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Bernicot, J., Laval, V. & Chaminaud, S. (2007). Nonliteral Language Forms in Children: In What Order Are They Acquired in Pragmatics and Metapragmatics? *Journal of Pragmatics*, 39, 2115–2132.

**Nonliteral Language Forms in Children:
In What Order Are They Acquired in Pragmatics and Metapragmatics?**

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March 2007

Abstract

The purpose of this study was to gain insight into nonliteral language acquisition by children. Two dimensions were introduced: the acquisition order of the different forms of nonliteral language from the standpoint of comprehension and metapragmatic knowledge, and the relationship between their understanding and metapragmatic knowledge about them. Three nonliteral forms -- indirect requests (hints), idioms, and conversational implicatures -- were studied in children divided into three age groups (6, 8, and 10 years) using a cross-sectional approach: each child was tested on all three nonliteral forms. Data was collected from a story completion task presented as a computer game (the child chose one of two pictures and explained why). The results indicated that nonliteral language comprehension (pragmatic skills) and metapragmatic knowledge are acquired in different orders. For comprehension, the order was: semantic-inference implicatures, indirect requests, idioms, sarcastic-inference implicatures. For metapragmatic knowledge, the order was: idioms, implicatures with a sarcastic or semantic inference, indirect requests. The discussion compares the results to available data on each of these forms, and proposes some future perspectives, both for the study of everyday language learning and for more theoretical questions. The analysis of the relationship between pragmatics and metapragmatics during language acquisition is also addressed.

Keywords: Indirect request, idiom, conversational implicature, children, non literal language, pragmatics, metapragmatics

1. Introduction

The topic of nonliteral language is a key issue in language development, one which underscores the interrelationships between linguistic, cognitive, and pragmatic skills (Tolchinsky, 2004). In the study of nonliteral language acquisition, pragmatic skills and metapragmatic knowledge have often been considered separately (Baroni & Axia, 1989; Bernicot, 1991; Hickmann, 2001; Laval, 2003; Prinz, 1983). An issue that remains to be addressed today is the link between pragmatic skills and metapragmatic knowledge during child development. Answering this question involves two steps: (1) determining the order, if one exists, in which children acquire the different forms of nonliteral language, and (2) finding out whether metapragmatic knowledge about those forms is acquired in the same order as they are understood.

To date, nonliteral language forms have been addressed one at a time. A significant body of results is now available for two of these forms, indirect requests and idiomatic forms (which we will discuss at length below), but the overall picture of nonliteral language acquisition provided by the existing literature is incomplete. The present study breaks away from this fragmented approach in order to show that nonliteral language acquisition is form-dependent. Ashkenazi, Ravid, and Dowker (1998) have already attempted to devise a developmental scale of the different types of humor in development. Bridging the gap between "what is said" and "what is meant" -- which defines nonliteral language -- requires cognitive and social inferences of variable complexity. It is hypothesized here that the acquisition order of the various nonliteral forms of language is a function of the complexity level of the inferences that must be made. To test this hypothesis, we studied the comprehension of three nonliteral forms (indirect requests, idioms, and conversational implicatures) in children between the ages of 6 and 10 years. For the same forms and the same children, we also assessed the corresponding metapragmatic knowledge, defined in terms of the ability to think about the link between linguistic structures and production contexts in situations that do not involve communication (Mey, 2001; Verschueren, 1999; 2000). We are interested in the ability to express the discrepancy between "what is said" and "what is meant", a crucial feature of nonliteral language (Lee, Torrance & Olson, 2001).

Historically, work on this topic began with the study of indirect requests in 1976, when Ervin-Tripp defined the different categories of this type of request. We are interested here in allusive requests for action (hints), i.e., requests in declarative form in which all or part of the action to be carried out, the agent of that action, or the requested object remains implicit. A typical example is saying "*It's cold in here*" to mean "*Close the window*". Research in the 1980's and since has shown that the ability to understand hints is not just a question of age, but depends heavily on the production context and the comprehension criterion used (the action to be accomplished or the speaker's intention) (Bates, 1976; Ervin-Tripp and Mitchell-Kernan, 1977; Ervin-Tripp, Strage, Lampert & Bell, 1986; Ninio & Snow, 1996; Tomasello, 2000; Ryckebusch & Marcos, 2004). In natural or close-to-natural settings, indirect requests have been noted by the age of 5 or even earlier. The related metapragmatic knowledge may show up by the age of 7 or 8 (Bernicot, 1991).

An idiom is a stereotyped expression with a conventional meaning that cannot necessarily be deduced from the meaning of the words it contains (Gibbs, 1994). It does not suffice, for example, to know the meaning of "*change*" and "*tune*" to understand the idiomatic meaning of "*change your tune*" (talk about something else). The following features of idioms were considered here: the potential ambiguity of the expression (whether the expression has a literal interpretation and an idiomatic interpretation, or an idiomatic interpretation only as in "*to*

have a frog in one's throat") (Mueller & Gibbs, 1987), the relative frequencies of the two interpretations if both exist (Schweigert, 1986), and the expression's transparency (whether the idiomatic interpretation can be determined from the literal interpretation) (Gibbs & Nayak, 1989).

