Form-function rules in the first words stage: A longitudinal study of two children[*]

Magda Rivero
Universitat de Barcelona

This work analyzes pragmatic development in the first words stage, specifically the form-function rules that infants construct for communicating. It presents data from two children who took part in a longitudinal/observational case study research. Our results point to the general tendencies identified with respect to form-function rules (Ninio, 1994b; Ninio & Snow, 1996) and to the existence of inter-individual differences. These differences refer to: a) the mapping of form-function rules and b) pragmatic flexibility. Differences in early lexical acquisition are related to the children's general communicative profiles.
    Keywords: *communicative development, pragmatic development, communicative intentions, speech-acts, lexical acquisition.*

Reglas forma-función en la etapa de las primeras palabras: un estudio longitudinal de dos niñas

Este trabajo analiza el desarrollo pragmático en la etapa de las primeras palabras, específicamente las reglas forma-función que los niños construyen para comunicarse. Presenta datos de dos niñas que formaron parte de una investigación longitudinal de estudio de casos. Nuestros resultados señalan las tendencias generales identificadas con respecto a las reglas forma-función (Ninio, 1994b; Ninio y Snow, 1996), así como la existencia de diferencias interindividuales. Esas diferencias se refieren a: a) las reglas de correspondencia forma-función y b) la flexibilidad pragmática.
    Palabras clave: *desarrollo de la comunicación, desarrollo pragmático, intenciones comunicativas, actos de habla, adquisición léxica.*

Introduction: First words as the expression of communicative intentions in child-adult conversations

Considered from a functional-social or socio-pragmatic viewpoint, the process of language acquisition is fundamentally to be conceived as a socio-cultural process, closely linked to communicative development (Bruner, 1983; Ninio & Snow, 1996; Tomasello, 2000). In this process, the adults who take care of the infant play an essential role in that they form the contexts for interaction and give the child support and specific help with communicative and linguistic development. When placing an emphasis on language as an instrument for communication, we need to study the child's speech within the framework of the interactions between children and their caregivers and to pay special attention to pragmatics, i.e., the use of language in communicative situations in social contexts. Among the main pillars of support for the theoretical basis of the functional-social viewpoint, the socio-cultural theory of Vygotsky (1960) is especially noteworthy, as are the contributions of pragmatic linguists, such as Austin (1962), Grice (1957) or Searle (1976).

From this perspective, which is the focus of this work, infants begin to use words in order to express communicative intentions. A number of studies have examined the communicative intentions expressed by infants' first words (e.g., Halliday, 1975; McShane, 1980; Ninio, 1993b; del Rio, 1987; Rivero, 2001; Snow, Pan, Imbens-Bailey & Herman, 1996; Triadó, 1982; Vila, 1984). In spite of the difficulties in comparing the results of the various studies, we can draw some general conclusions from them. On one hand, the repertoire of communicative intentions expressed by infants in the initial stages of their communicative and linguistic development is very broad. This can be seen especially in those studies that, in codifying communicative acts, take into account levels of analysis above the utterance, such as the definition of the situation of joint activity (e.g., Ninio, 1993b; Rivero, 2001; Snow, Pan, Imbens-Bailey & Herman, 1996). On the other hand, some studies show certain regularities in the initial development of the expression of communicative intentions. So, for example, *requesting an object, requesting action* or *protesting* tend to appear among the first communicative intentions expressed by infants (e.g., Carpenter, Mastergeorge & Coggins, 1983; Rivero, 2001). Regarding the communicative intentions expressed verbally, some of the categories most frequently linked to the first uses of language are related to the *negotiation of immediate activity, comments regarding the focus of attention* and the *establishment and maintenance of joint attention* (e.g., Ninio, 1993b; Rivero, 2001; Snow, Pan, Imbens-Bailey & Herman, 1996).

Expressing communicative intentions, i.e., making communicative proposals is an ability that children begin to develop during their first year. By the time children begin to use their first words they have already learned to express a set of communicative intentions via non-linguistic resources (gestures, vocalizations, etc.). When they utter their first words, they have formed a representation of them-

selves and others as intentional beings and have developed attention skills such as following the direction of an adult's eyes or gestures, imitating actions toward objects, or directing an adult's attention with regard to certain aspects of the environment (Carpenter, Nagell & Tomasello, 1998). When the acquisition of words begins, children have prior experience interpreting the intentions that the adult expresses non-verbally, such as showing objects or pointing to them, and they can use this experience to determine the adult's communicative intention and to try to define in what sense a particular word contributes to the expression of that intention.

It is widely accepted that the acquisition of new linguistic forms is possible since infants can attribute meaning to the expressions they hear on the basis of their non-linguistic context (e.g., Ninio & Snow, 1996; Pinker, 1984). Unless infants have sufficient communicative competence to decode the social meaning that is being transmitted by a given utterance, they will not be able to access its meaning. However, as some researchers have pointed out, infants are innately equipped to share meaning with their interaction partners (Trevarthen & Hubley, 1978). Additionally, caregivers facilitate the child's communicative development by providing the necessary social scaffolding (Bruner, 1975).

The knowledge that infants build within the framework of conversational interaction with adults can be formalized in terms of rules of correspondence between communicative intentions or proposals (functions) on one side and forms of expression (forms) on the other (for a review, see Ninio & Snow, 1996).

The rules of form-function correspondence: Typology and evolution

As mentioned above, the rules of form-function correspondence are understood as codification principles or mental representations that are implicit for making communicative attempts and for interpreting the intentions of others. When infants utter their first words, they have already constructed some of these codification rules.

