

RITVA KARJALAINEN (Helsinki)

## INTERPRETATION OF COMMUNICATIVE INTENTS OF AN INFANT

### 1. Introduction

The activity needed to understand what one wants is purposeful, in other words, an intent has been proposed (Halliday 1979 : 173). Some previous studies (e.g. McCormick 1984) investigating the development of children have suggested that there is no intentionality until the child is at least eight months old. According to L. McCormick (1984 : 69) the actual communicative acts will occur only when the child is about 12–18 months old. M. A. K. Halliday (1979) has investigated his own son Nigel and found that he gained the ability to propose an intent by the age of nine months. In expressing such intents as *let's be together* and *I'm interested in that* Nigel used intonation contrasts (Halliday 1979 : 173). D. Crystal (1975 : 3) has suggested that even infants under six months old use prosodic contrasts when wanting something or recognising someone. C. Harding (1984 : 128–129) observed 12 children and their mothers for a period of five months when the infants were approximately six months old. The results indicate that the mothers interpreted their children's gestures as intentional at about 6 months of age but the vocalizations were not interpreted as intentional before about 8–10 months of age. However, E. Bates (1976 : 52) has suggested that the hunger-cry of an infant of only 17 days of age is interpreted as intentional by adults. According to J. Locke (1995 : 133) the listener considers the vocalization of a neonate as intentional despite the fact that it is not.

The aim of my study was to investigate whether the voicing of an infant may be interpreted as intentional during the pre-lexical period (in this study from 2 weeks to 8 months). I mean by the term *communicative intent* a child's conscious aim to change or maintain his or her own circumstances.

### 2. Method

Forty voice-samples, duration 272–19622 ms, of a female infant (from the age of 16 days (= 0;0.16) till 7 months 26 days (= 0;7.26), see Table 1) were tested by 33 adults (25 females, 8 males), 20–70 years, under two conditions: 1. only auditory, and 2. auditory-visual. In the auditory section the subjects heard each vocalization sample 5 times, and in the auditory-visual section only once. The pause between two vocalization samples was 30 in the auditory section, and 50 seconds in the auditory-visual section. The subjects were asked if the vocalization sample was intentional or not. They also had the chance of answering "I don't know". If they con-

sidered the sample intentional they were asked to classify it according to 9 categories:

H = asking for attention (= hakee huomiota),

P = asking or demanding something other than attention (= pyytää tai vaatii jotakin muuta kuin huomiota),

V = resisting or refusing (= vastustaa tai kieltäytyy),

K = conversing (= keskustele),

U = calling for some one (= kutsuu),

T = greeting (= tervehtii),

Y = questioning (= kysyy),

N = naming (= nimeää),

M = something else, if so, what? (= muu: mikä?).

Table 1

Summary of the testing material

Child's age	Duration of recording	Number of vocalization samples/ recording session	Number of selected vocalization samples
0;0.16	15	4	4
0;0.28	15	10	4
0;1.26	28	10	5
0;3.7	45	23	4
0;4.7	45	57	5
0;4.26	36	40	4
0;6.1	30	29	5
0;6.29	30	45	4
0;7.26	42	9	5

### 3. Results

The results of this study indicate that vocalizations are interpreted as intentional from the very beginning of development. Either the interpretation of intention increases as the infant grows or the interpretation of intention is easier as the child grows. This is valid both for the auditory ( $p < .01$ ) and auditory-visual ( $p < .01$ ) sections (see Figures 1 and 2).

