typically do not use a verb unless they know how it subcategorises with respect to objects and commit relatively few errors in omitting an object with a pure transitive verb.

Theakston et al. [12], responding to Valian's study [6], found that the production of a great deal of direct object arguments with transitive verbs varied significantly from child to child, suggesting that not all children operate at an abstract level of language competence (see also [16], for a lower percentage of direct object provision compared to that found in [6]). Moreover, they highlighted that Valian's data [6] did not contain information regarding the number of different transitive verbs with which direct objects were expressed. To demonstrate the generalisation process of the abstract argument structure of transitive verbs, knowledge of the number of different verbs for which this occurs is necessary. It is possible that the direct object provision is related only to specific verbs that are frequently used by children, which would support the hypothesis that children operate on the basis of a more limited-scope knowledge of argument structure related to individual verbs [12] (see also [7]).

Moreover, in a recent longitudinal study by McClure et al. [17], the authors offered strong evidence that first verbs rarely appeared with more than one argument, a result consistent with the Verb Island Hypothesis. Furthermore, McClure et al. [17] found that the verbs that are learned in an early stage of language development are produced in the following period in more complex structures than newly acquired verbs.

In light of this debate, it is interesting to investigate whether Italian children use the obligatory direct object more frequently than English children: English children must use subject and direct object when producing transitive verbs in order to make grammatically correct sentences, while Italian children are allowed to express only direct objects with transitive verbs, in so far the use of subjects is not necessarily required. When they are able to produce only two-word combinations, according to the PL hypothesis, they should prefer to use direct objects rather than optional subjects with transitive verbs. Research on object production in Italian children have focused only on object clitic omission, and

TABLE 3: General characteristics of Group 1 and Group 2 verbal productions.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
Number of linguistic utterances (single-word + multiword utterances)	24	198	83.71	21	211	59.15	43	204	.275
% of utterances with verb*	24	32	8.79	21	46	9.70	43	75	.001
% of simple utterances*	24	97.56	3.44	21	90.29	7.04	43	79.5	.001
% of complex utterances*	13	2.44	3.44	20	9.71	7.04	31	79.5	.001
Number of multiword utterances	24	60	40.96	21	96	35.14	43	76	.001
% of verbs in multiword utterances ^o	24	73.79	7.85	21	84.93	7.59	43	70	.001

*The percentage was calculated on the total linguistic utterances produced by children. ^oThe percentage was calculated on total of verbs produced by children.

TABLE 4: Mean number of roots and tokens produced by Group 1 and Group 2.

	Group 1				Group 2				df	U	P
	Number of children	Mean	(total)	s.d.	Number of children	Mean	(total)	s.d.			
Mean number of roots	24	20	(484)	6	21	27	(568)	8	43	113	.001
Mean number of tokens	24	45	(1077)	20	21	76	(1586)	34	43	104	.001

TABLE 5: Mean percentage of transitive, intransitive, and mixed verbs produced by Group 1 and Group 2.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
Stems									
Transitive	24	58.03	10.40	21	57.90	7.29	43	249	.946
Intransitive	24	28.39	11.18	21	28.50	9.77	43	231	.632
Mixed	21	13.56	7.82	21	13.59	5.98	40	245	.873
Tokens									
Transitive	24	64.40	12.97	21	62.20	11.14	43	215	.400
Intransitive	24	23.41	14.19	21	25.40	8.55	43	193	.179
Mixed	21	12.18	8.24	21	12.39	7.26	40	243.5	.847

TABLE 6: Mean percentage of verbs produced in single-word utterances by Group 1 and Group 2.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
Transitive	24	31.62	14.77	21	18.97	12.03	43	120.5	.003
Intransitive	22	36.47	16.97	19	24.48	18.04	39	159.5	.034
Mixed	20	61.50	28.68	19	42.72	34.08	37	126	.017

TABLE 7: Mean percentage of subject produced with transitive, intransitive, and mixed verbs by Group 1 and Group 2 (percentages were calculated out of specific verbs).

	Group 1			Group 2		
	Number of children	Mean	s.d.	Number of children	Mean	s.d.
Expression of subject	24	32.12		21	35.62	
(i) Transitive	20	30.03	22.53	19	33.21	19.35
(ii) Intransitive	23	45.37	25.53	20	43.65	24.07
(iii) Unaccusative	21	41.69	24.68	20	43.10	23.39
(iv) Unergative	9	34.02	39.94	11	40.46	33.32
(v) Mixed	10	20.63	25.56	15	31.33	30.48

TABLE 8: Mean percentage of pre- and postverbal production of subject with transitive, unaccusative, and unergative verbs by Group 1 and Group 2.

	Group 1			Group 2		
	Number of children	Mean	s.d.	Number of children	Mean	s.d.
<i>Transitive</i>						
(i) Preverbal	21	59.73	36.21	19	63.23	27.52
(ii) Postverbal	21	40.27	36.21	19	36.77	27.52
<i>Unaccusative</i>						
(i) Preverbal	21	57.76	43.73	20	55.10	33.50
(ii) Postverbal	21	42.24	43.73	20	44.90	33.50
<i>Unergative</i>						
(i) Preverbal	9	38.89	48.59	9	68.11	43.76
(ii) Postverbal	9	61.11	48.59	9	31.89	43.76

TABLE 9: Mean percentage of different words used to express subject and person/number of expressed subject by Group 1 and Group 2.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
Noun	23	44	26.55	18	38	25.19	39	227	.566
Pronoun	18	25	16.77	15	29	26.80	31	225	.532
Personal pronoun	19	31	21.06	17	32	19.89	34	232	.647
1st singular	18	75	33.90	15	64	33.99	31	130.5	.208
2nd singular	9	25	33.90	10	23	28.49	17	161	.770
3rd singular	0	0	0	4	12	27.04	3	130	.024
3rd plural	0	0	0	1	1	2.20	0	160	.278

TABLE 10: Mean percentage of direct object produced with transitive and mixed verbs by Group 1 and Group 2 (percentages were calculated out of specific verbs).