This study analyzes form-function rules according to Ninio's proposal (1994a). Ninio differentiates between rules of *constant correspondence* and rules of *variable correspondence*, on the one hand, and between rules of *single correspondence* and rules of *multiple correspondences*, on the other. Ninio has pointed out two inter-related developmental tendencies in the infant's learning of these rules: development from constant correspondence rules to variable correspondence rules and from single to multiple correspondences rules.

From constant to variable correspondence rules

When infants begin to utter words, they use a constant form to express a particular communicative intention (rules of constant correspondence). Some examples of this type of rule could be:

Proposing a new activity ————————————————→ *saying "that"*
Indicating that someone or something is leaving ————→ *saying "bye-bye"*

Rules of correspondence are fundamentally analytical (Ninio, 1993a). Infants analyze the components of communicative situations –objects, people, actions, etc. - and create rules reflecting a correspondence between a specific verbal form and a particular communicative intention, which is related to specific elements or features of the communication situation as a whole. For example, the infant uses the word "bye" with different people, objects, and in different situations. Infants will say "bye-bye" when the father, mother or grandmother goes away or when a car, dog, etc. leaves. They understand the term to be associated with the intention of *indicating that someone or something is going away*, irrespective of the persons or objects involved, the time of the day, etc. The fact that infants can make generalizations of this kind with ease indicates that they are able to isolate from the broad communicative situations in which the term is used the unchanging feature that sets the conditions for its use.

There are three types of constant correspondence rules:

1. The communicative intention corresponds, in an overall sense, to a word. For example, saying "hello" to *execute a movement or step in the game of talking on the telephone.*

2. A word expresses a fixed element of the communicative intention. For example, the word "more" is used to *propose the repetition or continuation of the action,* irrespective of whether this is eating, tickling, etc.

3. A word expresses a variable element of the communicative intention with a constant form. For example, "this" is uttered with the intention of *suggesting the start of a new activity*. In this case, the object to which the word refers is variable –a ball, a car, etc.

Variable correspondence rules codify the expression of an element of communicative intention which varies according to the circumstances, via a variable verbal element. For example:

Propose a new activity ————→ Verbalize the object (e.g., "ball")
Verbalize the activity (e.g., "sleep")

Commenting on the focus of attention/action ————→ Verbalize the object (e.g., "car")
Verbalize the attribute (e.g., "big")

At the beginning of the first words stage, infants also draw on other rules of correspondence that are considered to be *intermediate* in between the rules of constant correspondence and the rules of variable correspondence. These are:

1. To express a communicative intention by giving a word that lexicalizes the receiver of the message. For example, the infant says "mummy" in order to *attract the hearer's attention.*

2. To express a communicative intention by lexicalizing the person producing the message. For example, the infant says "baby" in order to *ask for his turn when speaking.*

3. To express a communicative intention by repeating a word or part of a previous utterance. For example, the adult asks the infant "do you want dinner?" and the infant responds "dinner" to express the intention of *express agreement with the proposal to start a new activity*.

4. To express a communicative intention by reciting a memorized "text". For example, the infant says "finger" to *recite the text of a song*.

The progression from constant to variable correspondence is a gradual process. At a given moment, however, the quantity of variable correspondence rules used by the infant increases considerably, without bringing about the disappearance of the rules of constant correspondence. In a longitudinal study carried out when the infants were aged 10, 12, 14, 16, 18, 20 and 22 months, Ninio (1994a) observed the first appearances of the rules of variable correspondence at 12 months. A notable increase in the use of rules of variable correspondence was observed from a certain age onwards, which differed from one infant to another (at 16, 18, 20 or 22 months).

From single to multiple correspondences rules

The second developmental tendency observable throughout the first words stage is the progression from single to multiple correspondences. Many authors have noted that, initially, infants make every communicative intention correspond with a single form of verbal expression (e.g., Bates, 1976; Halliday, 1975). The principle of single correspondence has, however, some limitations (Ninio & Snow, 1996). On one hand, the expression of a given communicative intention would be limited to a single verbal form, but not to a single rule. For example, infants say "yes" to *express agreement with the proposal to start a new activity*. But they do not use words like "good", "Okay", etc. They may possess, however, another rule for the same intention, such as repeating the utterance of the speaker of the proposal for the new activity.

On the other hand, the principle of single correspondence is asymmetrical. A communicative intention is expressed with a given form, but the form can express multiple communicative intentions. For example:

Expressing agreement with the proposal of starting a new activity ⟶ saying "yes"

Responding affirmatively to a yes/no question
about the focus of attention/action ⟶ saying "yes"

The multiple correspondences rules appear when infants have mastered the expression of between 9 and 13 communicative intentions, as with the rules of variable correspondence (Ninio, 1994b). These two tendencies imply a developmental process toward the rules of the "diverse intentions-diverse forms" correspondence that characterizes adult speech. Ninio (1994a) suggests that this change in the rules of form-function correspondence is the basis of the lexical explosion that takes place at the age of around 18 months.

Learning form-function rules within the framework of infant-adult interaction

A number of authors have suggested that infants learn form-function rules in the context of their interaction with adults (e.g., Bruner, 1983; Ninio & Snow, 1996). As far as their cognitive, linguistic and social resources allow, the infants will use those rules of correspondence that the adult uses during their interaction. Ninio (1992) compared the one-word utterances in twenty-four infants aged 18 months with the one-word utterances that their mothers had used during their interactions with their infants. The results show that, on average, 94.6 percent of the rules of correspondence employed by the infants and 97.0 percent of their utterances coincided with the maternal models. However, the relative frequency of a given rule of correspondence was predictive of the probability that the infant would use it.