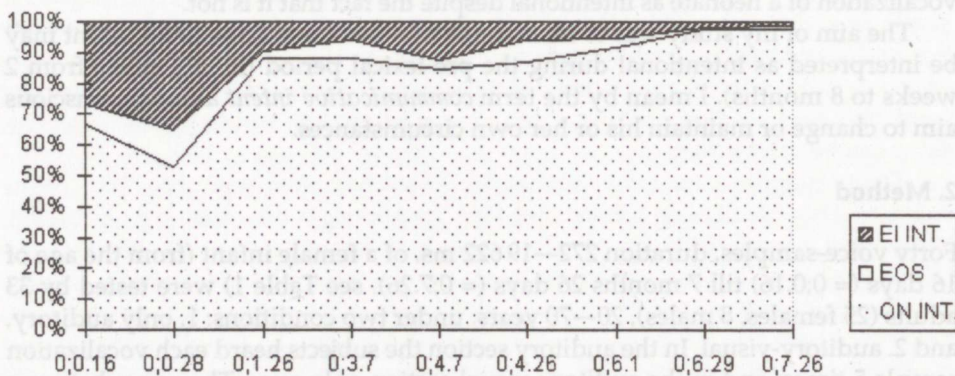


Figure 1. The answers ("is not intentional" (= EI INT.), "I don't know" (= EOS) and "is intentional" (= ON INT.) of the subjects ( $n = 33$ ) in the vocalization samples ( $n = 40$ ) in the auditory section.

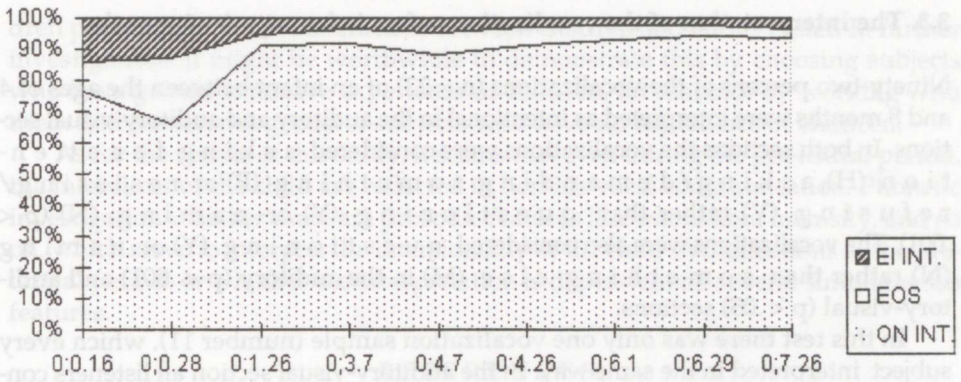


Figure 2. The answers ("is not intentional" (= EI INT.), "I don't know" (= EOS) and "is intentional" (= ON INT.) of the subjects (n = 33) in the vocalization samples (n = 40) in the auditory-visual section.

The data shown in Figure 1 indicates that in the auditory section less intention in the vocalizations (n = 8) of an infant under one month of age was perceived than in the vocalizations (n = 9) of an infant over one but under 4 months of age ( $p < .05$ ). The answers (n = 66) in the auditory and auditory-visual sections show that seeing the circumstances of the vocalization increases the number of "is not intentional" answers ( $p < .05$ ). The auditory section of this test was considered more difficult than the auditory-visual section given the number of "I don't know" answers ( $p < .001$ ).

### 3.1. The interpretation of vocalizations of an infant under one month old

In this study even the vocalizations (n = 8) of an infant under one month of age were interpreted as intentional. "Is intentional" answers outnumbered both "is not intentional" answers ( $p < .001$ ) and "I don't know" answers ( $p < .001$ ). In the auditory section the number of answers where the category of intent suggested was asking for attention (H), asking for something (P) or resisting/refusing (V) outnumbered "is not intentional" answers ( $p < .01$ ), and "I don't know" answers in both the auditory and auditory-visual sections (in both sections  $p < .01$ ).

### 3.2. The interpretation of the vocalizations of an infant age 1—4 months

The number of "is intentional" answers in interpreting the vocalizations of an infant age 1—4 months was more than "is not intentional" answers ( $p < .001$ ) and "I don't know" answers ( $p < .001$ ) in the auditory and auditory-visual sections. In both the auditory and auditory-visual sections 42% of the vocalization samples were interpreted either as asking for attention (H), asking/demanding something (P) or resisting/refusing (V). These answers together outnumbered both "is not intentional" answers and "I don't know" answers (in both sections  $p < .001$ ). In both the auditory and auditory-visual sections 38% of the vocalization samples were interpreted as conversing (K), calling for someone (U) or greeting (T). These answers together outnumber questioning (Y) or naming (N) answers and something else (M) answers (in both sections  $p < .001$ ).

