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## THE SPEECH OF MENTALLY RETARDED ADULTS IN A DYADIC COMMUNICATION SITUATION : SOME FORMAL AND INFORMATIVE ASPECTS

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The conversations between a group of moderately and severely mentally handicapped adults and a familiar nonhandicap adult were recorded in a dyadic communication situation. The analysis concentrated on the formal as well as on the informative aspects of the speech produced by the retarded adults. It appears that despite severe formal limitations the speech of the retarded adults has informative value. They are capable of assuming in turn the roles of speaker and receiver in the conversation. Also the themes discussed are varied and the conversation proceeds regularly without breakdowns or major discontinuities.

Researchers have recently addressed the question of the communicative capability of mentally retarded adults (Bedrosian & Prutting, 1978; Berry, Pountney & Powell, 1978; Marshall, Hegrenes & Goldstein, 1973; Owings & Mc Manus, 1980; Veit, Allen & Chinsky 1976; Sabsay, Note 1; Bedrosian, Note 2). The available data suggest the following tentative conclusions: first, mentally retarded adults are able to take part in conversation and to demonstrate similar types of conversational controls and constraints as nonretarded adults; second, they use similar communicative functions (e.g., questions, information-giving, commands, etc.) with similar frequency as nonretarded subjects.

The above mentioned studies have emphasized the functional and communicative aspects of the language behavior of mentally retarded adults. This accent is well placed given the actual emphasis on deinstitutionalization that renders necessary the detailed examination of the functional communication in the retarded within a natural environmental setting. However, the data reported are in sharp contrast with the conclusions reached in those studies that have assessed the language capabilities of mentally retarded individuals in their phonological, lexical, and morpho-syntactical aspects (cfr Rondal, 1975, and Rondal & Lambert, 1983, for detailed reviews and evaluations of this literature). Therefore, the question remains of the relationship between formal and functional aspects of language behavior in the retarded subjects. Not only is it necessary to document the way that retarded

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Portions of the data in this article were presented at the *Jornadas Internacionales Sobre El Síndrome de Down*, "Instituto Internacional Para La Investigación Y Asesoramiento Sobre La Deficiencia Mental", Madrid, November 1980.

adults communicate with each other and with nonretarded people but one has yet to know how this communicative function is accomplished in terms of the formal means employed.

In the present study, the conversational behaviors of a group mentally retarded adults assembled with a nonretarded adult in a natural dyadic situation were examined both from a formal and informative point of view. The objective pursued was twofold: First, to document various formal aspects of the conversational behaviors in mentally retarded adults; second, to examine how these aspects relate to more informative aspects of the communicative behavior in these subjects.

The sample of retarded subjects used in the present study contained Down's syndrome retarded individuals and other moderately and severely retarded individuals of other etiology. Between these subjects the comparison was intended in view of the often reported differences in language development between Down's syndrome children and retarded children of other aetiologies (Zisk & Bialer, 1967; Rondal, 1975).

## METHOD

### SUBJECTS

Twenty-two monolingual French-speaking mentally retarded adults living in their family and attending a day care center were divided into two groups. 12 adults with Down syndrome (DS group) — 8 men and 4 women — and 10 adults in the NonDown syndrome group (NDS) — 3 men and 7 women. For the DS group the mean CA, IQ (Wechsler Adult Intelligence Scale) and number of years spent in special schools were 26, 45.1 and 12.1 respectively. The adults in the NDS group were moderately and severely retarded individuals of other organic aetiology than Down syndrome. Their mean CA, IQ and number of years spent in special schools were 28.5, 46.3 and 8, respectively. None of them had been institutionalized in the past.

### PROCEDURE

The language samples were tape-recorded in a free conversational situation between a retarded and a nonretarded adult (a female educator) at the day care center. The educator was familiar with the retarded adults. In order to preserve as much spontaneity in the interaction as possible, no specific instruction was given to the educator other than: "Let the retarded adult speak as she or he usually does on whatever topic she or he may choose, only avoid yes-no questions". The recording sessions lasted approximately twenty minutes for each subject. A verbatim transcription of the speech was made.