To study idioms, we will look in particular at the discrepancy between "what is said" and "what is meant", with the idea that the literal meaning and the idiomatic meaning are connected by a linguistic convention in the language in question (Laval, 2003; Laval & Bernicot, 2001, 2002). Recently, there has been a growing interest in this issue in the developmental research on children and adolescents. Studies conducted so far have shown that idioms are not understood until the age of 6 (Abkarian, Jones, & West, 1992) and that their comprehension is facilitated by an appropriate context (Ackerman, 1982; Cacciari and Levorato, 1989; Gibbs, 1987, 1991; Laval, 2003; Levorato and Cacciari, 1995, 1999; Nippold & Martin, 1989; Qualls, Lantz, Pietrzyk, Blood, & Hammer, 2004). Research has also shown that familiar and transparent idioms are easier to understand than unfamiliar and opaque ones (Gibbs, 1987, 1991; Levorato and Cacciari, 1992, 1995; Nippold and Duthie, 2003; Nippold, Moran and Schwarz, 2001; Nippold and Rudzinski, 1993; Nippold and Taylor, 1995, 2002; Nippold, Taylor and Baker, 1996). In the area of metapragmatic knowledge of idioms, there are only a few studies, and the findings are contradictory. Prinz's work (1983) conducted in a non-communication setting suggested that metalinguistic skills do not appear until the age of 9. By contrast, Laval's (2003) study showed that metapragmatic knowledge linked to the contextual characteristics of the situation can appear by age 6. Then later at age 9, context-linked metapragmatic knowledge was found to coexist with metapragmatic knowledge of linguistic conventions. In short, it seems that an understanding of idiomatic forms appears by the age of 6 and the corresponding metapragmatic knowledge shows up after age 9.

Conversational implicatures are defined in terms of Grice's (1975, 1989) theory, which posits the existence of a fundamental, mutually-assumed principle governing conversation, the cooperation principle. Abidance by this principle and its maxims (quantity, quality, relation, and modality) guarantees successful communication. In daily conversations, whenever a speaker appears to violate one of the maxims, the listener, who assumes speaker cooperation, makes what Grice (1975; 1989) calls a conversational implicature in order to re-establish abidance by the apparently violated maxim. The following example of a dialogue between two persons, A and B, illustrates this phenomenon for violation of the maxim of relation: "be relevant".

A: Do you want some coffee?

B: I'm afraid I won't be able to sleep.

In replying to A's utterance, B violates the maxim of relation (what B says is irrelevant). The implicature that allows A to conclude that B does not want coffee is based on the assumption of abidance by the cooperation principle and the interlocutors' shared knowledge of a property of coffee (its stimulating effect). What the speaker says (*he's afraid he won't be able to sleep*) differs from what he means (*he doesn't want any coffee*). The conversational implicature thus involves the classic problem of a discrepancy between the literal meaning and the implicit meaning of an utterance. Grice's (1975, 1989) model laid the groundwork for recent work on this issue (see Sperber & Wilson, 1989; Levinson, 2000; Noveck & Sperber, 2004; Gibbs, 2002).

Experimental studies dealing specifically with children's understanding of conversational implicatures are extremely scarce. We might mention an initial approach by Adams (2002), who studied children with communication disorders and associated deficits, but this author considered implicatures in a very general way. We therefore thought it would be useful to assess implicature comprehension by controlling what maxim is

violated and how. The present experiment was based on a French-language study by Bernicot, Bateau and Gil (forthcoming). The materials were designed in such a way that the maxim of relation ("be relevant") was violated, but the violated relation could be re-established by means of a semantic inference (Example 1, already discussed above) or a sarcastic inference (Example 2).

Example 1. Implicature with a semantic inference

Speaker A: Would you like a cup of coffee?

Speaker B: I want to get to sleep early tonight.

Example 2. Implicature with a sarcastic inference

Speaker A: Do you want me to invite Beatrice to dinner?

Speaker B: Yes, I'd love to see that pest again.

In Example 2, Speaker A explicitly asks a question to Speaker B, who explicitly gives a reply containing cues indicating that he means the opposite of what he says (contradiction: love/pest).

The few studies conducted so far do not allow us to make any predictions about children's understanding of conversational implicatures. The only study comparing different nonliteral language forms is the work by Champagne, Virbel, Nespoulous, and Joannette (2003) on French-speaking adults. Based on measures of reading time, these authors defined the following complexity hierarchy for the various nonliteral forms, in decreasing order of comprehension performance: indirect requests, utterances that violate the maxim of relation, utterances that violate the maxim of quantity, sarcastic utterances.

To set forth a precise hypothesis about the acquisition order of nonliteral forms in children, we must first determine what cognitive-social inferences are needed to understand these forms. Understanding indirect requests requires relating the linguistic characteristics of the utterance to the characteristics of the communication situation. The utterance "*cold air is coming in the window*" has an assertive illocutionary value if the speaker's intention is to communicate his/her belief about the state of the world to the listener. This same utterance will take on a directive illocutionary value (hint) in a context where the speaker's intention is to have the listener close the window. The inference the listener must make requires establishing a correspondence between the linguistic characteristics of the utterance and the fulfillment conditions of the request. In short, the listener is presented with an utterance (which, linguistically speaking, does not evoke a request) and a situation: he/she must relate the utterance and the situation on the basis of knowledge of the fulfillment conditions of the request.

For idioms, going from "what is said" to "what is meant" rests on a linguistic convention. For the expression "*clear the air*", for example, the listener must go from a referential meaning that has to do with "*cleaning*" to a nonliteral meaning that has to do with "*settling unsolved problems*". The inference consists of making a connection, by way of a convention, between the two meanings "*cleaning*" and "*settling problems*". Based on a linguistic convention, the listener must deduce a signified concept from a semantically unrelated signifier in accordance with the communication situation.

For conversational implicatures, the inference to be made depends on what maxim is violated. We will look in particular at the maxim of relation. This maxim is violated when there is discrepancy between Speaker A's

utterance and Speaker B's reply. There are different kinds of violations that create such discrepancies, two of which will be considered here: semantic violations and sarcastic violations. For implicatures requiring a semantic inference (e.g. *A: Should I mow the lawn? B: The children are taking a nap*), Speaker A explicitly asks a question that refers to a defined lexical domain, and Speaker B explicitly gives a reply that refers to a different semantic domain. The violation is defined by the gap between the two domains. It is the interlocutors' shared knowledge of the world (the fact that lawn mowers are noisy) that bridges the gap. Two lexical domains are evoked, and the listener must use shared knowledge to determine how the second is related to the first.