	Group 1			Group 2		
	Number of children	Mean	s.d.	Number of children	Mean	s.d.
Expression of direct object*	24	45.59		21	61.76	
(i) Transitive	24	50.22	15.99	21	68.17	17.41
(ii) Mixed	13	27.83	31.91	16	34.92	27.45

*Overt pronoun was counted as expression of direct object.

TABLE 11: Mean percentage of different ways used by Group 1 and Group 2 to express direct object.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
Clitic	21	28	21.49	23	34	14.65	42	237.5	.741
Noun	24	49	19.30	21	51	13.49	43	193.5	.182
Pronoun	20	23	16.88	18	16	11.29	36	189.5	.155

TABLE 12: Mean percentage of indirect object produced with transitive, intransitive, and mixed verbs by Group 1 and Group 2 (percentages were calculated out of specific verbs).

	Group 1			Group 2		
	Number of children	Mean	s.d.	Number of children	Mean	s.d.
Expression of indirect object	24	24.26		21	35.18	
(i) Transitive	23	21.90	12.31	21	31.64	10.11
(ii) Intransitive	23	36.76	16.24	21	49.12	20.93
(iii) Mixed	10	13.78	17.43	15	24.86	23.39

TABLE 13: Mean percentage of different words used by Group 1 and Group 2 to express indirect object.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
Adjective	4	2	3.93	5	2	3.80	7	239	.672
Adverbs	24	71	15.32	21	66	18.57	43	213	.375
Noun	17	15	13.50	19	18	11.51	34	208	.315
Pronoun	16	13	11.76	18	14	11.89	32	232	.647

TABLE 14: Mean percentage of indirect object produced by Group 1 and Group 2.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
Place	21	52	27.99	21	56	20.44	40	242	.820
Mood	12	13	23.12	17	13	10.75	27	191	.156
Time	16	15	15.11	15	12	10.94	29	231.5	.636
Dative	12	11	14.59	15	11	9.90	25	222.5	.488
Others	9	9	14.10	12	8	7.78	19	226.5	.529

only with elicited tasks, while no general analysis about the production of direct objects has been conducted. The research has suggested that object clitic is omitted until approximately the age of 2.4 years [18].

Finally, no data are available concerning the expression of indirect objects. In this case, the analysis of their use in transitive frames would provide useful information about the knowledge children have of the differing nature of transitive and intransitive verbs.

4. Acquisition of Verb Morphology

The acquisition of verb morphology by Italian children has been compared to that of English children in order to support a parameter setting or, more generally, a nativist account of language development. Hyams [19, 20] proposed a parameterised account of the acquisition of inflectional morphology, hypothesising the existence of a “stem-parameter,” that is, a verbal stem does or does not constitute a well-formed word. Some languages (i.e., English) have a positive value on this parameter, because verbs can surface as bare stems (e.g., in English, a bare stem is used in most regular present tense verb conjugations, only the third person singular is formed by adding a marked inflection “+s” to the bare verb stem). In Italian, the parameter takes on the opposite value, because verbs cannot surface as bare stems. For example, all tensed verbs require a suffix marking one of six possible person/number combinations. Hyams used the notions of “core” versus “peripheral” grammars and proposed that verb inflections are linguistically specified as a “core property” of a language like Italian, in which verbs never surface in uninflected forms, and as “peripheral property” of a language like English, in which verbs also appear in unmarked forms. Therefore, since inflection is specified as a core property in Italian, the parameter is well set from the start, so children acquiring Italian rarely, if

ever, produce uninflected verbs, and the acquisition of Italian morphology is very precocious.

Pizzuto and Caselli [21] tested Hyams’ hypothesis on children acquiring the Italian language, but found different developmental pattern. These authors found that the 3 children longitudinally tested from age 1; 4 to 3; 0 produced an impressive number as well as a variety of different inflected forms of verbs, but that very few of the forms attained their acquisition criterion. These authors identified a developmental pattern characterized by two main stages: in the first “learning” stage, there were often few required contexts, and thus also few productions of inflected verbs. During this stage children’s performance was essentially probabilistic. In the second stage, the number of obligatory contexts and the actual production increases, reaching and exceeding the 90% correct level. Only during this latter stage, each of the various person-inflections was instantiated by at least two different verbs. The authors concluded that when applying consistent criteria for the evaluation of child language data, the process of morphological development in Italian looked very similar to the process observed in many other languages, including English, and that the developmental pattern they described was best explained by a combination of cognitive, perceptual, and distributional factors.

Another interesting study on the acquisition of Italian verb morphology was that of Caprin and Guasti [22]. The cross-sectional nature of their corpus (they observed 59 children grouped by MLU: G1 MLU 1.0–1.5; G2 MLU 1.5–2.0; G3 MLU 2.5–3.1) does not permit them to use Pizzuto and Caselli’s acquisition criterion (no consecutive speech samples were available). Therefore, the 75% of correct uses or the uses of a morpheme in three distinct contexts was used as criteria of acquisition. Their results indicated that children of all three groups produced different verb forms, and that some morphemes were already acquired by some children of the youngest group they considered. More specifically,

TABLE 15: Mean percentage of verbal inflections produced by Group 1 and Group 2.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
<i>Mode</i>									
Indicative	24	65.49	12.49	21	76.48	8.30	43	111.5	.001
Imperative	24	21.14	12.41	21	14.56	7.97	43	172	.049
Infinite	17	5.88	7.32	14	3.00	4.08	29	202.5	.251
Participle	16	6.36	6.19	17	3.82	4.88	31	203	.260
Conditional	16	0	0	17	.26	.94	31	228	.126
Gerund	8	1.13	2.29	9	1.88	2.75	15	217	.361
<i>Time</i>									
Present	24	88.37	7.67	21	87.51	5.96	43	224	.524
Past	24	11.63	7.67	21	12.49	5.96	43	224	.524
<i>Person</i>									
1st singular	24	29.27	17.22	21	24.13	10.55	43	222.5	.502
2nd singular	24	27.14	15.01	21	24.26	11.54	43	227.5	.577
3rd singular	24	36.55	17.04	21	41.19	11.80	43	197	.211
1st plural	16	4.85	5.24	13	5.65	6.54	27	245	.871
3rd plural	10	2.20	4.23	17	4.76	4.11	25	138	.007

TABLE 16: Percentage and (number) of children who used the given morphemes.