Eleven measures (indices) of the retarded adults' speech in their lexical, syntactical and informative aspects were computed. Four

measures were also computed on the nonretarded adult's speech. The indices were calculated on the complete sample of speech available in each transcript except when otherwise indicated.

#### ANALYSIS OF THE RETARDED ADULT SPEECH

##### *Lexical aspect*

*Index 1: Type-token-ratio (TTR):* TTR, a measure of lexical diversity, was computed by dividing the number of different words (types) by the number of words sampled (tokens). It was calculated on samples of 100 words randomly selected from the transcripts.

##### *Morpho-syntactical aspects*

*Index 2: Mean length of utterance (MLU):* MLU was computed by dividing the number of morphemes in the utterance by the number of utterances (after Brown, 1973). An utterance is a verbal production marked off on either side by a pause or by some change in inflection. A sentence is an utterance that minimally contains a noun or a pronoun and a verb in a subject-verb relationship. Imperative sentences were excluded from the count.

*Index 3: Proportion of sentences:* Ratio of the number of sentences to the total number of utterances.

*Index 4: Sentence complexity:* Ratio of the number of compound verbs (e.g., "is going", "have made") plus subordinate clauses to the total number of utterances.

*Index 5: Number and gender:* Ratio of the number of morphological markers (singular-plural) and for gender (masculine-feminine) to the total number of utterances.

*Index 6: Proportion of articles:* Ratio of the number of articles to the total number of utterances.

*Index 7: Proportion of verbal inflexions:* Ratio of the number of correct verbal inflexions to the total number of utterances.

*Index 8: Proportion of pronouns:* Ratio of the number of pronouns to the total number of utterances.

##### *Information aspect*

*Index 9: Proportion of informations:* Ratio of the number of informations supplied verbally to the total number of utterances. By information is meant a *complete relational meaning* (i.e. a verb with its obligatory arguments in the sense of Filmore, 1968, and Chafe, 1970), an elliptical statement or a question referring back to an immediately preceding utterance by the interlocutor. The echoic and onomatopoeic productions were not counted as instances of informative utterances.

*Index 10: Proportion of new informations:* Ratio of the number of informations not previously stated in the conversation to the total number of informations given verbally.

*Index 11: Conversational continuity:* Ratio of the number of times the retarded subject correctly followed on the topic introduced or developed by the nonretarded adult.

#### ANALYSIS OF THE NONRETARDED ADULT SPEECH

*Index 12: Proportion of questions:* Ratio of the number of questions to the total number of utterances.

*Index 13: Proportion of statements:* Ratio of the number of statements to the total number of utterances.

*Index 14: Approval-disapproval:* Ratio of the number of explicit verbal signs of approval or disapproval contingent upon the speech intervention of the retarded subject to the total number utterances.

*Index 15: Correction-repetition:* Ratio of the number of corrections and repetitions of the retarded subject speech to the total number of utterances.

#### INTERJUDGE RELIABILITY FOR CODING CONVERSATION BEHAVIORS

Interjudge reliability was established in having a sample of 10 utterances obtained randomly from each subject's corpus coded by an independent observer. The percentage agreement between the original coding and the observer's coding was never lower than 90 for the various indices except for index 9 (percentage agreement 83).

#### RESULTS AND DISCUSSION

The average scores and standard deviations for the various speech indices are shown in Table 1 for the Down syndrome and the NonDown syndrome groups. Table 1 also displays frequency data relative to the speech of the nonretarded interlocutor.

None of the differences in group means between Down syndrome and NonDown syndrome retarded adults proved significant (*t*-test for independent sample) due to the relatively large interindividual variability in the two groups of subjects. A *t*-test was also carried out for differences according to sex. None of the comparisons proved significant. Describing the retarded adult's speech, it is necessary to distinguish between formal and informative aspects of the language. Mentally retarded adults as a rule use simple formal means to express meaning. The mean length of utterances averages 6 or 7 with standard deviations around 2.5. Only about half of the utterances are grammatical sentences. Sentence complexity (in terms of compound verbs and subordinate clauses) remains low. It is known (Zisk & Bialer, 1967; Yoder & Miller, 1972; Rondal, 1975) that the use of grammatical morphemes is one of the areas in which particularly moderately and severely retarded individuals have difficulties. Therefore, it could be

TAB. 1. AVERAGE SCORES AND STANDARD DEVIATIONS FOR DOWN SYNDROME (DS) AND NONDOWN SYNDROME (NDS) ADULTS. FREQUENCY DATA ON THE NONRETARDED INTERLOCUTOR'S SPEECH.