For implicatures requiring a sarcastic inference (e.g. *A: Should I open the parasol? B: No, I really like getting sunburned*), Speaker A explicitly asks a question and Speaker B explicitly gives a reply that supplies contradictory cues indicating that she means the opposite of what she said (contradiction: like/sunburn). The inference is based on the detection of these two contradictory terms (which lead to a yes vs. no interpretation) and on shared knowledge about the harmful effects of sunburn. The listener is given no situational clues: her interpretation can only be based on linguistic cues (namely, the contradiction between the two terms) and shared knowledge.

One can predict that the greater the complexity of the cognitive-social inference made by the listener to reduce the discrepancy between "what is said" and "what is meant", the later the nonliteral form will be acquired. It was hypothesized here that the acquisition order with age would be: semantic-inference implicatures, indirect requests (hints), idioms, sarcastic-inference implicatures.

The aim of the present study was to supplement past research on nonliteral language in children by gaining insight into the acquisition order of its various forms, and the link between pragmatic skills and metapragmatic knowledge. Pragmatic skills and metapragmatic knowledge were tested for three forms of nonliteral language -- indirect requests (hints), idioms, and conversational implicatures -- in native French-speaking children between the ages of 6 and 10 years. Pragmatic skills were assessed using a comprehension task (choose a picture to complete a story) and metapragmatic knowledge was assessed using a choice-explanation task performed during the comprehension task.

Several methods have been used to study children's understanding of nonliteral forms. Very large corpora gathered in natural situations are useful for analyzing real productions and real responses to (and thus comprehension of) those productions. However, with this technique, the probability of being able to study early comprehension of three particular nonliteral language forms in the same children is extremely low. For this reason, we used a paradigm that both exhibits the characteristics of natural language-production situations and meets the methodological requirements of the experimental method. We designed a computer-driven task that resembles a computer game. This approach has the advantage of putting the child in the center of the interaction at the same time as it allows us to control (in the experimental sense of the term) the various interactions (utterance-production contexts, utterances to be understood, etc.).

2. Method

2.1 Participants

Sixty native French-speaking children¹ participated in the experiment. They were divided into three age groups of 20 children each (10 boys and 10 girls). The mean ages of the groups were 6 years 4 months (range: 6 years to 7 years 11 months), 8 years 8 months (range: 8 years 2 months to 9 years 9 months), and 10 years 5 months (range: 10 years 3 months to 11 years 3 months). All of the children were from middle class homes (based on the parents' occupations) and were attending normal public schools. In the remainder of this paper, the three groups will be called the 6-year-olds, the 8-year-olds, and the 10-year-olds.

2.2 Materials

The equipment included a portable computer with a touch screen. The experimental paradigm -- a computerized form of an experimental procedure that has already been validated in the pragmatic research -- was a story completion task like the one previously used to study children's understanding of requests (Bernicot & Legros, 1987), promises (Bernicot & Laval, 1996), and idioms (Laval, 2003).

The experimental materials consisted of sixteen stories describing the adventures of familiar Walt Disney characters. The stories were presented in comic strip format and varied as a function of the four nonliteral language forms studied here: indirect requests (of the hint type), idioms, semantic-inference conversational implicatures, and sarcastic-inference conversational implicatures. The forms were studied in context. Each story was composed of four pictures.² The first picture established the interaction setting, the second showed the production of the target utterance, and the last two depicted two possible endings. Examples of the stories used in the four experimental conditions are presented in Tables 1 and 2. For each story, the original French version is given in the Appendix.

Insert Tables 1 and 2

Indirect requests. Indirect requests were studied using declarative utterances in subject-verb-complement form (e.g. *cold air is coming in the window*). The utterances were inserted in an appropriate context that abided by the request fulfillment conditions and created a communication situation involving this nonliteral language form (indirect request). From the locutionary standpoint, the speaker expressed a belief about the state of the world (here, "*cold air is coming in the window*"). From the illocutionary standpoint, the speaker attempted to make the listener do something in this particular context ("*close the window*"). Pictures 3 and 4 depicted possible endings: a nonliteral ending showing the accomplishment of the action corresponding to the underlying request, and a literal ending showing a verification of the state of the world. From the operational standpoint, two criteria were used. For the illocutionary level, the external criterion for the realization of the speaker's intention was the accomplishment of the action by the listener (closing the window). For the locutionary level, the external criterion for the realization of the speaker's intention was the verification by the listener of the belief expressed by the speaker about the state of the world (looking at the thermometer).

¹ Half of the data was collected by Christian Hudelot's research group (CNRS, UMR 7114 MoDyCo, Université Paris 10) and the other half, by Virginie Laval's research group (CNRS, LMDC UMR 6215, Université de Poitiers): ACI "Ecole et Sciences Cognitives" No. 02 2 0615

² The pictures in the stories were produced using @Disney Interactive Dessinez c'est Disney 3, 2004 software. Some of the pictures were extracted as is and others were touched up using the software tools.

Idioms. All of the idioms used (e.g. *change your tune*) had two interpretations (idiomatic and literal), and all were familiar (as assessed by their frequency of use) and transparent (the idiomatic interpretation could be found from the literal interpretation) (Laval, 2003). The idioms were inserted in an appropriate nonliteral communication context. Pictures 3 and 4 showed two possible endings: a nonliteral ending corresponding to a paraphrase or a consequence of the idiomatic meaning of the expression, and a literal ending corresponding to a paraphrase or a consequence of the literal meaning.

Conversational implicatures. Conversational implicatures were studied in conversation sequences that established an appropriate interaction context. Two types of implicatures were manipulated: semantic-inference implicatures in which Character A explicitly asked a question ("*Should I mow the lawn?*") that referred to a particular lexical domain and Character B replied in another semantic domain ("*The nephews are taking a nap*"), and sarcastic-inference implicatures in which Character A asked a question ("*Should I open the parasol?*") and Character B replied ("*No, I really like getting sunburned*") with cues indicating that he meant the opposite of what he said. Positive and negative replies were counterbalanced across the two types of implicatures. Pictures 3 and 4 showed two possible endings: an ending requiring an inference to link the utterances of the two interlocutors, and an ending representing what the situation would be if the inference was not made.