	Group 1						Group 2					
	Never		Not productive		Productive		Never		Not productive		Productive	
2nd Sg present imperative	4	(1)	46	(11)	50	(12)	5	(1)	29	(6)	67	(14)
4th Sg present imperative	46	(11)	46	(11)	8	(2)	48	(10)	43	(9)	10	(2)
1st Sg past indicative	63	(15)	38	(9)	0	(0)	48	(10)	43	(9)	10	(2)
3rd Sg past indicative	25	(6)	63	(15)	13	(3)	19	(4)	62	(13)	19	(4)
1st Sg indicative present	4	(1)	17	(4)	79	(19)	0	(0)	10	(2)	90	(19)
2nd Sg indicative present	25	(6)	42	(10)	33	(8)	14	(3)	29	(6)	57	(12)
3rd Sg indicative present	0	(0)	8	(2)	92	(22)	0	(0)	0	(0)	100	(21)
1st Pl indicative present	75	(18)	17	(4)	8	(2)	48	(10)	43	(9)	10	(2)
3rd Pl indicative present	58	(14)	33	(8)	8	(2)	29	(6)	57	(12)	14	(3)

TABLE 17: Mean percentage of verbs used by Group 1 and Group 2 with one or more morphological inflection.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
(1) Inflection	24	75.79	9.06	21	73.51	12.82	43	250	.964
(2) Inflections	23	15.92	6.77	19	12.34	7.12	40	149	.079
(3) Inflections	16	5.21	4.44	19	6.39	3.36	33	206	.715
(4) Or more inflections	10	3.08	3.97	14	7.77	7.33	22	117.5	.002

TABLE 18: Mean percentage of verbs used by Group 1 and Group 2 in one or more construction.

	Group 1			Group 2			df	U	P
	Number of children	Mean	s.d.	Number of children	Mean	s.d.			
(1) Construction	23	67.48	26.25	20	57.07	23.86	41	197.5	.213
(2) Constructions	17	30.54	26.97	20	37.69	20.43	35	208	.314
(3) Or more constructions	2	1.98	7.29	6	5.24	10.40	6	203	.094

TABLE 19: Verbs produced in a simple utterance.

Verbs	Tokens	Users
<i>Abbaiare</i> [to bark]	3	2
<i>Accendere</i> [to turn on]	4	3
<i>Acchiappare</i> [to catch]	1	1
<i>Addormentare</i> [to fall asleep]	3	1
<i>Aggiustare</i> [to repair]	6	4
<i>Aiutare</i> [to help]	2	2
<i>Allacciare</i> [to lace up]	1	1
<i>Alzare</i> [to raise]	1	1
<i>Andare</i> [to go]	117	38
<i>Apparecchiare</i> [to set (the table)]	1	1
<i>Appiccicare</i> [to stick]	1	1
<i>Appoggiare</i> [to lean]	2	2
<i>Aprire</i> [to open]	88	31
<i>Arrivare</i> [to arrive]	18	5
<i>Aspettare</i> [to wait for]	24	11
<i>Assaggiare</i> [to taste]	2	1
<i>Attaccare</i> [to attach]	20	6
<i>Atterrare</i> [to land]	1	1
<i>Avere</i> [to have]	52	27
<i>Avvicinare</i> [to draw up]	1	1
<i>Baciare</i> [to kiss]	1	1
<i>Bagnare</i> [to wet]	2	2
<i>Ballare</i> [to dance]	3	1
<i>Bastare</i> [to be enough]	7	6
<i>Bere</i> [to drink]	37	19
<i>Bucare</i> [to make a hole in]	1	1
<i>Bussare</i> [to knock]	2	1
<i>Buttare</i> [to throw]	9	8
<i>Cadere</i> [to fall]	56	22
<i>Cambiare</i> [to change]	2	2
<i>Camminare</i> [to walk]	7	5
<i>Capire</i> [to understand]	7	5
<i>Chiamare</i> [to call]	23	12
<i>Chiudere</i> [to close]	57	28
<i>Colorare</i> [to colour]	7	2
<i>Combattere</i> [to fight]	3	1
<i>Comperare</i> [to buy]	3	3
<i>Conoscere</i> [to know]	1	1
<i>Coprire</i> [to cover]	2	1
<i>Cucinare</i> [to cook]	16	10
<i>Curare</i> [to cure]	1	1
<i>Dare</i> [to give]	43	26
<i>Dire</i> [to say]	5	4
<i>Disegnare</i> [to draw]	2	2
<i>Dormire</i> [to sleep]	17	9
<i>Dovere</i> [to must]	7	3
<i>Entrare</i> [to enter]	7	4
<i>Essere</i> [to be]	24	16
<i>Fare</i> [to do]	181	37

TABLE 19: Continued.