We understand the proposal explained above to be complementary with Tomasello's proposal (2000) of a mechanism of learning by *"role reversal imitation"*. The learning of form-function rules is not just a process of imitation based on association between stimuli, but also a constructive process that is based on socio-cognitive skills of some complexity. Role reversal imitation relies on combined attention skills and on the attribution of intentions. When infants hear an adult utter a word (or a longer utterance) they interpret the adult's intentions in relation to the environment, but also, and especially, the adult's intentions in relation to them (the infants), and more specifically, in relation to their states of attention and intention. The word (or the speech) is addressed to someone in order to influence such a state of attention or intention. The infants, in order to learn to use a word that the adult has been heard to use, must reverse the roles and use the word to express the communicative intention (in relation to the adult) that the adult has transmitted with relation to them. Therefore, for example, when the adult says to the infant "come on, to bed", the infant not only interprets that the adult is talking about bed, but that the adult intends that the child will go to bed. In this way, when it is the infant who takes the initiative of going to bed, he or she will use the word "bed" to get the adult to take him or her there, in other words, to modify the adult's intentions.

Aims of the present study: general tendencies and individual differences in the construction of form-function rules

Our study focuses on the form-functions rules that infants construct for communicating in the first words stage, attending to the general tendencies identified in previous work (Ninio, 1994b; Ninio & Snow, 1996) and to inter-individual differences.

As we have pointed out, while there are general tendencies in the early expression of communicative intentions, individual differences are another, less-studied aspect. There exists a great tradition about individual differences in early vocabulary, but not attending deeply to pragmatics. Most of these studies are based on the referential *vs.* expressive styles distinction (see Lieven, Pine & Barnes, 1992; Nelson, 1973). The present study attends to individual differences in early lexical acquisition from a complementary, but different, perspective, focusing on pragmatic differences, specifically those related with the mapping of form-function rules (Rivero, 2005). Intentions expressed by non-verbal forms will also be considered in order to achieve a broader knowledge of children's communicative and linguistic profiles.

Methods

Participants

This study presents data from two children who took part in a longitudinal/observational case-study of early communicative and linguistic development, from birth to 18 months of age. Case studies have a solid tradition in the research of communicative and linguistic development (e.g., Bamberg, Budwig & Kaplan, 1991; Harding, Weissmann, Kromelov & Stilson, 1997; Rivero, 2011; Windsor, Doyle & Siegel, 1994). In case study inquiry, we expect that a hypothesized conclusion can emerge from some empirical evidences (Yin, 1994). In our case, evidences will refer to commonalities and differences between two children, with respect to form-function rules.

The children were selected respecting the criteria of pregnancy and delivery without special difficulties and good health of the baby at birth. There was no relationship between the families and the researchers before starting the study. The following is a brief description of the studied children:

Sara: a girl, born at full term with a 10 score on the APGAR test. Her mother and father are high school graduates without college educations. The mother is a housewife, with five children including Sara, and the father has an executive/managerial occupation. Spanish is the family language. During the study, the girl did not attend a childcare center, and her habitual caregiver was her mother.

Marta: a girl, born at full term with a 10 score on the APGAR test. Her mother and father have university educational levels and work as qualified professionals. They have six children including Marta. Catalan is the family language. During the study, the girl attended a childcare center.

In this study, the familial languages are not a relevant point, as we focus on pragmatics. Catalan and Spanish are roman languages. They are both official languages in Catalonia.

Data collection and transcription

Monthly audiovisual records of daily routines were made in a familial context. The recorder was the researcher. This study analyzes the mealtime sessions. Meals are selected as the observational situation in many studies about communicative interaction as they provide a good context for promoting child-adult conversation (e.g., Ely, Gleason, MacGibbon & Zaretsky, 2001; Snow & Beals, 2006; Weizman & Snow, 2001). Data describing the sessions analyzed are compiled in table 1.

TABLE 1.

	Child's age (Years; months. days)	Duration in minutes	Total registered time	Meal time mean duration
Sara	0;8.29	4'	135'	16.9'
	0;9.14	13'		
	0;10.14	22'		
	0;11.16	10'		
	1;2.13	19'		
	1;3.11	27'		
	1;4.15	32'		
	1;5.13	8'		
Marta	0;9.0	15'	145'	18.1'
	0;9.14	17'		
	0;10.18	22'		
	1;1.9	24'		
	1;2.16	16'		
	1;3.21	27'		
	1;4.18	13'		
	1;5.23	11'		

Audiovisual recordings were transcribed according to the CHAT format included in CHILDES (*Child Language Data Exchange System*; MacWhinney, 2000; MacWhinney & Snow, 1985, 1990).

Coding and analysis

Ninio and Wheeler's (1984, 1988) system for coding communicative intentions was adapted for use in this study. The system categorizes verbal communication by taking into account the relationship between the utterances and the production context. It is published in some detail in Ninio and Wheeler (1986) and Ninio and Snow (1996). The taxonomy identifies three levels on which verbal communication is organized: The interchange, the utterance, and the inter-utterance discourse relation levels. The first two levels are the most investigated in pragmatic development research with the third being more specific to discourse analysis.

