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COMMUNICATIVE FUNCTION OF INTONATION CONTOUR IN PROTO-LANGUAGE: A SHORT SUMMARY NOTE*

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This short survey concerns the use of intonation contour on short babble utterances, proto-words, and early words, where the communicative function can be assessed. No studies that I am aware of have tried to analyze the relation of such short utterances to long 'conversational' (phatic) babble sequences - the often-noted 'harangues', 'telephone conversations' and so on - with their adult-sounding contours. At this point we can only note informally that the prosody of this extended babble, which at least seems to mirror the outer form of adult conversation with great fidelity, seems very far in advance of the prosody of the child's message-bearing utterances.

Early work on intonation contour can be described as consisting of **form-based** studies, and this type of work continues as one major current investigative thread. This approach categorizes child intonation contours in pre-speech in terms of adult perceptions and functional labels: requests, demands, declaratives, etc. The most recent form-based studies are those by de Boysson-Bardies and colleagues (1981,1984); the latter study focuses on the question of the age at which listeners can discriminate among children's intonation contours according to the language the child is acquiring, and is somewhat removed from our present concern. Among earlier studies, we find work by Menyuk and Bernholtz (1969), Stark (1980), and Tonkova-Yampl'skaya (1969). The form-based approach by itself is not able to tell us what function, if any, these contours have for the child, but it is nevertheless essential to our understanding of the eventual acquisition of the adult functions of intonation contour, because adult reactions to the child's contours will surely play a major role in the child's development of the intonational system.

Function-based studies require longitudinal data, preferably diary studies, in order to have enough density of observation of the child's behavior so that reasonable inferences about the child's meaning can be made. Several of these are now available for children acquiring various dialects of English (Halliday 1975, Menn 1976, Painter 1984) at the period of transition from babble to speech. The 'mind-reading' required here is made somewhat easier by the fact that children at this age make frequent use of rather simple behavioral routines.

It is necessary (and sometimes difficult) in function-based work to avoid circularity in labeling the child's contours. One functional category in which certain researchers have sometimes slipped into circular labeling is desideratives: since the difference between 'request' and 'demand' depends entirely on whether the accompanying contour is rising or falling, these cannot be treated as separate behavioral categories for the child (if they are, it becomes circular to say that 'the child uses rising contour for requests' or 'falling contour for demands'). A cover term like 'desiderative' must be used in functional studies for all verbalizations whose accompanying behavior indicates that the child wants something. (In form-based studies the terms 'request' and 'demand' are used without any problem, since adult categorization rather than child behavior is the basis for classification.)

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The following table summarizes the results of these three studies in terms of contour and pitch range. Utterances are babble or proto-words unless noted as using words.

Jacob, 13;13 - 15;3 (Menn; instrumental)

falling from mid
1. early greeting
2. accompanying own act
3. giving object

falling from high
4. whines

rising to mid
5. exploring
6. later greeting
7. desid/partner
8. desid (using word)

rising to high
9. desid/object
10. desid/J.act on object
11. desid/act on J.

Nigel, early - 9;0-12;0 (Halliday 1975)

low falling
1. comment

falling from mid
2. desid/object
3. desid/action
3. greet

level high
5. greet w. name

Nigel, late -19;0 to 19;15

falling
1. 'mathetic'-for self, no response required

rising
2. 'pragmatic' - adult response required

Hal, early - 12;0 to 15;0 (Painter 1984)

rising
1. initial exploration "..2or 3 rises followed by a fall as if finally satisfied with his investigation"

level-high
2. 'instrumental'=desid/obj or act
3. ritual giving

(about a week of high rise-fall on first word, 'puss', then falling)

Hal, later - 15;0 to 16;1

rising
1. some 'instrumental' +desid/object or action 'variable' tones including some rises

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Several studies have also been done on children acquiring tone languages; the findings of Tuaycharoen (1977) and Clumeck (1980) are summarized in the following table:

Tuaycharoen's subject, about 8 months (1977), (Thai)
summarized in Clumeck 1980

low-mid or mid
1. acknowledge response

high level or slight rise
3. desid/object
4. desid/name of object

2. direct attention to familiar person/object

5. direct attention to novel person/object

later: desid (on words, which happened to have lexical tone mid-level or low)

M.(Clumeck 1980) (Mandarin) -early - 14 to 17 months - on vowel carriers

fall mid-low or high-low
1. find object
2. accompany own action
3. "simply content"

mid-level, rising, high (level or slight rise, slight fall)
4. desid/object
5. desid/action

M. middle - proto-words - 17 to 22 months

low falling
1. indicate object

high level
2. desid
3. "anxiety or concern"

M. late - after 22 months

rising
1. indicate object on words with lexical rising tone (nursery forms)

One quasi-longitudinal group study (H. Marcos 1987) of French has also been reported, but the results are somewhat unsatisfying. Ten subjects were observed for four half-hour sessions; the total age range was from 14;0 to 21;15. Mean initial pitch of utterances that could be behaviorally classified was measured and found to be lower in labels, higher in desideratives, and highest in repetitions of desideratives; pitch associated with showing and giving were intermediate between these, on the average. There was no consistent finding on use of intonation contours, categorized as fall/rise/level ('level' defined as < semitone variation = 6%).

In this study, no attempt was made to categorize utterances as babble, proto-words, or (adult-model) words. Given the importance of this categorization for Jacob at least, and the individual differences in pitch use found between Nigel, Jacob, and Hal, the Marcos group study could not be expected to find any more consistency than it did.

Conclusion: There seem to be some basic general ingredients that the various children are drawing on to build their pre-speech and one-word intonational systems. I suggest that internal tension is expressed by higher pitch; this can be compared to the pitch of whines, which had peaks from 550 to 1060 Hz just in a small sample from Jacob. Utterances which are less egocentric and more socially oriented show a generally lower relative pitch, which I interpret as reflecting an adjustment towards the adult mode. Finally, there are the effects of adopting a language-specific model, based on the use of intonation in the ambient language,

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whose lexical, idiomatic, and recurrent tones may be almost any range or contour. (By 'idiomatic' tone I refer to particular pitches and contours associated with identifiable social routines, e.g. the very high pitch of 'peekaboo' in American English; by the term 'recurrent contour' I mean such things as the reliably recurrent contour of 'what's that' used by parents in word-teaching routines.)

There is also considerable individual variation which can be expected to cloud any group study that cannot, for whatever reason, trace the patterns of the individual children in the group. What we see from the tables is that individual children use range (low, mid, high) and contour (fall, rise, etc.) somewhat differently, structuring these ingredients along such cognitive lines as 1) whether or not an adult response is required, 2) whether the adult is wanted as a social partner or as a means to an end, and 3) whether the utterance uses and adult-model word.

Utterances not intended to elicit a response tend to be lower and/or falling as compared to utterances which require a response; utterances which are attempts to elicit a social response tend to be lower and/or falling as compared to those which are attempts to get an object with the help of the adult, and utterances which use an adult-model form tend to be lower in pitch as compared to babble or proto-word utterances, with contours modeled on those of the ambient language.

Assuming that 'meaning' develops to some extent interactively, children will modify their vocalizations according to the results they get; based on this (and on their observations of the speech of others), they will develop new categories which will eventually accord with those of the ambient language; this, as I noted above, is how the form-based work on adult categorization of child utterances complements the function-based approach.

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