Verbs	Tokens	Users
<i>Fermare</i> [to stop]	3	2
<i>Finire</i> [to finish]	7	4
<i>Giocare</i> [to play]	29	18
<i>Girare</i> [to turn]	15	9
<i>Grattare</i> [to scratch]	1	1
<i>Guardare</i> [to watch]	75	30
<i>Guidare</i> [to drive]	3	2
<i>Imparare</i> [to learn]	1	1
<i>Incastrare</i> [to fit together]	1	1
<i>Interessare</i> [to interest]	1	1
<i>Lanciare</i> [to throw]	2	2
<i>Lasciare</i> [to leave]	18	12
<i>Lavare</i> [to wash]	9	5
<i>Lavorare</i> [to work]	3	1
<i>Leccare</i> [to lick]	2	2
<i>Legare</i> [to bind]	1	1
<i>Leggere</i> [to read]	28	12
<i>Levare</i> [to remove]	3	3
<i>Mancare</i> [to miss]	2	1
<i>Mangiare</i> [to eat]	104	31
<i>Mantenere</i> [to maintain]	1	1
<i>Mescolare</i> [to mix]	2	2
<i>Mettere</i> [to put]	230	44
<i>Muovere</i> [to move]	2	1
<i>Nascondere</i> [to hide]	1	1
<i>Nuotare</i> [to swim]	1	1
<i>Parlare</i> [to talk]	10	7
<i>Partire</i> [to leave]	5	4
<i>Passare</i> [to pass]	10	7
<i>Pescare</i> [to fish]	1	1
<i>Piacere</i> [to like]	11	8
<i>Piangere</i> [to cry]	7	5
<i>Piovere</i> [to rain]	7	6
<i>Portare</i> [to carry]	20	10
<i>Potere</i> [to can]	2	2
<i>Prendere</i> [to take]	45	27
<i>Preparare</i> [to prepare]	9	5
<i>Prestare</i> [to lend]	2	1
<i>Profumare</i> [to perfume]	2	2
<i>Pulire</i> [to clean]	15	9
<i>Pungere</i> [to sting]	4	2
<i>Puzzare</i> [to smell]	2	2
<i>Raccogliere</i> [to pick up]	1	1
<i>Raccontare</i> [to tell]	2	2
<i>Regalare</i> [to give]	1	1
<i>Reggere</i> [to hold]	1	1
<i>Ricordare</i> [to remember]	3	3
<i>Ridere</i> [to laugh]	2	2
<i>Rispondere</i> [to reply]	12	4

TABLE 19: Continued.

Verbs	Tokens	Users
<i>Riuscire</i> [to succeed]	2	2
<i>Rompere</i> [to break]	9	6
<i>Rotolare</i> [to roll]	1	1
<i>Rovesciare</i> [to spill]	1	1
<i>Salire</i> [to go up]	5	4
<i>Saltare</i> [to jump]	3	3
<i>Salutare</i> [to greet]	5	3
<i>Sapere</i> [to know]	24	12
<i>Sbucciare</i> [to peel]	2	2
<i>Scappare</i> [to escape]	1	1
<i>Scendere</i> [to go down]	6	5
<i>Schiacciare</i> [to squash]	3	2
<i>Sciare</i> [to sky]	1	1
<i>Scivolare</i> [to slip]	1	1
<i>Scopare</i> [to sweep]	1	1
<i>Scottare</i> [to burn]	6	4
<i>Scrivere</i> [to write]	6	2
<i>Sdraiare</i> [to lay]	1	1
<i>Sedere</i> [to sit down]	48	23
<i>Sembrare</i> [to seem]	2	2
<i>Sentire</i> [to hear]	2	2
<i>Servire</i> [to be useful]	14	5
<i>Soffiare</i> [to blow]	1	1
<i>Spaccare</i> [to break]	1	1
<i>Spegnere</i> [to turn off]	2	2
<i>Spezzare</i> [to sweep]	1	1
<i>Spingere</i> [to push]	19	7
<i>Spostare</i> [to move]	5	4
<i>Sputare</i> [to spit]	1	1
<i>Squillare</i> [to ring]	1	1
<i>Staccare</i> [to detach]	10	5
<i>Stare</i> [to stay]	78	30
<i>Strisciare</i> [to slither]	1	1
<i>Suonare</i> [to play]	17	7
<i>Svegliare</i> [to waken]	4	4
<i>Svuotare</i> [to empty]	2	1
<i>Tagliare</i> [to cut]	42	20
<i>Telefonare</i> [to phone]	7	7
<i>Tenere</i> [to hold]	89	27
<i>Tirare</i> [to pull]	6	4
<i>Toccare</i> [to touch]	3	2
<i>Togliere</i> [to remove]	50	28
<i>Tornare</i> [to come back]	5	3
<i>Traballare</i> [to wobble]	1	1
<i>Trovare</i> [to find]	8	7
<i>Usare</i> [to use]	3	3
<i>Uscire</i> [to exit]	12	9
<i>Vedere</i> [to see]	58	26
<i>Venire</i> [to come]	29	15

TABLE 19: Continued.

Verbs	Tokens	Users
<i>Versare</i> [to pour]	5	3
<i>Volare</i> [to fly]	15	4
<i>Volere</i> [to want]	113	32

the authors focused their analysis on the present indicative that was the most frequent tense used, and evidenced that even some G1 children (27%, $N = 4$) were productive when using the third person singular, using this inflection with at least three different verbs. The productive use of inflectional morphemes increased across the three groups of children, that is, increased as the MLU increased. These authors concluded that their data does not prove that all children have generalized the use of different morphemes at the same time, but that some children have acquired it at an early stage and that the use of various inflectional morphemes increases over a relatively short period.

However, no studies focused on the use of different morphological inflections with the same verb, even if in our opinion, this is a crucial point in order to identify a real process of generalization through an early parameter setting. On the contrary, if Italian children, at the early precocious stages of language development, use a verb only in one or two morphological inflections (e.g., *io gioco* [(I) play] 1st Sg present, and *io ho giocato* [(I) have played], 1st Sg present perfect), while they are able to use other possible inflections with other verbs (e.g., *andiamo!* (We) go! 1st Sg imperative), this may constitute evidence of an item-by-item learning, as suggested by Tomasello [4, 12, 23].

5. Aims

The general aim of this work was to analyze the argument structure of early verb utterances produced by a group of Italian children, comparing the performance of children who were beginning to combine words to that of a more advanced group in terms of MLU.

More specifically, we investigated the following:

- the influence of MLU on children's use of transitive and intransitive verbs;
- the influence of MLU on children's subject omission and on children's direct and indirect object production;
- if children generalize the verb morphemes they produce across verbs;
- if children generalize the syntactic constructions they produce across verbs (i.e., whether there is a "one-verb/one-construction correspondence" or if the same verb is used in many different syntactic constructions).

6. Method

6.1. Participants. Forty-five monolingual Italian children, selected from a larger sample collected by D'Odorico and

colleagues (corpus D'Odorico, 1996–2006) [1, 2, 24–27]) and by Cassibba and Costantini, participated in the study. Prior to the current study, the language development of the children included in the corpus was analysed monthly for vocabulary development and characteristics of early two-word utterances. Children were video-recorded during 30-minute play sessions with their mothers; only children with MLU ranging from 1.50 to 2.99 at the time of the recording were selected. The following two subgroups were identified: children with MLU under 1.99 constituted Group 1 ($N = 24$) and children with MLU above 2.00 constituted Group 2 ($N = 21$). All children were above the 25th percentile for language development (measured by the Italian version of MacArthur Communicative Development Inventory [28], excluding risk of language delay or language disorders).