In the present work, the revised Ninio and Wheeler (1988) taxonomy was used, as it is the more detailed version of the coding system. We coded communicative acts at the level of the communicative interchange and at the level of the utterance. A communicative interchange is defined as one or more turns of production by one or both participants that serve a unitary interactive function (to negotiate, to evaluate, etc.). At the level of the communicative interchange, the framing of the immediate social situation is coded. On the second level of coding, the communicative function of each single utterance is classified in terms of the illocutive force of speech acts. Therefore, the coding of the communicative intention of an utterance is based on the unitary appreciation of the illocutive force associated with it and of the general interactive function of the interchange in which it takes place. The coding is always based on the verbal and non-verbal interactive context. Thus, a particular illocutive force within a particular type of interchange characterizes a type of communicative act for which there is a corresponding intention. For example, a *proposal* inside an interchange aimed at *re-establishing interaction after a break* has the communicative intention of *proposing the reestablishment of interaction after a break.*

For reliability purposes, the first and last sessions of the study were not considered. The other sessions were distributed in four groups, according to age intervals, and one session per group was randomly selected. All of the communicative acts of the selected sessions corresponding to ages of 0;1.1, 0;9.14 and 1;3.11 were double coded for reliability analysis. For coding categories, the Cohen's kappa values ranged from 0.73 to 0.87, showing substantial agreement (Landis & Koch, 1977).

The qualitative analysis focuses on the rules of form-function correspondence (types and evolution of correspondence rules), the communicative intentions expressed (functions) and the formal resources employed (forms). Some quantitative measures are considered: The ratio of intentions/word and "pragmatic flexibility", defined as the number of different communicative intentions expressed (Snow, Pan, Imbens-Bailey & Herman, 1996).

Results

Form-function rules

Tables 2-5 show the form-function rules, distributed as rules of constant correspondence and rules of variable correspondence, for the words employed by the infants during the studied period. In each case, it is indicated at which of the ages the rule was observed in the infant's speech. The intermediate rules have been included in the constant correspondence rules list, with their intermediate character marked.

TABLE 2.

Calling the attention of a person to come: *saying "Umá!" (for "Tomás!")*   0;10.14   *(Intermediate rule)*
Commenting on the focus of attention/joint action –including labeling: *saying ("am")*   0;10.14
Exclaiming to indicate the entry of food into the mouth: *saying* "am!"   0;11.16 (*imitation*)- 1;2.13 - 1;3.11 - 1;4.15
Transferring an object in order to get help with it: *verbalizing name of the receiver of the object ("mama"= "mum")*   1;2.13   *(Intermediate rule)*
Exclaiming in relation to a recent event: *saying "oh!"*   1;3.11-1;4.15
Accepting the prohibition of an action or of performing it in a particular way: *saying "no"*   1;3.11
Rejecting the proposal to continue the current activity: *saying "no"*   1;3.11
Indicate that the activity has been completed or has finished: *saying "tatá" (for "ya está" = "it's done")*   1;3.11
Accepting the proposal to carry out an action or to carry it out in a given way: *saying* "nane" *(for "vale" = "okay")*   1;3.11 *(Imitation)*
Expressing agreement with the other's disapproval regarding the infant's behavior: *saying "ji [:sí] = "yes"*   1;4.15
Accepting the departure or temporary absence of the listener: *saying "ji [:sí]" = "yes"*   1;4.15
Responding affirmatively to a question aimed at clarifying the meaning of non-verbal behavior: *saying "ji [:sí]" = "yes"*   1;4.15
Responding affirmatively to a yes/no question regarding the focus of attention/joint action: *saying "ji [:sí]" = "yes"*   1;4.15
Responding affirmatively to a *wh*-question aimed at clarifying the meaning of an utterance: *saying "ji [:sí]" = "yes"*   1;4.15
Disapproval of the infant's behavior: *saying* "mumá" *(for "muy mal" ="very bad")*   1;4.15 *(Imitation.)*
Expressing satisfaction: *saying "a:::h!"*   1;4.15

TABLE 3.

Commenting on the focus of attention/joint action –including labeling: *Verbalize the result of the action ("aquí" = "here")* 1;3.11 1;4.15: *Verbalize the location of the object ("aquí" = "here")* 1;4.15: *Verbalize the name of the object ("iaia" for "aigua" = "water")*
Requesting an object: *Verbalize the name of the object ("iaia" for "aigua" = "water")* 1;3.11 - 1;4.15
Accepting the start of the activity: *Verbalize the name of the activity ("ñamñam" = onomatopoeia for eating)* 1;4.15
Commenting on something or someone not present: *Verbalize the name of the person ("nen" = "child", "papá" = "daddy")* 1;4.15
Exclaiming with enthusiasm in relation to something not present: *Verbalize the name of the person ("papá!" = "daddy")* 1;4.15
Directing other's attention towards an object, person or event: *Verbalize the name of the object ("iaia" for "aigua" = "water")* 1;4.15 1;4.15: *Verbalize a property of the object ("ca" for "caca" = "poo-poo", meaning* dirty)
Proposing the start of a new activity: *Verbalize the name of the activity ("ñamñam" = onomatopoeia for eating)* 1;5.13
Declaring the intention to carry out a given action in the immediate future: *Verbalize the name of the action ("ñamñam" = onomatopoeia for eating)* 1;5.13
Expressing the desire to continue the current activity: *Verbalize the name of the action ("ñamñam" = onomatopoeia for eating)* 1;5.13
Proposing that other carries out a given action: *Verbalize the name of the action ("ñamñam" = onomatopoeia for eating)* 1;5.13
Proposing a new focus for the activity: *Verbalize the name of the activity ("ñamñam" = onomatopoeia for eating)* 1;5.13

TABLE 4.