2.3 Procedure

The participants performed a story completion task that resembled a computer game. A wizard named Zebulon guided the children throughout the task. An experimenter was present to make sure the session proceeded correctly. The child was seated facing the screen with his/her most skilled hand on the mouse pad located 20 cm from the screen. The child's task was to finish the stories by choosing one of two endings. Table 3 illustrates the layout of the stories as they appeared on the computer screen in comic strip format. The four pictures were displayed one by one as the wizard told the story (see Table 3). Each story was composed of two "priming" pictures: the first depicted the interaction setting and the second showed the scene where the target utterance was produced. An empty window containing only a question mark (indicating that the child would have to supply the ending) was displayed on the right. The wizard then asked the child "*What do you think happened?*" and proposed the two "target" pictures (the two possible endings). The child had to complete the story by simply touching the picture of his/her choice on the screen. This caused the chosen picture to move up into the empty window. Then the wizard asked the child to explain his/her choice by answering the question "*Why?*" (metapragmatic knowledge). The story-presentation order was varied randomly across children, and the target-presentation order was varied randomly across stories.

Insert Table 3

3. Data Coding

3.1 Comprehension Task

Again, the children's task was to complete each story by choosing one of two possible endings (choose a picture). Given that the goal of this experiment was to study the ability to make the inferences needed to understand the speaker's intention, the children's answers were scored as "correct" or "incorrect". A correct

answer was the response indicating that the child understood the difference between "what was said" and "what was meant".

For indirect requests, the correct answer was the nonliteral response, i.e., the choice showing the requested action being carried out. For example (see Table 1), when Minnie Mouse said to Mickey Mouse "*Cold air is coming in the window*", the correct answer was "*Mickey Mouse gets up and closes the window*". For idioms, the correct answer was the nonliteral response, i.e., the choice corresponding to a paraphrase or consequence of the idiomatic meaning of the expression. For example (see Table 1), when Donald Duck said to Uncle Scrooge "*change your tune*", the correct answer was "*Uncle Scrooge talks about something else*". For conversational implicatures, the correct answer was the choice indicating the ability to make the inference linking the utterances of the two interlocutors. For example (see Table 2), for the semantic-inference implicatures, when Donald Duck asked Daisy Duck "*Should I mow the lawn?*" and she replied "*The nephews are taking a nap*", the correct answer was "*Donald Duck waters the flowers*". For the sarcastic-inference implicatures (see Table 2), when Minnie Mouse asked Mickey Mouse "*Should I open the parasol?*" and he replied "*No, I really like getting sunburned*", the correct answer was "*Minnie Mouse opens the parasol*".

3.2 Explanation Task

The purpose of this task was to determine the extent to which children are capable of expressing the discrepancy between "what is said" and "what is meant" for the different nonliteral forms considered. The children's explanations of their correct answers were analyzed and coded by two judges. The overall inter-judge agreement rate was .85.

The analysis pointed out three main categories of explanations. Table 4 gives some examples of explanations in each category, for each nonliteral language form. *Irrelevant explanations* were ones related to knowledge of the world that clearly corresponded to a simple paraphrase or repetition of the chosen picture. *Simple explanations* were explanations based on the utterance production context or the utterance itself. *Elaborate explanations* were ones that explicitly expressed the discrepancy between what was said and what was meant. Only elaborate explanations were taken to be indicative of the ability to express the discrepancy.

Insert Table 4

4. Results

4.1 Comprehension Task

Descriptive analysis: number of children who understood each nonliteral form. A child could give at most four responses per experimental condition (one for each of the four stories in that condition). To determine the number of children who understood each nonliteral form, only those children who gave three or more responses were considered. For each age group and experimental condition (semantic inference, indirect request, idiom, sarcastic inference), Table 5 indicates the number of children with a comprehension score of 3 or more (out of 4). For example, fifteen 6-year-olds (out of 20) gave three or four correct answers on semantic-inference implicatures (see Table 5).

Insert Table 5

The descriptive analysis of the results clearly indicated that comprehension depended not only on the child's age, but also on the nonliteral language form in question. The high number of children who gave correct answers for semantic-inference implicatures and indirect requests indicates that neither of these nonliteral language forms was difficult for the children, regardless of their age. This was not true, however, for idioms and sarcastic-inference implicatures. The low number of 6-year-olds (4 out of 20) and 8-year-olds (9 out of 20) who answered correctly for the idioms, compared to the high number of 10-year-olds (16 out of 20), suggests that this nonliteral language form has not yet been acquired at the age of 8. In addition, the very small number of children who gave correct answers on sarcastic-inference implicatures, even among the 10-year-olds (7 out of 20), indicates that this nonliteral language form is acquired at a later period of development (after age 10).

Quantitative analysis: number of correct answers. The above conclusions were examined further by means of an inferential analysis of how the children's responses varied with age and across nonliteral language forms. A two-factor analysis of variance was conducted on the dependent variable "number of correct answers": Age (3) x Nonliteral Language Form (4). Figure 1 shows the mean number of correct answers per subject, by age group (6, 8, and 10) and nonliteral language form (indirect request, idiom, semantic-inference implicature, sarcastic-inference implicature). The main results can be described as follows.

The age effect was significant ($F(2,57) = 6.46, p < .002$): fewer correct answers were given by 6-year-olds (2.4) than by 8-year-olds (2.73) ($F(1,38) = 4.22, p < .046$) and 10-year-olds (2.96) ($F(1,38) = 12.72, p < .0012$). The nonliteral language form also had a significant effect ($F(3,171) = 45.76, p < .000001$): more correct answers were given for semantic inferences (3.68) than for indirect requests (3.1) ($F(1,57) = 20.04, p < .00003$), which in turn obtained more correct answers than did idioms (2.36) ($F(1,57) = 15.54, p < .00002$), which themselves obtained more correct answers than did sarcastic inferences (1.65) ($F(1,57) = 16, p < .0001$). The interaction was nonsignificant. Note that for indirect requests, however, the mean number of correct responses was about 3 out of 4 in all age groups.