See Table 1 for the general characteristics of the two groups.

6.2. Procedure. The children's spontaneous speech samples were taken from the material recorded during 30-minute video-recorded unstructured play sessions. Five different sets of toys were used, including a farm, a "nurturing" set (telephone, a doll with a bed, mattress, and pillow), a "food" set (plastic fruit and vegetables with dishes and cutlery), and several illustrated books. Mothers were instructed to play with their children as usual and to try to attract their attention to each set of toys. The experimenter attended the play sessions and could participate if directly asked to do so by the children or their mothers. An observer subsequently transcribed all of the productions using CHAT format [29].

6.3. Coding and Measures. After excluding from the children's speech corpora preverbal utterances (babbling and vocalisations), routines (counting, nursery rhymes, etc.), and completely or partially intelligible utterances, children's utterances were coded. The coder noted whether the following:

- they were single or multiword utterances;
- they contained lexical verbs (verbs henceforth) or copular verbs;
- they were simple (containing only one lexical verb) or complex (containing 2 or more lexical verbs). Each verb produced by the children was classified by argument structure as transitive (verbs that obligatorily take an object), intransitive (verbs that do not take a direct object), or mixed (verbs that may take a direct object but do not necessarily do so), according to Valian's [6] and Theakston et al.'s [12] criteria.

TABLE 20: Verbs introducing a complex utterance.

Verbs	Tokens	Users
<i>Alzare</i> [to raise]	1	1
<i>Andare</i> [to go]	43	16
<i>Aprire</i> [to open]	4	4
<i>Attaccare</i> [to attach]	3	3
<i>Avere</i> [to have]	4	4
<i>Battere</i> [to beat]	1	1
<i>Bere</i> [to drink]	4	4
<i>Bisognare</i> [to need]	1	1
<i>Buttare</i> [to throw]	2	1
<i>Camminare</i> [to walk]	1	1
<i>Cercare</i> [to look for]	1	1
<i>Chiudere</i> [to close]	1	1
<i>Combattere</i> [to fight]	5	1
<i>Combinare</i> [to combine]	1	1
<i>Cominciare</i> [to begin]	1	1
<i>Cucinare</i> [to cook]	2	2
<i>Curare</i> [to cure]	1	1
<i>Dire</i> [to say]	2	2
<i>Dormire</i> [to sleep]	1	1
<i>Dovere</i> [to must]	46	17
<i>Entrare</i> [to enter]	5	4
<i>Essere</i> [to be]	1	1
<i>Fare</i> [to do]	56	20
<i>Finire</i> [to finish]	3	3
<i>Giocare</i> [to play]	6	3
<i>Guardare</i> [to watch]	7	4
<i>Imparare</i> [to learn]	1	1
<i>Infilare</i> [to thread]	1	1
<i>Lasciare</i> [to leave]	1	1
<i>Lavare</i> [to wash]	5	4
<i>Lavorare</i> [to work]	4	2
<i>Leggere</i> [to read]	2	1
<i>Mangiare</i> [to eat]	15	9
<i>Mettere</i> [to put]	24	13
<i>Parlare</i> [to talk]	1	1
<i>Passare</i> [to pass]	2	2
<i>Pescare</i> [to fish]	2	2
<i>Piacere</i> [to like]	2	2
<i>Portare</i> [to carry]	2	2
<i>Potere</i> [to can]	21	10
<i>Prendere</i> [to take]	12	7
<i>Provare</i> [to try]	3	3
<i>Pulire</i> [to clean]	1	1
<i>Regalare</i> [to give]	1	1
<i>Riuscire</i> [to succeed]	1	1
<i>Salire</i> [to go up]	2	1
<i>Saltare</i> [to jump]	2	1
<i>Sapere</i> [to know]	2	1
<i>Scendere</i> [to go down]	3	1

TABLE 20: Continued.

Verbs	Tokens	Users
<i>Scontrare</i> [to crash]	1	1
<i>Sedere</i> [to sit down]	2	2
<i>Spogliare</i> [to undress]	1	1
<i>Sporcare</i> [to dirty]	1	1
<i>Spostare</i> [to move]	2	1
<i>Stancare</i> [to make tired]	1	1
<i>Stare</i> [to stay]	5	4
<i>Tagliare</i> [to cut]	5	4
<i>Tenere</i> [to hold]	4	4
<i>Tirare</i> [to pull]	1	1
<i>Togliere</i> [to remove]	11	5
<i>Urtare</i> [to hit]	1	1
<i>Usare</i> [to use]	2	2
<i>Vedere</i> [to see]	19	9
<i>Venire</i> [to come]	2	2
<i>Volare</i> [to fly]	2	1
<i>Volere</i> [to want]	47	12

Intransitive verbs were divided into unergative and unaccusative verbs.

For verbs produced in simple utterances, person, mode, and tense were coded.

Moreover, a measure of the lexical variety of verbs used by children was computed considering the number of different verb types, defined by their stem form [30].

For each simple sentence, it was annotated if subject, direct object, or indirect object were expressed. Imperative and interrogative utterances, impersonal verbs (like *piovere* [rain], *sembrare* [seem]), and reflexive forms were excluded from this analysis because the subject is typically not overtly expressed, or because it is not allowed, in this sentence type. The latter category includes all datives and indirect objects expressed by a preposition plus a noun or by adverbs indicating time, manner, place, or degree. We even considered adverbial complements as indirect complements by focusing firstly on the role of complements. The constituents of these complements are debated in the results section. For all of these arguments, the coder recorded whether they were expressed by a noun, a pronoun, an adjective, or an adverb; subject person and number were coded too.

For transitive, unergative and unaccusative verbs were coded if subject was expressed in pre- or postverbal position.