Requesting help: *Verbalize the name of the receiver ("mama")*   1;1,19   *(Intermediate rule - between constant correspondence and variable correspondence)*
Exclaiming to indicate the entry of food into the mouth: *saying "am!"*   1;1.19 – 1;2.16
Expressing the desire to continue the current activity: *saying "mé" (for "més" = "more")*   1;1.19
Expressing satisfaction: *saying "a:::h!"*   1;3.21
Thanking: *saying "gatxia" (for "gràcies" = thank you")*   1;3.21 – 1;4.18
Rejecting the proposal to continue the current activity: *saying "no"*   1;3.21 – 1;4.18
Responding negatively to a yes/no question about the well-being of the receiver: *saying "no"*   1;3.21
Rejecting the proposal to carry out an action or to carry it out in a given way: *saying "no"*   1;3.21 – 1;5.23
Responding negatively to a request for an object: *saying "no"*   1;4.18
Rejecting the offer of help: *saying "no"*   1;4.18
Expressing the desire to finish the activity: *saying "no"*   1;5.23
Indicating that the activity has been completed or has finished: *saying "iatà" (for "ja està" = "it's done")*   1;3.21
Saying goodbye: saying "adéu" = "goodbye")   1;3.21
Expressing enthusiasm in relation to the focus of attention/joint action: *saying "aquí!" = "here")*   1;4.18
Exclaiming with displeasure because of an unfortunate event related to the focus of attention/joint action: *saying "oh!"*   1;4.18
Directing the other's attention to an object so that the other will perform some action with it: *saying "té" = "take it")*   1;5.23
Requesting help: *saying ""vumé" (for "vull més" = "I want more")*   1;4.18

TABLE 5.

Request an object: *Verbalize the name of the object ("mam" (for food), "aba" (for "aigua" = "water"))* 1;1.19 - 1;3.21 1;2.16 – 1;4.18: *Verbalize the action ("dóma" for "dóna'm" = "give me")*
Comment on the focus of attention/joint action –including labeling: *Verbalize the name of the object ("aba")* 1;3.21 1;4.18 – 1;5.23: *Verbalize the result of the action (*"hanquigut" *(for "han caigut" = "fallen down"),* "tatecà" *(for "està trencat = "it's broken"))* (*Imitation*) 1;4.18: *Verbalize the name of the person ("bebè" ="baby")* (*Imitation*) 1;5.23: *Verbalize the name of the agent (*"Marta" *)*
Propose the start of a new activity: *Verbalize the name of the activity ("papa" for "tapa" = "to cover")* 1;3.21
Execute a movement or step in a game: *Verbalize the name of the person in the game of "call people" ("papà!" = "daddy",* "iaia!" *= "grandma"–*imitation–*)* 1;3.21 – 1;5.23 (*Imitation*)

Focusing on the rules of constant correspondence, we can see that Sara expressed 14 different intentions corresponding to 14 rules by means of 8 words. Marta expressed a total of 16 intentions distributed between 16 rules, to which 11 words correspond. The ratio of intentions/words is 1.75 (or 2, if we exclude imitations) for Sara and 1.45 for Marta.

With respect to variable correspondence rules, Sara used 6 words to express 11 different communicative intentions. Marta used a total of 11 words to express 4 communicative intentions. The ratios of intentions/words in each linguistic repertoire are 1.75 for Sara and 0.36 (0.57 if we exclude imitations) for Marta.

Communicative intentions (functions)

As shown in tables 2-5, Sara expressed 24 different intentions by verbal means, and Marta 20.

Including all of the communicative intentions expressed by linguistic (word) or non-linguistic means (gestures, vocalizations…), Sara expressed a total of 42 different communicative intentions, compared with 28 for Marta. A higher "pragmatic flexibility", defined as the number of different communicative intentions expressed (Snow, Pan, Imbens-Bailey & Herman, 1996), is evidenced in Sara's case. Table 6 shows all of the communicative intentions expressed by the girls in the study period.

TABLE 6.

Sara	Marta
1. Expressing the desire to continue the current activity.	1. Expressing the desire to continue the current activity.
2. Protesting about the interruption of an activity.	
3. Rejecting the proposal to continue the current activity.	4. Rejecting the proposal to continue the current activity.
	5. Requesting help.
4. Requesting an object.	3. Requesting an object.
5. Calling the attention of a person to come.	
6. Commenting on the focus of attention/joint action –including labeling.	19. Commenting on the focus of attention/joint action –including labeling.
	20. Saying goodbye.
7. Execution of a movement or a step in a game.	6. Execution of a movement or a step in a game.
8. Expressing discomfort.	2. Expressing discomfort.
9. Suggesting that the listener should repeat an action.	
10. Expressing enthusiasm in relation to the focus of attention/joint action.	21. Expressing enthusiasm in relation to the focus of attention/joint action.
	22. Exclaiming with displeasure because of an unfortunate event related with the focus of attention/joint action.
	23. Responding negatively to a request for an object.
11. Rejecting the proposal to carry out an action or to carry it out in a given way.	7. Rejecting the proposal to carry out an action or to carry it out in a given way.
	8. Expressing the wish to initiate an activity.
12. Rejecting the prohibition of an action or of performing it in a particular way.	
13. Exclaiming to indicate the entry of food into the mouth.	9. Exclaiming to indicate the entry of food into the mouth.
14. Directing other's attention towards an object, person or event.	24. Directing other's attention towards an object, person or event.
	25. Rejecting the mother's request for an object.
15. Indicating the transferring of an object in order to get help with it.	
16. Rejecting an offer of help.	10. Rejecting an offer of help..
	11. Disagreeing with the action that the mother wants to do.
	12. Protest the mother's intent to take away a child's object.
17. Accepting the proposal to carry out an action or to carry it out in a given way.	
18. Requesting help.	
19. Exclaiming in relation to a recent event.	