### 3.3. The interpretation of the vocalizations of an infant age 4—8 months

Ninety-two percent of the vocalizations ( $n = 23$ ) of an infant between the ages of 4 and 8 months were interpreted as intentional in the auditory and auditory-visual sections. In both sections the vocalizations were considered asking for attention (H), asking/demanding something (P) or resisting/refusing (V) rather than questioning (Y) or naming (N) ( $p < .001$ ). The vocalizations were also considered questioning (Y) or naming (N) rather than something else (M) in the auditory ( $p < .001$ ) and auditory-visual ( $p < .05$ ) sections.

In this test there was only one vocalization sample (number 11), which every subject interpreted in the same way. In the auditory-visual section all listeners considered this sample as asking/demanding something.

### 3.4. Factors correlating with the interpretation of vocalizations

The age and sex of the subject as well as their experience of the children correlated with their interpretation of vocalizations. The younger the subject ( $n = 33$ ) was, the less she/he interpreted the vocalization samples as intentional in the auditory section ( $p < .05$ ). The less experience the subject had of children, the more frequent the "I don't know" answers in the auditory-visual section ( $p < .01$ ).

The age of the child, duration, intonation contour and content of the vocalization sample correlated with the interpretations of the vocalization samples ( $n = 40$ ) in the auditory section. The younger the child, the more "is not intentional" answers ( $p < .001$ ) and "I don't know" answers occurred ( $p < .05$ ). While the older the child, the more "is intentional" answers occurred ( $p < .001$ ). The vocalization sample duration correlation figures indicate that the longer the sample was, the more naming (N) answers there were ( $p < .05$ ). The intonation contour correlation figures show that the more complex the sample was, the more it was interpreted as intentional ( $p < .001$ ). The vocalization sample content correlation figures indicate that the more the sample contained only the child's vocalization, the more it was interpreted as calling for someone (U) ( $p < .01$ ) or greeting (T) ( $p < .05$ ).

The age of the child, vocalization sample duration and intonation contour ( $n = 40$ ) correlated with the interpretations in the auditory-visual section. The younger the child, the more "is not intentional" answers ( $p < .001$ ) and "I don't know" answers ( $p < .05$ ) there were. Consequently, the older the child was, the more "is intentional" answers ( $p < .01$ ) were received. While the younger the child was, the more resisting/refusing

the more questioning (Y) or naming (N) answers were registered ( $p < .05$ ). The correlation between vocalization sample duration and the interpretations indicates that the longer the sample was, the more questioning (Y) or naming (N) answers there were ( $p < .05$ ). The intonation contour correlation figures show that the more complex the vocalization sample was, the more "is intentional" answers cropped up ( $p < .01$ ).

## 4. Discussion

The results of this study indicate that experience with children correlates with the interpretation of the vocalizations of an infant. This result is strengthened by the results of the cry studies of O. Wasz-Höckert, J. Lind, V. Vuorenkoski, T. Partanen and E. Valanne (1968 : 29). Their results have indicated that experience of chil-

dren probably makes the interaction between children and adults easier. In further investigations it might be worthwhile to demonstrate this by choosing subjects who have gained extensive experience of children, for instance by working with them and a reference group of subjects who have no experience of children.

As for the results of this study, it seems that even during the pre-lexical period, the intentions of the child are reflected in her/his vocal communication. Phonetic investigation whether there are prosodic features like intonation, intensity, and so on, which serve to interpret the intentionality of the child's vocalizations in the pre-lexical period, or whether the interpretation is dependent on several simultaneous features.

#### REFERENCES

- Bates, E. 1976, *Language and Context. The Acquisition of Pragmatics*, New York.
- Crystal, D. 1975, *The English Tone of Voice. Essays in Intonation, Prosody and Paralinguage*, London.
- Halliday, M. A. K. 1979, *One Child's Protolanguage. — Before Speech. The Beginning of Interpersonal Communication*, Cambridge, 171—190.
- Harding, C. 1984, *Acting with Intention. A Framework for Examining the Development of the Intention to Communicate. — The Origins and Growth of Communication*, Norwood, 123—135.
- Locke, J. 1995, *The Child's Path to Spoken Language*, Cambridge (Mass.).
- McCormick, L. 1984, *Review of Normal Language Acquisition. — Early Language Intervention*, Columbus, 35—88.
- Wasz-Höckert, O., Lind, J., Vuorenkoski, V., Partanen, T., Valanne, E. 1968, *The Infant Cry. A Spectrographic and Auditory Analysis*, Lavenham (*Clinics in Developmental Medicine* 29).