For each use of a verb, we analysed the construction in which it was produced, considering the argument(s) that accompanied it. For example, “*io bevo*” [I drink] and “*lei beve*” [she drinks] are the same construction (SV), while “*io bevo latte*” [I drink milk] is a different construction (SVO).

In order to test the children’s ability to generalize the generalization competence according to the morphological paradigm, we counted how many different inflections were produced with the same verb.

Finally, for each child, it was also counted how many times he/she produced a given verb morpheme with different verbs being counted, following Caprin and Guasti procedure [22] and children who never used a given morpheme (never productive) were distinguished from those who produced it at least once (not productive) and those who used it in at least three different contexts (Productive).

7. Results

7.1. General Characteristics of Children’s Verb Production. During the observation sessions, children produced 11965 utterances that were transcribed and coded (Table 2). Of these, 3653 utterances contained a verb and 1196 utterances were copulas, which were not further analysed. Based on the analysis of the 2223 simple utterances, the children produced 160 different verbs (stems), but 10 stems (*andare* [to go], *aprire* [to open], *fare* [to do], *guardare* [to watch], *mangiare* [to eat], *mettere* [to put], *stare* [to stay], *tenere* [to keep], *vedere* [to see], *volere* [to want]) accounted for 50% of all of the verb utterances produced (see Table 19). A more restricted set of verbs introduced the 234 sentential complement utterances, which were rarely produced by children (see Table 20).

The analysis of children’s verbal productions (Table 3) evidences that the two groups produced a similar number of utterances, but there was qualitative and quantitative difference in children’s use of verbs depending from their MLU. Given the presence of high-standard deviations in the measures collected from spontaneous productions, we employed a nonparametric approach, that is, Mann-Whitney’s U for between subjects comparison, Wilcoxon’s Z for within subjects comparisons, and Spearman’s rho for correlations. Group 2 children more frequently produced verbs in their utterances and produced a higher percentage of complex

utterances and multiword utterances comprising a verb than children in Group 1. The two groups also differed on the variety (stem) and frequency of verbs they used (Table 4). These results demonstrate that the two groups, created on the basis of MLU, were different with respect to the use of verbs as well as the variety of verbs they know and produce.

Nevertheless, children in Group 1 and Group 2 did not differ in the use of transitive, intransitive, and mixed verbs (Table 5). All children of both groups produced a higher percentage of transitive than intransitive verbs and a higher percentage of intransitive than mixed verbs. Moreover, there were no significant differences between transitive and intransitive verbs produced in isolation (Group 1 $N = 24$, $Z_{(23)} = -1.514$, $P = .134$; Group 2 $N = 21$, $Z_{(20)} = -1.095$, $P = .288$, Table 6) and only mixed verbs were produced in single-word utterances more frequently than transitive (Group 1 $N = 22$, $Z_{(21)} = -3.136$, $P = .001$; Group 2 $N = 21$, $Z_{(20)} = -2.520$, $P = .010$) and intransitive verbs (Group 1 $N = 22$, $Z_{(20)} = -2.502$, $P = .010$; Group 2 $N = 21$, $Z_{(20)} = -2.241$, $P = .025$).

These data are in contrast with Valian's hypothesis [6] for Italian children, which predicts a preferential use of intransitive verbs as they can be used grammatically in one-word utterances.

7.2. The Subject. The frequency with which the overt subject (Table 7) was expressed by participants in the current research is similar to that observed in other studies on Italian children (19% in Serratrice's study [15] for children with MLU ranging from 1.5 to 2.0; 32% with MLU ranging from 2.0 to 3.0; 25% in Lorusso et al.'s study [13]). No differences were observed between groups in the percentage of expression of subjects ($N = 45$, $U_{(43)} = 211.500$, $P = .357$). Only for Group 1, there was a significant difference in subject expression when transitive and intransitive verbs were compared (Group 1 $N = 19$, $Z_{(18)} = -2.144$, $P = .034$, Group 2 $N = 17$, $Z_{(16)} = -1.590$, $P = .212$). Considering the subcategories of intransitive verbs, in the current data, subject expression was similar between unaccusative and unergative verbs (Group 1 $N = 5$, $Z_{(4)} = .778$, $P = .436$; Group 2 $N = 9$, $Z_{(8)} = .454$, $P = .650$). Group 1 showed a higher expression of subject with unaccusative than with transitive verbs (Group 1 $N = 18$, $Z_{(17)} = -2.029$, $P = .042$; Group 2 $N = 18$, $Z_{(17)} = 1.268$, $P = .205$), while no differences emerged for subject expression between transitive and unergative verbs (Group 1 $N = 8$, $Z_{(7)} = -.284$, $P = .776$; Group 2 $N = 10$, $Z_{(9)} = .784$, $P = .433$). These results differ from those of Lorusso et al. [13], which evidenced a higher percentage of subject expression with unaccusative verbs than with transitive and unergative verbs for all of MLU groups they considered.

Contrary to Lorusso et al.'s [13] findings, participants of both groups produced subjects in a pre- or postverbal position, with similar percentages (Table 8) with transitive verbs (Group 1: preverbal versus postverbal position $Z_{(20)} = -1.215$, $P = .224$; Group 2: preverbal versus postverbal position $Z_{(18)} = -1.896$, $P = .058$), unaccusative verbs (Group 1: preverbal versus postverbal position $Z_{(20)} = -.833$, $P = .405$; Group 2: preverbal versus postverbal position $Z_{(19)} =$

-1.215 , $P = .600$), and unergative verbs (Group 1: preverbal versus postverbal position $Z_{(8)} = -.707$, $P = .480$; Group 2: preverbal versus postverbal position $Z_{(8)} = -1.185$, $P = .288$). In the current study, the number of productions analysed, comprising unergative and unaccusative verbs, was very small, approximately 100 utterances (39 subjects) in Lorusso et al.'s sample and 163 utterances (43 subjects) in the present sample. Therefore, it is possible that individual preferences of subject realisation may have influenced the final group mean to a great extent.