⟶

Sara	Marta
20. Approval of the speaker's performance.	
21. Accepting the prohibition of an action or of performing it in a particular way.	
22. Expressing the desire to finish the activity.	26. Expressing the desire to finish the activity.
23. Indicating that the activity has been completed or has finished.	13. Indicating that the activity has been completed or has finished.
	14. Rejecting the suggestion to begin an activity.
	15. Thanking.
24. Accepting the start of the activity.	
25. Accepting the departure or temporary absence of the listener.	
26. Acceptance of the offer of help.	
27. Commenting on something or someone not present.	
28. Responding affirmatively to a question aimed at clarifying the meaning of an utterance.	
29. Expressing the wish to play a role.	
30. Rejecting the suggestion of playing a role.	
31. Disapproval of the infant's own behavior. *(Imitation)*	
32. Expressing agreement with the other's disapproval regarding the infant's own behavior.	
33. Commenting on a recent event.	
34. Responding affirmatively to a question aimed at clarifying the meaning of non-verbal behavior.	
35. Expressing satisfaction.	16. Expressing satisfaction.
	17. Responding negatively to a yes/no question about the well-being of the receiver.
36. Responding affirmatively to yes/no question regarding the focus of attention/joint action.	
37. Responding affirmatively to yes/no question regarding a recent event.	
38. Exclaiming with enthusiasm in relation to something not present.	
39. Proposing that other carry out a given action.	27. Proposing that other carry out a given action.
	28. Directing the other's attention to an object so that the other will perform some action with it.
40. Proposing the start of a new activity.	18. Proposing the start of a new activity.
41. Proposing a new focus for the activity.	
42. Declaring the intention to carry out a given action in the immediate future.	

Formal resources (forms)

We also observe differences between the two girls if we examine the formal resources that they employed to communicate. Table 7 shows for every girl the percentage of communicative intentions expressed exclusively by non-linguistic means, in communicative acts that included a word (linguistic), or in both type of acts (non-linguistic and linguistic).

TABLE 7.

	Sara	*Marta*
Non-linguistic	38%	25%
Linguistic	38%	39%
Both	24%	36%

Discussion

With regard to the form-function rules, our data replicate the tendencies shown in the studies by Ninio (1994a; 1994b). Sara and Marta used rules of constant correspondence throughout the research period. Rules of variable correspondence appeared from the age of 15 months for Sara and from 13 months for Marta. At this point the girls already had a pragmatic repertoire consisting of 8 different communicative intentions for Marta and 13 for Sara. The increase in rules of variable correspondence in our data was gradual and not particularly marked. This could be because the sudden growth in this kind of rules, which infants undergo between the ages of 16 and 22 months (Ninio, 1994a), had not yet taken place. However, we have seen how the appearance of multiple correspondences (more than one form for the expression of the same intention) is associated with the rules of variable correspondence.

However, apart from ratifying the general tendencies concerning the rules of form-function correspondence, the most interesting aspect of our results is that they point to the existence of differences between children in the use of these rules (Rivero, 2005). Sara used some words to express more than one communicative intention. Specifically, she used the word "am" to express two different communicative intentions. The same can be said of the word "no", which appeared in association with two intentions. The word "sí" (=yes) was used for expressing five different communicative intentions. The number of words that expressed more than one communicative intention was lower in Marta's case – she used the word "no" in six rules of constant correspondence.

These differences can be summarized by saying that while Sara seemed to be better oriented toward increasing her pragmatic repertoire Marta seemed better oriented toward increasing her vocabulary. In other words, Sara had to express more communicative intentions with the vocabulary that was available to her. We could say that she "exploited" her lexicon more pragmatically.

It is interesting to observe the role of imitation in the development of the girls' linguistic resources. It is noteworthy that, while Sara's two imitations expressed a new communicative intention or verbally expressed an intention that was previously fulfilled by way of non-linguistic procedures, Marta's four imitations expressed communicative intentions for which she already had words available. The imitations here were cases of employing a broader lexicon for the expression of the same intention (*commenting on the focus of attention/joint action* or *executing a movement or step in a game*). These results are consistent with those mentioned above.

Sara showed, overall, more pragmatic flexibility and tended toward increasing her repertoire of communicative intentions, albeit through the use of non-linguistic resources. New communicative intentions in non-linguistic communicative acts were still appearing in the last sessions with Sara.

This distribution of resources employed for the expression of communicative intentions again shows differences between both children, which follow the same pattern as the overall results. Throughout the period of the study, Sara presented a very balanced distribution between communicative intentions expressed through non-linguistic procedures and intentions expressed in communicative acts that incorporated a word. So, for example, we can see that in the sessions corresponding to the ages of 1;3.11 and 1;4.15, new communicative intentions appeared that were expressed using non-linguistic means, as did new communicative intentions that appeared only in communicative acts incorporating a word. In this case, the growth in her repertoire of communicative intentions did not exclusively involve the incorporation of vocabulary; her non-linguistic resources also continued to be a useful medium for increasing her pragmatic repertoire. Marta's profile is slightly different in this sense. In overall terms, during the period of the study, she showed more linguistically expressed communicative intentions than non-linguistically expressed ones. Beginning from age 1;3.21, most of the communicative intentions that became part of her repertoire were associated with communicative acts that incorporated a word and, therefore, with the acquisition of vocabulary. In her case, non-linguistic communicative procedures continued to be useful for expressing communicative intentions, but from a certain age, the increase in her pragmatic repertoire was closely associated with the acquisition of words.