*Insert Figure 1**4.2 Explanation Task*

The idea here was to analyze the elaborate explanations given by children whenever they answered correctly on the comprehension task. Accordingly, children who gave no correct answers in at least one experimental condition were not included in the analysis. In other words, to be included, a given child had to give at least one correct answer in each case. Table 6 gives the number of children in each age group, the number of elaborate explanations per group, and the percentage of the group that gave correct answers.

Insert Table 6

The number of children who gave at least one correct answer in each experimental condition remained high. The percentage of elaborate explanations was extremely low among the 6-year-olds (under 7%), and it was below 7% for indirect requests at all ages. This last result should be interpreted in the light of the fact that the

vast majority of the participants' explanations for their responses were simple rather than elaborate; there was only one case of an irrelevant explanation (see Table 4). So for the subsequent statistical analysis using a nonparametric chi-squared test (2x2) on the counts, we included only two age groups (8 and 10) and three nonliteral language forms (semantic inferences, idioms, and sarcastic inferences). Yates' correction was applied to cases where the group size was five or below. Differences were considered significant at a p-level of .05. To make it easier to read the results, Figure 2 gives the percentage of elaborate explanations by age group and nonliteral language form.

The 10-year-olds produced more elaborate explanations (30.87%) than did the 8-year-olds (18.11%) ($C^2(1) = 4.42$, $p < .0355$). Idioms gave rise to more elaborate explanations (38.63%) than did semantic inferences (17.35%) ($X^2(1) = 11.90$, $p < .0006$) and sarcastic inferences (20.89%) ($X^2(1) = 5.60$, $p < .018$). At the age of 8, idioms triggered more elaborate explanations (30.76%) than did semantic inferences (12.28%) ($X^2(1) = 4.99$, $p < .0256$). The same was true at age 10 (44.89% vs. 21.87%, respectively; $X^2(1) = 6.78$, $p < .0092$).

Insert Figure 2

5. Discussion

The goal of this research was to gain insight into children's acquisition of nonliteral language by studying the order in which various nonliteral language forms are acquired and the relationship between their understanding and metapragmatic knowledge of them.

Some new findings were obtained. The results demonstrated the existence of a clear-cut acquisition order: with a criteria of 75% of the participants in the age group considered, we found that 6-year-olds understood semantic-inference implicatures, 8-year-olds understood indirect requests (hints), and 10-year-olds understood idioms. Note that for indirect requests, this criterion was nearly reached already by the age of 6. With this same criterion, even the oldest children (10-year-olds) did not understand sarcastic-inference implicatures. These results were supplemented by analyses of variance at each age, which showed that the number of correct answers decreased in the following order: semantic-inference implicatures, indirect requests, idioms, sarcastic-inference implicatures.

The results in the literature on conversational implicature understanding by children are inconsistent. Our findings (semantic-inference implicatures were easy to understand, sarcastic-inference implicatures were difficult) validate our predictions, which were derived from the idea that the greater the complexity of the cognitive-social inference required to bridge the gap between "what is said" and "what is meant", the later the acquisition. The finding that indirect requests were understood before idioms is in line with results already obtained for indirect requests (Bates, 1976; Ervin-Tripp and Mitchell-Kernan, 1977; Ervin-Tripp, Strage, Lampert & Bell, 1986; Ninio & Snow, 1996; Tomasello, 2000; Ryckebusch & Marcos, 2004) and idioms (Abkarian, Jones, & West, 1992; Laval, 2003). These studies allowed us to predict comprehension at age 5 or earlier for indirect requests, and after age 6 for idiomatic forms. Note, however, that with our strict experimental method, computer-driven paradigm, and high comprehension criterion (75% of the participants in a given age

group), the ages at which understanding was achieved are slightly above those that might be predicted from the literature.

Our results have a point in common with the Champagne, Virbel, Nespoulous, and Joannette (2003) study: sarcasm is difficult for children. But they differ in one respect: for those authors, indirect requests are easier than conversational implicatures that violate the maxim of relation. Note that these two studies can only be compared with caution, due to the different methods used and ages tested.

The results for the acquisition order of metapragmatic knowledge of the various nonliteral forms were just as clear-cut. Recall that only the most elaborate knowledge of the discrepancy between "what is said" and "what is meant" was considered here. Importantly, other explanations were given in all age groups, in particular metapragmatic ones containing knowledge about the context or the utterance. Our first result was classic but strong: the children understood the nonliteral language forms well before they expressed metapragmatic knowledge of them. Metapragmatic knowledge did not exist at all at age 6 (less than 7%) and did not exist for indirect requests at any age (less than 7%). For indirect requests, most of the metapragmatic explanations were about the utterance production context or the utterance itself. At age 8, it was the idioms that received the greatest number of metapragmatic explanations (about a third), while at age 10, the scores were lower for both sarcastic-inference implicatures (about a quarter) and semantic-inference implicatures (about a fifth). We can conclude, then, that metapragmatic knowledge is acquired in the following order: idioms, sarcastic-inference implicatures and semantic-inference implicatures, indirect requests.

The results obtained for idioms are consistent with the literature, i.e., metapragmatic knowledge begins to emerge at the age of 8 and develops until age 10 or older (Laval, 2003). The observed absence of metapragmatic knowledge about indirect requests (hints) is much more surprising. Using a similar questioning method, Bernicot (1991) obtained metapragmatic knowledge productions starting at the age of 7 or 8. Two differences may help account for this result. In the study presented here, the hints were probably processed "automatically" since the participants could deduce the meaning without noticing that the utterance was inconsistent with the context. In addition, only the most elaborate explanations were taken to be indicative of metapragmatic knowledge.