When expressed (Table 9), Group 1 children more often realised the subject by a noun than by a pronoun ($N = 18$, $Z_{(17)} = -2.057$, $P = .040$). In Group 2, the children used nouns and pronouns with similar frequency ($N = 15$, $Z_{(14)} = -.928$, $P = .353$). When using a personal pronoun, the first singular person was the most used by both groups (Group 1: $N = 9$, 1st singular versus 2nd singular $Z_{(8)} = -2.648$, $P = .008$; Group 2: $N = 9$, 1st singular versus 2nd singular $Z_{(8)} = -2.402$, $P = .016$).

7.3. The Direct Object. Direct objects were expressed almost exclusively with transitive verbs (Table 10), with a lower frequency of direct objects reported in the current study than reported by Valian [6] and Theakston et al. [12] for English children, even though MLU did not differ (Valian's study Group 1 MLU = 1.77; Theakston et al.'s study Group 1 MLU = 1.66). Only 4 cases (3 Group 2 subjects) of direct objects were observed with intransitive verbs. Specifically, the children produced the requested obligatory arguments with only 50% of the transitive verbs (stem) in Group 1 and 68% of the transitive verbs in Group 2 ($N = 45$, $U_{(43)} = 114$, $P = 0.002$).

The expression of a direct object was related to the number of different transitive verbs that the children were able to use ($N = 45$, $r_{(44)} = .744$, $P = .001$). These results are in accordance with Tomasello's [23] hypothesis and suggested that children construct their syntactic knowledge of transitive verbs "item by item." The results further suggest that knowledge is transferred from one verb to another only when the number of verbs the children have acquired is sufficiently large.

Both groups, when expressing direct objects (Table 11), produced more nouns than pronouns (Group 1 $N = 20$, $Z_{(19)} = 3.411$, $P = .001$; Group 2 $N = 39$, $Z_{(38)} = -3.980$, $P = .001$) and clitic pronouns (Group 1 $N = 21$, $Z_{(20)} = -2.403$, $P = .016$; Group 2 $N = 21$, $Z_{(20)} = -2.698$, $P = .007$).

The low percentage of direct objects observed in children participating in the present study is particularly intriguing, with regard to the PL hypothesis because, given that the expression of subjects is not obligatory, the limited resources children have in this early phase of language acquisition could have been used for the Obligatory Direct Object. On the contrary, a more detailed analysis of the argument structure of children's utterances containing a transitive verb showed that they often preferred to use an optional (subject or indirect object) instead of an obligatory (direct object) argument. This occurred in 25% of the multiword utterances produced with transitive verbs by Group 1 children, and in

14% of the cases for Group 2 children. It is probable that this occurred for pragmatic reasons (see also for this type of explanations Serratrice [15]), which in these cases appears to be stronger than the grammatical knowledge attributed to children in this period of development according to Principle and Parameter model.

7.4. The Indirect Object. The production of indirect object arguments increased significantly with MLU (Table 12). Group 1 children produced indirect objects in 24% of their utterances and Group 2 children produced indirect objects in 35% of the cases ($U_{(43)} = -131, P = .003$). As predicted by the PL hypothesis, the production of indirect objects is greater with intransitive than transitive verbs (Group 1: $Z_{(21)} = -3.229, P = .001$; Group 2 $Z_{(20)} = -3.211, P = .001$).

Both groups realised indirect arguments principally with adverbs, followed by similar percentages of nouns and pronouns (Table 13).

More than 50% of indirect objects were constituted by place complement (Table 14).

7.5. The Argumental Structure of Mixed Verbs. The children's use of mixed verbs was analysed to determine whether they understand that mixed verbs can be used in both transitive and intransitive frames. Therefore, the current work examined the argument structures in which mixed verbs were expressed (only for the 15 Group 1 and 16 Group 2 children who used the same mixed verbs at least twice). The results demonstrated that in Group 1 mixed verbs were used in the same frame in approximately 70% of the cases (i.e., the intransitive frame in 97% of the cases). The percentage of mixed verbs used in both forms increased to 60% in Group 2.

7.6. Verb Inflection. As evidenced by previous studies [21, 22], children were able to use different verbal morphological forms from the beginning of their production. All children were able to use different modes, tenses, and persons (Table 15). The productions of the two groups were quite similar with the exception of the use of indicative and imperative modes, as evidenced by Caprin and Guasti [22]. In fact, Group 1 children used the imperative mode more frequently than Group 2 children. In contrast, children in Group 2 produced more verbs in the indicative mode than Group 1 children, as also evidenced by Caprin and Guasti [22]. As proposed by other authors [22], past participles and infinitives should be considered to be incomplete verbal forms.

The analysis of morphemes (Table 16) evidenced that the majority of children of both groups were productive when using second person present imperatives, first and third person present indicatives and used the same morpheme with three or more verbs. These data support Caprin and Guasti's [22] results. The number of different verbs produced with the same inflection correlated with the total number of verbs present in the children's vocabulary (2nd singular person present imperative: $N = 44, r_{(42)} = .401, P = .004$; 1st plural person present imperative $N = 24, r_{(23)} = -.026, P = .45$; 1st singular person past indicative $N = 20, r_{(19)} = .182, P = .221$; 3rd singular person past indicative $N = 35,$

$r_{(34)} = .084, P = .316$; 1st singular person present indicative $N = 44, r_{(43)} = .597, P = .001$; 2nd singular person present indicative $N = 36, r_{(35)} = .519, P = .001$; 3rd singular person present indicative $N = 45, r_{(44)} = .655, P = .001$; 1st plural person present indicative $N = 32, r_{(31)} = .568, P = .001$; 3rd plural person present indicative $N = 45, r_{(44)} = .196, P = .099$).

Regarding the analysis of the generalization of the morphological paradigm, results indicated that, on average, Group 1 produced the same verb in 1.38 different inflections and Group 2 in 1.56 different inflections ($U_{(43)} = 135.5, P = .008$). Moreover, Group 1 children tended to produce verbs in only one or two morphological forms (only 8% of the verbs they produced were morphologically inflected 3 or more times, Table 17). Group 2 children, on the other hand, demonstrated an increased percentage of 3 or more variations, but the percentage remained low (approx. 10%). The percentage of verbs produced in 3 or more different forms was related to the number of different stems children knew ($N = 35, r_{(34)} = .372, P = .021$).