INDICES	DS ADULTS		NDS ADULTS	
	mean	<i>Sd</i> (1)	mean	<i>Sd</i> (1)
<i>retarded adult's speech</i>				
<i>lexical aspect</i>				
1. TTR	.575	.075	.568	.045
<i>morpho-syntactical aspect</i>				
2. MLU	5.980	2.620	6.950	2.520
3. proportion of sentences	.412	.311	.533	.299
4. sentence complexity	.217	.173	.327	.241
5. number and gender	.563	.235	.690	.214
6. proportion of articles	.381	.212	.518	.154
7. verbal inflexions	.547	.365	.780	.379
8. proportion of pronouns	.624	.504	.876	.501
<i>informative aspect</i>				
9. proportion of informations	.972	.046	.945	.074
10. proportion of new informations	.692	.121	.693	.114
11. conversational continuity	.833	.077	.824	.117
<i>nonretarded interlocutor's speech</i>				
12. proportion of questions	.647	.132	.661	.143
13. proportion of statements	.112	.051	.110	.080
14. approval-desapproval	.095	.048	.132	.105
15. Correction-repetition	.111	.093	.042	.051

(1) standard deviation

predicted that the retarded subjects in the present study may never reach the stage where they would make a proper use of grammatical morphology in order to modulate the basic meaning expressed. Yet despite severe limitations on the formal side, their language appears to have functional value: It is informative and carries a good proportion of new informations. The topics introduced are dealt with in such a way as to allow for the necessary continuity of the exchange between interlocutors. Severe formal restrictions in the speech of the retarded adults does not mean, therefore, that their discourse is devoid of informative value or grossly deficient in this respect.

Table 2 displays the linear intercorrelations between various speech indices for the retarded adults. The seven formal indices are highly and significantly intercorrelated. As for the intercorrelations between MLU and the other formal measures, the proportion of variance shared (coefficient of determination) is .90, .85, .55, .58, .90, .94 for indices 3, 4, 5, 6, 7 and 8, respectively.

Lastly it is interesting to relate the present data on MLU with previous data on groups of moderately and severely retarded children (Table 3).

TAB. 2. PEARSON'S INTERCORRELATIONS BETWEEN SPEECH INDICES FOR THE RETARD SUBJECTS

	1	2	3	4	5	6	7	8	9	10	11
1											
2	-.03										
3	-.02	.95***									
4	-.11	.92***	.92***								
5	.12	.74**	.73**	.69**							
6	.17	.76**	.70**	.67**	.63**						
7	.00	.95**	.98***	.94***	.74**	.72**					
8	.02	.97***	.98***	.92***	.76**	.71**	.98***				
9	.25	.24	.18	.14	.24	.17	.18	.32	.21		
10	.25	-.49*	-.41	-.44*	-.18	-.49*	-.40	-.06	-.39	-.02	
11	.38	.48*	.45	.38	.59**	.40	.48*	.44*	.50*	.60**	-.22

*Speech indices* : 1. type token ratio, 2. mean length of utterance, 3. proportion of sentences, 4. sentence complexity, 5. number and gender, 6. proportion of articles, 7. verbal inflexions, 8. proportion of pronouns, 9. proportion of informations, 10. proportion of new informations, 11. conversational continuity.

*df* = 20; \* :  $p \leq .05$ , \*\* :  $p \leq .01$ , \*\*\* :  $p \leq .001$ .

TAB. 3. CROSS-SECTIONAL DATA ON MEAN LENGTH OF UTTERANCE IN DOWN SYNDROME CHILDREN AND ADULTS

study	chronological age		MLU (2)	
	mean	sd (1)	mean	sd
Rondal (1978)	4.1	.9	1.26	.23
	6.6	2.1	1.94	.19
	9.9	1.9	2.87	.14
Rondal, Lambert & Sohler (1980)	11.6	1.8	3.40	.95
Rondal & Lambert (this study)	26.0	1.7	5.98	2.63

(1) standard deviation : (2) computed in number of morphemes after Brown's criteria (1973)

The figures displayed in Table 3 are indicative of a possible continued language growth as expressed by MLU, in the Down syndrome subjects, together with an marked increase in the interindividual variability. The former indications may be entirely or partially spurious for the following reasons : First, Rondal's study (1978) was conducted with monolingual American English Down syndrome subjects where as the other two studies used French-speaking subjects; second, and more important, these data come from cross-sectional studies, i.e. studies conducted with different individuals at different ages.