So, the differences between both girls in early lexical acquisition are related to their general communicative profiles. While Sara is more oriented to the expanding of her communicative intentions (functions), Marta is more interested in the increasing of her vocabulary (forms).

Maternal responses were not considered in this study. This is a limitation of our study and future works should take the mothers' communicative intentions and speech into account. The differences between subjects could be related to the specific characteristics of mother-infant interaction in terms of communicative and linguistic stimuli. It would be necessary to check, in further analyses, whether the speech of the two mothers corresponds to the tendencies observed in the two girls (i.e., whether the characteristics of mother-child interaction offer more opportunities for vocabulary learning in one case and more opportunities for pragmatic flexibility in the other). A great amount of research has established the existence of relationships between the adult's speech, communicative characteristics and support, and the child's communicative and linguistic development (e.g., Bruner, 1983; Cazden, 1983; Harding, Weissmann, Kromelow & Stilton, 1997; Hoff-Ginsberg, 1998; Kelly, Morisset, Barnard, Hammond & Booth, 1996; Moerk, 1983; Ninio, 1992; Snow, 1983). Nevertheless, more research is needed to establish more precisely the specific characteristics of these relationships.

The context of communicative and linguistic interaction must also be considered, as different contexts may promote particular interaction styles (Blum-Kulka & Snow, 2002; Yont, Snow & Vernon-Feagans, 2003). Our results are relevant to the mealtime situation. Further analysis of the data collected during bathing and play could create a more complete map of the children's competences and also of the support offered by adults.

REFERENCIAS

Austin, J.L. (1962). *How to do things with words.* New York: Oxford University Press.
Bamberg, M., Budwig, N. & Kaplan, B. (1991). A developmental approach to language acquisition: two case studies. *First Language, 11*, 121-141.
Bates, E. (1976). *The emergence of symbols.* New York: Academic Press.
Blum-kulka, S. & Snow, C.E. (2002) (Eds.). *Talking to adults: The contribution of multiparty discourse to language acquisition*. Mahwah, NJ: Lawrence Erlbaum.
Bruner, J. (1975). The ontogenesis of speech acts. *Journal of Child Language, 2*, 1-19.
Bruner, J. (1983). *Childs talk*. New York: Norton.
Carpenter, R.L., Mastergeorge, A.M. & Coggins, T.E. (1983). The acquisition of communicative intentions in infants eight to fifteen months of age. *Language and Speech, 26*, 101-116.
Carpenter, M., Nagell, K. & Tomasello, M. (1998). Social cognition, joint attention and communicative competence from 9 to 15 months of age. *Monographs of the Society for Research in Child Development, 63*(4): 1-143..
Cazden, C. (1983). Adult assistance to language development: Scaffolds, models and direct instruction. In A.R.P. Parker & F.A. Davis (Comps.), *Developing Literacy* (pp. 3-17). Delaware: International Reading Association.
Ely, R., Gleason, J.B., MacGibbon, A. & Zaretsky, E. (2001). Attention to language: Lessons learned at the dinner Table. *Social Development, 10,* 355-373.
Grice, H.P. (1957). Meaning. *Philosophical Review, 66*, 377-388.
Halliday, M.A.K. (1975). *Learning to mean-Explorations in the development of language.* London: Edward Arnold.

Harding, C.G., Weissmann, L., Kromelow, S. & Stilton, S.R. (1997). Shared minds: How mothers and infants co-construct early patterns of choice within intentional communicative partnerships. *Infant Mental Health Journal, 18*, 24-39.

Hoff-Ginsberg, E. (1998). The relation of birth order and socioeconomic status to children's language experience and language development. *Applied Psycholinguistics, 19*, 603-629.

Kelly, J.F., Morisset, C.E., Barnard, K.E., Hamond, M.A. & Booth, C.L. (1996). The influence of early mother-child interaction on preschool cognitive/linguistic outcomes in a high-social-risk group. *Infant Mental Health Journal, 17,* 310-321.

Landis, J.R. & Koch, G.G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33,* 159-174.

Lieven, E.V., Pine, J.M. & Barnes, H.D. (1992). Individual differences in early development: Redefining the referential-expressive distinction. *Journal of Child Language, 19*, 287-310.

MacWhinney, B. (2000). T*he CHILDES Project: Tools for Analyzing Talk. Volume I: Transcription Format and Programs* (3rd edition). Mahwah, N. J.: Lawrence Erlbaum Associates.

MacWhinney, B. & Snow, C. (1985). The child language data exchange system. *Journal of Child Language, 12,* 271-296.

MacWhinney, B. & Snow, C. (1990). The child language data exchange system: An update. *Journal of Child Language, 17,* 457-472.

McShane, J. (1980). *Learning to talk.* Cambridge: Cambridge University Press.

Moerk, E. (1983). *The mother of Eve as a first language teacher*. New York: Applex.

Nelson, K. (1973). Structure and strategy in learning to talk. *Monographs of the Society for Research in Child Development*, *38* (Serial No.149).