The children of our sample seem to have difficulties in generalizing morphological inflections they know to all the verbs they are able to produce. This can be observed, even when we analysed the arguments that children produced associated with the same stem, considering only verbs produced at least 2 times in finite form (*io mangio* [I eat], *mamma mangia* [mommy eats] = 1 construction-SV; *io mangio* [I eat], *mangia mela* [(she) eats apple] = 2 constructions-SV, VO). The analysis suggested that almost all children from both groups produced the majority of verbs in only one construction, with no statistical differences between the two groups (Table 18). Moreover, children showed individual preferences in the association of specific arguments with specific verbs. Some children preferentially used subjects (*mette papà* [daddy puts]), others indirect objects (*metto lì* [(I) put there], and so on).

8. Discussion

In the present paper, we analysed lexical, morphological, and syntactic characteristics of verb productions, during the first stages of language acquisition, comparing the productions of children with different MLU (under 1.99, above 2.0). Moreover, our results were compared with those of other authors investigating language acquisition with different approaches.

Taking into consideration the lexical characteristics of verbs, the current results suggested that Italian children of both groups used more transitive than intransitive verbs. Moreover, the percentage of transitive and intransitive verbs produced in single-word utterances did not differ. These results are in contrast with Valian's PL hypothesis [6], indicating that if children know the abstract argument structure of verbs, the percentage of intransitive verbs should decrease when MLU increases, and that during this phase, they should produce more intransitive than transitive verbs in single-word utterances.

Considering the syntactic structure of utterances containing a verb, we evaluated the production of subjects, direct and indirect objects with transitive, intransitive, and mixed

verbs. Results showed that children produced subjects with intransitive verbs more frequently than with transitive verbs, confirming Valian's results [6]. Therefore, when children's linguistic abilities are limited, they prefer to use subjects with intransitive verbs (for which no obligatory argument is required) than transitive verbs (for which the direct object expression is necessary to produce grammatical correct sentences). However, it should be highlighted that the optional argument (subject) was expressed with transitive verbs instead of the obligatory argument, in approximately 25% of utterances of Group 1 children and in 14% of utterances of Group 2 children. The analysis of the production of subjects with unergative and unaccusative verbs, and the analysis of the position in which the subject was produced, evidenced contrasting data with respect to those obtained by previous studies on children acquiring the Italian language [13]. Our subjects did not seem to be sensitive to the different characteristics of these verbs, children expressed subject in similar percentages with unergative and unaccusative verbs. Moreover, no differences emerged in the production of subjects in pre- or postverbal positions. These results seem to indicate that children are not yet able to distinguish the characteristics of the different verbs they produced, but, in some cases (in particular with respect to unergative and unaccusative verbs), given the limited number of utterances examined, our results may not be considered conclusive evidence of children's ignorance of the abstract nature of these verbs.

The percentage of direct object provision with transitive verb arguments increased when the mean length of utterances in words (MLUw) increased, but this was also the case for the expression of optional arguments (subject and indirect complements). It appears, therefore, that the capacity to produce longer sentences is not accompanied by the development of knowledge regarding the abstract argument structures of the different classes of verbs for children at the linguistic level of the current sample. It is possible that the elements that are added are not necessarily selected on the basis of their grammatical requirement, but they may be chosen for pragmatic and/or conversational reasons, to which children seem more sensitive in this early phase of development.

The analysis of productions of mixed verbs does not permit to formulate clear conclusions. Children produced many of their mixed verbs in only a single frame therefore providing no evidence that they were making a choice (transitive versus intransitive form). Moreover, it is not possible to distinguish when mixed verbs were produced in the intransitive form and when they were produced in the transitive form with direct object omissions.

The analysis of the morphological characteristics of verbs produced by children confirmed as evidenced by previous studies [21, 22] that children are able to produce different verb forms from the beginning of their production, using different modes, tenses, and persons. However, when considering the specific verbs used by children, the presence of more than two different inflections with the same verb were very rare. A wider use of morphology appears only when the number of verbs that children know increases,

providing evidence of a process of generalisation. In the same way, children used some inflections productively, but this result was also related to the number of verbs children know, and not only to the MLU, as the work in [22] suggested. These results, on the whole, seem to indicate that the children we considered gradually acquired specific morphological forms for specific verbs and only at the end of this process they become able to generalize their knowledge, like the work in [4, 7, 21, 23] suggest.

Finally, we considered the children's capacity to generalise the verbs' argument structure, which was evaluated by considering the number of different structures with which the same verb was used. This measure was related to the number of verbs the children knew, and this result supports the hypothesis that the process of abstraction and generalisation develops on the basis of linguistic experience [4, 7].

In general, our results seem to indicate that children gradually develop an abstract knowledge of the verb characteristics they produce. In particular, this was suggested by the reduced ability to produce the same verbs with different morphological inflections and in different syntactic structures. On the contrary, the children's ability seems to be influenced by the lexical ability they possess, that is, in many cases, the larger amounts of verbs they know, and the different ways they used them, confirming relationships between lexicon and grammar, as evidenced by other authors [31].

We consider the results we obtained to be a useful contribution to the debate about the nature of early linguistic knowledge children possess at the beginning of the stage of multiword utterances. However, there are limits to our study that must be considered. In particular, the fact that even if we considered a sufficient number of subjects, the number of productions analysed was quite small. In some cases, the small number was due to the fact that specific verbs are rarely produced during spoken language (in particular, unergative verbs), in other cases, because multiword utterances were not produced with high frequencies by our subjects. On the other hand, given that our aim was to evaluate the nature of multi-word utterances comprising the verbs that are used when children begin to produce them, we could not expect that they would produce a lot of them. In any case, although it may not be possible to draw definite conclusions from children who in spontaneous speech do not produce something (it may be possible that the sample is inadequate), it is of interest to note children's productions when their resources are limited, as when they produce subjects instead of direct objects with transitive verbs.

Acknowledgment

The preparation of this paper was supported by a grant from the Ministero della Pubblica Istruzione (COFIN2003 no. 2003107555).

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