Now that we have pointed out the developmental lag between comprehension and metapragmatic knowledge in nonliteral language acquisition, let us discuss the differences between the two acquisition orders. All four of the possible cases were found. For semantic-inference implicatures, both comprehension and metapragmatic knowledge showed up at an early age. For indirect requests (hints), comprehension emerged early, but metapragmatic knowledge about the expression of the discrepancy between "what is said" and "what is meant" was lacking; only metapragmatic knowledge about the context or the utterance was expressed. For idioms, comprehension appeared relatively late while metapragmatic knowledge was expressed relatively early. Finally, for sarcastic-inference implicatures, although comprehension was acquired late, it was accompanied by metapragmatic knowledge when it was present. This complex result pattern suggests that, in the acquisition of nonliteral language forms, by children, the relationship between pragmatics and metapragmatics is not fixed but varies across forms.

It would be worthwhile to extend these findings both to everyday language learning and to more fundamental research. For example, it would be interesting to find out whether the understanding of sarcastic-

inference implicatures is linked to the ability to express the difference between "what is said" and "what is meant", given that this is not always the case for indirect requests. Another interesting topic is the potential absence of a link between pragmatic skills and metapragmatic knowledge, and thus the relative independence of these two systems during language acquisition. Lastly, to obtain a complete, overall view of development, it would be necessary to test nonliteral language comprehension in adolescents and adults.

Appendix. Examples of stories used in the four experimental situations: original French version (*the target utterance is underlined*).

Example of a story with an idiom

Communication situation - Pictures 1 and 2

Picsou et Donald discutent dans le salon. Picsou aime tellement l'argent qu'il en parle tout le temps.

Donald dit à Picsou: "Change de disque".

Story ending (to complete the story, the children had to choose Picture 3 or 4)

Nonliteral response - Picture 3

Picsou parle d'autre chose

Literal response - Picture 4

Picsou met une autre musique

Examples of a story with an indirect request (hint)

Communication situation - Pictures 1 and 2

Mickey et Minnie regardent la télévision dans le salon. Minnie est allongée sur le canapé: elle est malade et elle a très froid.

Minnie dit à Mickey: "Le froid entre par la fenêtre"

Story ending (to complete the story, the children had to choose Picture 3 or 4)

Nonliteral response - Picture 3

Mickey se lève et ferme la fenêtre

Literal response - Picture 4

Mickey regarde sur le thermomètre

Example of a story with a conversational implicature: semantic-inference implicature

Communication situation - Pictures 1 and 2

Donald et Daisy sont dans le jardin

Donald demande à Daisy: "Est-ce que je passe la tondeuse?"

Daisy répond: "les neveux dorment dans leur chambre"

Story ending (to complete the story, the children had to choose Picture 3 or 4)

Inference understood - Picture 3

Donald arrose les fleurs

Inference not understood - Picture 4

Donald passe la tondeuse

Example of a story with a conversational implicature: sarcastic-inference implicature

Communication situation - Pictures 1 and 2

Mickey et Minnie sont à la plage. Il fait très chaud.

Minnie demande à Mickey: "Est-ce que j'ouvre le parasol?"

Mickey répond: "Non, j'aime beaucoup attraper des coups de soleil"

Story ending (to complete the story, the children had to choose Picture 3 or 4)

Inference understood - Picture 3

Minnie ouvre le parasol

Inference not understood - Picture 4

Minnie va se baigner

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Table 1. Examples of stories with an idiom or an indirect request (*the target utterance is underlined*)

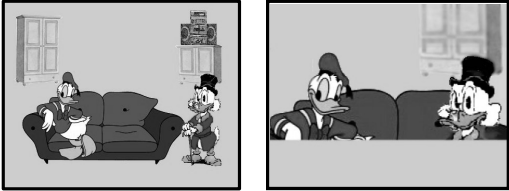


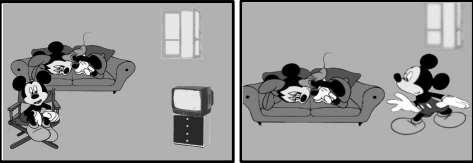
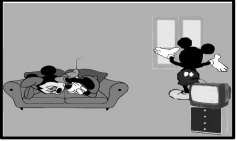
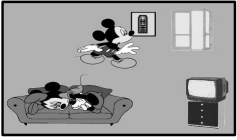
Idiom		
<p>Picture 1 and 2 Communication situation</p>		<p>Uncle Scrooge and Donald Duck are talking in the living room. Uncle Scrooge is so fond of money that he talks about it all the time.</p> <p>Donald Duck says to Uncle Scrooge: <u>"Change your tune."</u> "Change de disque."</p>
<p>Story Ending <i>To complete the story, the children had to choose Picture 3 or 4.</i></p>		
<p>Picture 3 Nonliteral response</p>		<p>Uncle Scrooge talks about something else.</p>
<p>Picture 4 Literal response</p>		<p>Uncle Scrooge puts on some other music.</p>
Indirect Request (Hint)		
<p>Picture 1 and 2 Communication situation</p>		<p>Mickey and Minnie Mouse are watching TV in the living room. Minnie Mouse is lying down on the sofa: she's sick and is very cold.</p> <p>Minnie says to Mickey: <u>"Cold air is coming in the window."</u> "Le froid entre par la fenêtre."</p>
<p>Story Ending <i>To complete the story, the children had to choose Picture 3 or 4.</i></p>		
<p>Picture 3 Nonliteral response</p>		<p>Mickey Mouse gets up and closes the window.</p>
<p>Picture 4 Literal response</p>		<p>Mickey Mouse looks at the thermostat.</p>

Table 2. Examples of stories with a conversational implicature (*the target utterance is underlined*)

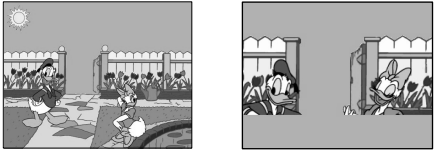
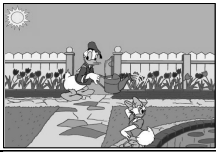
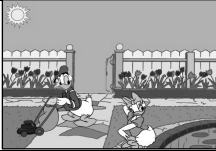
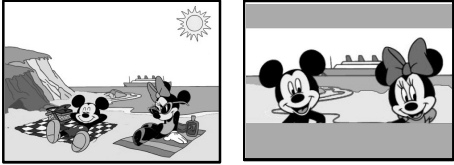