It seems reasonably, however, to hypothesize a continued growth in MLU with chronological age after 10 or 11 years in Down syndrome subjects (at least in some Down syndrome subjects) and possibly in retarded individuals of other aetiologies. Only longitudinal studies will allow to test this hypothesis *sensu stricto*.

#### REFERENCES

- BEDROSIAN J.L. *Communicative performance of mentally retarded adults. A topic analysis.* Paper presented at the Symposium "The linguistic environment of the mentally retarded child", 103<sup>rd</sup> Annual Conference of the American Association on Mental Deficiency, Miami Beach, Florida, May-June 1979.
- BEDROSIAN, J.L., & PRUTTING, C.A. Communicative performance of mentally retarded adults in four conversational settings. *Journal of Speech and Hearing Research*, 1978, 21, 79-95.
- BERRY, P., POUNTNEY, C., & POWELL, I. Meal-time communication in moderately and severely retarded adults: An ethological study. *Australian Journal of Mental Retardation*, 1978, 5, 105-108.
- BROWN, R. *A first language.* Cambridge, Massachusetts: Harvard University Press, 1973.
- CHAFE, W. *Meaning and the structure of language.* Chicago: The University of Chicago Press, 1970.
- FILLMORE, C. The case for case. In E. BACH & E. HARMS (Eds.), *Universals in linguistic theory.* New York: Holt, Rinehart & Winston, 1968.

- MARSHALL, N.R., HEGRENS, J.R., & GOLDSTEIN, S. Verbal interaction: Mothers and their retarded children vs. mothers and their nonretarded children. *American Journal of Mental Deficiency*, 1973, 77, 415-419.
- OWINGS, N.O., & MCMANUS, M.D. An analysis of communication functions in the speech of a deinstitutionalized adult mentally retarded client. *Mental Retardation*, 1980, 18, 309-314.
- RONDAL, J.A. Développement du langage et retard mental: Une revue de la littérature en langue anglaise. *L'Année Psychologique*, 1975, 75, 513-547.
- RONDAL, J.A. Maternal speech to normal and Down's syndrome children matched for mean length of utterance. In C. MEYERS (Ed.), *Quality of life in severely and profoundly mentally retarded people: Research foundations for improvement*. Washington, D.C.: American Association on Mental Deficiency, Monograph N° 3, 1978, pp. 193-265.
- RONDAL, J.A., & LAMBERT, J.L. *Langage et communication chez les handicapés mentaux: Théorie, évaluation et intervention*. Neuchâtel, Paris: Delachaux et Niestlé, 1983, sous presse.
- RONDAL, J.A., LAMBERT, J.L., & SOHIER, C. L'imitation verbale et non verbale chez l'enfant retardé mental mongolien et non mongolien. *Enfance*, 1980, 3, 107-122.
- SABSAY, S. *Communicative competence among the severely retarded: Some evidence from the conversational interaction of Down's syndrome (Mongoloid) adults*. Paper presented at the meeting of the Linguistic Society of America, San Francisco, California, Winter, 1975.
- VEIT, S.W., ALLEN, G.J., & CHINSKY, J.M. Interpersonal interactions between institutionalized retarded children and their attendants. *American Journal of Mental Deficiency*, 1976, 80, 535-542.
- YODER, D., & MILLER, J. What we may know and what we can do: Input toward a system. In J. MCLEAN, D. YODER, & R. SCHIEFELBUSCH (Eds.), *Language intervention with the retarded: Developing strategies*. Baltimore: University Park Press, 1972.
- ZISK, P., & BIALER, I. Speech and language problem in mongolism: A review of the literature. *Journal of Speech and Hearing Disorders*, 1967, 32, 228-241.

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Received October 1982

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