Ninio, A. (1992). The relation of children's single word utterances to single word utterances in the input. *Journal of Child Language, 19*, 87-110.

Ninio, A. (1993a). Is early speech situational? An examination of some current theories about the relation of early utterances to the context. In D. Messer & G. Turner (Eds.), *Critical influences on language acquisition and development* (pp. 23-39). London: Macmillan.

Ninio, A. (1993b). On the fringes of the system: Children's acquisition of syntactically isolated forms at the onset of speech. *First Language, 13,* 291-313.

Ninio, A. (1994a). Expression of communicative intents in the single-word period and the vocabulary spurt. In K. Nelson & A. Reger (Eds.), *Children's language, Vol. 8* (pp. 103-124). Hillsdale, N. J.: Erlbaum.

Ninio, A. (1994b). Antecedents of syntax in the communication system. Invited lecture, Colloquium on Prelinguistic and Linguistic Communication in Children, Université René Descartes Paris-V, Centre Nationale de la Recherche Scientifique, Paris, France, june.

Ninio, A. & Snow, C.E. (1996). *Pragmatic Development.* Oxford: Westview Press.

Ninio, A. & Wheeler, P. (1984). *A manual for classifying verbal communicative acts in mother-infant interaction*. Working Papers in Developmental Psychology, No. 1. Jerusalem: Martin and Vivian Levin Center, Hebrew University. Reprinted as *Transcript Analysis*, 1986, 3, 1-82.

Ninio, A. & Wheeler, P. (1986). A manual for classifying verbal communicative acts in mother-infant interaction. *Transcript analysis, 3,* 1-83.

Ninio, A. & Wheeler, P. (1988). *A revised manual for classifying verbal communicative acts in mother-infant interaction.* Coding manual distributed by the Department of Psychology, Hebrew University, Jerusalem, Israel.

Pinker, S. (1984). *Language learnability and language development*. Cambridge, MA: MIT Press.

del Rio, M.J. (1987). La adquisición del lenguaje: un análisis interaccional. *Infancia y Aprendizaje, 30*, 11-30.

Rivero, M. (2001). Pragmatic development in early infancy: The development of communicative intents expressed by three children during mealtimes. In M. Almgren, A. Barreña, M.J. Ezeizabarrena, I. Idiazabal & B. MacWhinney (Eds.), *Research on Child Language Acquisi-*

tion: Proceedings of the 8th Conference of the International Association for the Study of Child Language (pp. 546-557). Somerville, MA: Cascadilla Press.

Rivero, M. (2005). Diferencias individuales en la expresión de intenciones comunicativas en el primer año y medio de vida. In M. A. Mayor, B. Zubiauz & E. Díez-Villoria (Eds.), *Estudios sobre la adquisición del lenguaje* (pp. 307–322). Salamanca: Ediciones Universidad de Salamanca.

Rivero, M. (2010). Maternal expression of communicative intentions and pragmatic fine tuning in early infancy. *Infant Behavior and Development, 33,* 373-386.

Searle, J. R. (1976). The classification of illocutionary acts. *Language in Society, 5,* 1-25.

Snow, C.E. (1983). Parent-child interaction and the development of communicative ability. In L. Schiefelbusch (Ed.), *Communicative competence: Acquisition and retardation*. Baltimore: University Park Press.

Snow, C.E. & Beals, D.E. (2006). Mealtime Talk That Supports Literacy Development. *New Directions for Child and Adolescent Development, 111,* 51-66.

Snow, C.E., Pan, B.A., Imbens-Bailey, B. & Herman, J. (1996). Learning how to say what one means: A longitudinal study of children's speech act use. *Social Development, 5,* 56-84.

Tomasello, M. (2000). The social-pragmatic theory of word learning. *Pragmatics, 10*, 401-413.

Trevarthen, C.B. & Hubley, P. (1978). Secondary intersubjectivity: Confidence, confiding and acts of meaning in the first year. In A. Lock (Ed.), *Action, gesture and symbol. The emergence of language* (pp. 183-229)*.* London: Academic Press.

Triadó, C. (1982). *Els inicis del llenguatge. Activitats i communicació.* Barcelona: Laia (Reprinted Barcelona: La Llar del Llibre, 1990).

Vila, I. (1984). *La competencia comunicativa en los dos primeros años de vida* (Non-published doctoral dissertation). Universitat de Barcelona.

Vygotsky, L.S. (1960). *Razvitie vysshikh psikhicheskikh funktsii*. Moscú: Izdatel'stvo Akademii Pedagogicheskikh Nauk. (English edition: *Mind in society: The development of higher mental processes*. M. Cole, V. John-Steiner, S. Scribner & E. Souberman (Eds.) Cambridge, MA: Harvard University Press, 1978).

Weizman, Z.O. & Snow, C.E. (2001). Lexical Input as Related to Children's Vocabulary Acquisition: Effects of Sophisticated Exposure and Support for Meaning. *Developmental Psychology, 37*, 265-279.

Windsor, J., Doyle, S.S. & Siegel, G.M. (1994). Language acquisition after mutism: A longitudinal case study of autism. *Journal of Speech and Hearing Research, 37,* 96-105.

Yin, R.K. (1994). *Case study research: Design and methods.* London: Sage.

Yont, K.M., Snow, C.E. & Vernon-Feagans, L. (2003). The role of context in mother-child interactions: An analysis of communicative intents expressed during toy play and book reading with 12-months-olds. *Journal of Pragmatics, 35*, 435-454.