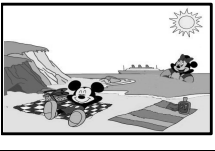
Semantic-Inference Implicature		
<p>Picture 1 and 2 Communication situation</p>		<p>Donald and Daisy Duck are in the yard.</p> <p>Donald asks Daisy: "Should I mow the lawn?" (« <i>Est-ce que je passe la tondeuse ?</i> »)</p> <p>Daisy replies: "<u>The nephews are taking a nap.</u>" (« <i>les neveux dorment dans leur chambre.</i> »)</p>
<p>Story Ending <i>To complete the story, the children had to choose Picture 3 or 4.</i></p>		
<p>Picture 3 Inference understood</p>		<p>Donald Duck waters the flowers.</p>
<p>Picture 4 Inference not understood</p>		<p>Donald Duck mows the lawn.</p>
Sarcastic-Inference Implicature		
<p>Picture 1 and 2 Communication situation</p>		<p>Mickey and Minnie Mouse are at the beach. It's very hot.</p> <p>Minnie asks Mickey: "Should I open the parasol?" (« <i>Est-ce que j'ouvre le parasol?</i> »)</p> <p>Mickey replies: "<u>No, I really like getting sunburned.</u>" (« <i>non, j'aime beaucoup attraper des coups de soleil.</i> »)</p>
<p>Story Ending <i>To complete the story, the children had to choose Picture 3 or 4.</i></p>		
<p>Picture 3 Inference understood</p>		<p>Minnie Mouse opens the parasol.</p>
<p>Picture 4 Inference not understood</p>		<p>Minnie Mouse goes swimming.</p>

Table 3. Example of computer-driven story display

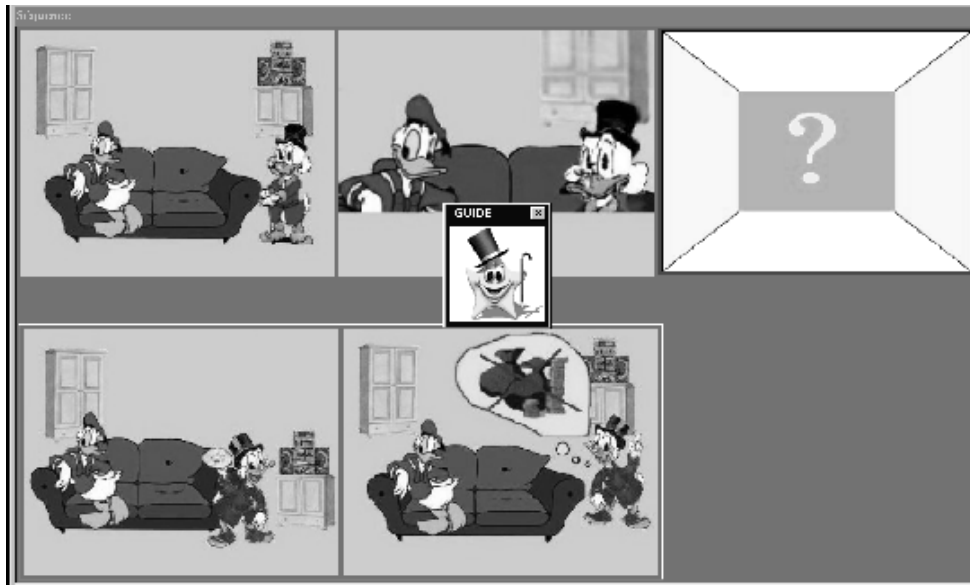


Table 4. Examples of explanations in each category and for each nonliteral language form. *The examples are taken from the stories presented in Tables 1 and 2.*

Explanation categories	Examples
1. Irrelevant explanations	<p><u>Indirect request.</u> <i>Because there he closed it and later, two minutes later, he's going to be hot so later, two minutes later, he's going to be cold</i></p> <p>-----</p> <p><u>Idiom.</u> <i>Because he puts on some other music</i></p> <p>-----</p> <p><u>Implicature with semantic inference.</u> <i>Because Donald Duck is watering the flowers or else they'll die</i></p> <p>-----</p> <p><u>Implicature with sarcastic inference.</u> <i>Because when you get sunburned, it hurts</i></p>
2. Simple explanations	<p><u>Indirect request.</u> <i>(1) Because Minnie Mouse is cold; (2) So Minnie won't get too cold; (3) Because it was cold.</i></p> <p>-----</p> <p><u>Idiom.</u> <i>Because he talks about money too much</i></p> <p>-----</p> <p><u>Implicature with semantic inference.</u> <i>In order to not wake up the kids</i></p> <p>-----</p> <p><u>Implicature with sarcastic inference.</u> <i>Because at first Minnie Mouse asked him to open it and in the end she opened it</i></p>
3. Elaborate explanations	<p><u>Indirect request.</u> <i>(1) Because when Minnie tells Mickey cold air is coming in the window, she asks him to close the window because she's cold; (2) Mickey closes the window; Minnie asked him in this picture (points to preceding picture); (3) He closes the window because she asked him to, I mean, she told him the cold was coming in through the window so he goes right away to close the window</i></p> <p>-----</p> <p><u>Idiom.</u> <i>Because change your tune isn't change the disk on the stereo but stop talking about that</i></p> <p>-----</p> <p><u>Implicature with semantic inference.</u> <i>Because Daisy Duck told him he couldn't mow the lawn because the nephews are sleeping</i></p> <p>-----</p> <p><u>Implicature with sarcastic inference.</u> <i>Because he was joking, he doesn't want to get sunburned</i></p>

Table 5. Number of children (out of 20) who gave three or four correct answers out of the possible four, by age group and nonliteral language form.

	Semantic-Inference Implicatures	Indirect Requests	Idioms	Sarcastic-Inference Implicatures
6-year-olds	15	14	4	3
8-year-olds	19	16	9	3
10-year-olds	20	16	16	7

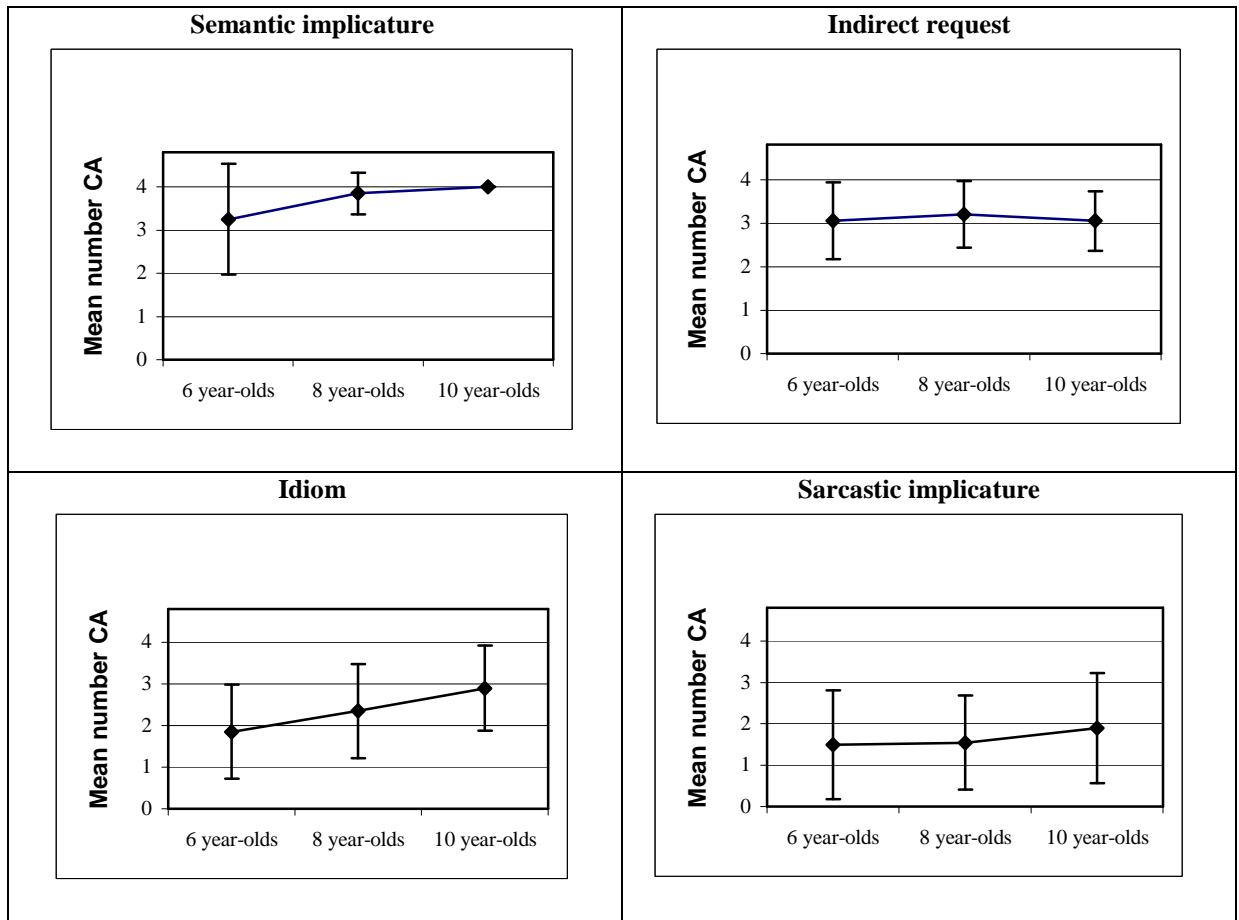


Figure 1. Mean number of correct answers (CA) per subject, by age group and nonliteral language form.

Table 6. Number of elaborate explanations (EE) and percentage of the total in each group by age and nonliteral language form (CA > 1).

Age	Semantic-Inference Implicatures	Indirect Requests	Idioms	Sarcastic-Inference Implicatures
6-year-olds N=13	36 CA 2 EE 5.55%	42 CA 1 EE 2.28%	29 CA 1 EE 3.44%	29 CA 2 EE 6.89%
8-year-olds N=15	57 CA 7 EE 12.28%	45 CA 3 EE 6.66%	39 CA 12 EE 30.76%	31 CA 4 EE 12.90%
10-year-olds N=16	64 CA 14 EE 21.87%	48 CA (3) 1 EE (0.06) 2.08%	49 CA 22 EE 44.89%	36 CA 10 EE 27.77%

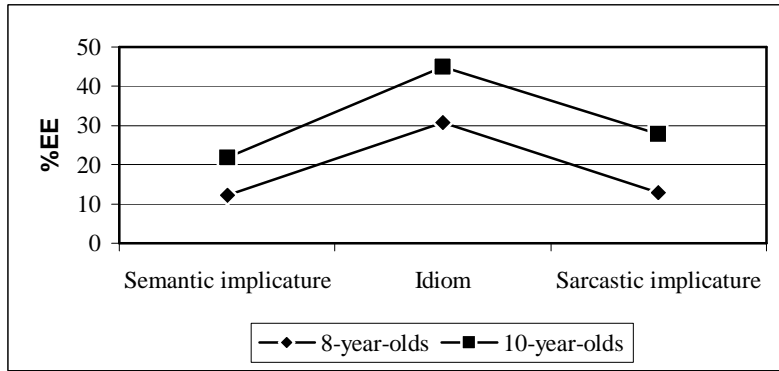


Figure 2. Mean percentage of elaborate explanations (EE), by age group and nonliteral language form.