

Echolalia and Comprehension in Autistic Children¹

Jacqueline M. A. Roberts²

The Autistic Association of New South Wales, Sydney, Australia

The research reported in this paper investigates the phenomenon of echolalia in the speech of autistic children by examining the relationship between the frequency of echolalia and receptive language ability. The receptive language skills of 10 autistic children were assessed, and spontaneous speech samples were recorded. Analysis of these data showed that those children with poor receptive language skills produced significantly more echolalic utterances than those children whose receptive skills were more age-appropriate. Children who produced fewer echolalic utterances, and had more advanced receptive language ability, evidenced a higher proportion of mitigated echolalia. The most common type of mitigation was echo plus affirmation or denial.

INTRODUCTION

The phenomenon of echolalia was described in 1825 when Itard reported his clinical observations of verbal (echolalia) and nonverbal (echopraxia) echoing behaviors. Since that time echolalia had been reported in connection with several organic conditions such as aphasia and schizophrenia. Echolalia is also a feature of normal language development in many children. The distinction between normal and atypical echolalia is discussed by Zipf (1949) and Howlin (1982), who suggested that prolonged echolalia (occurring after

¹This work is part of a research project undertaken under the auspices of the English and Linguistics Department of Macquarie University, Sydney, Australia. I thank Dr. Barbara Dodd, who has been an invaluable guide and support throughout this project, and the staff and students of the schools of The Autistic Association of New South Wales for their cooperation and interest. Thanks also to Dr. Sue Bettison, Mr. Frank Higgins, and Mrs. Jenny Daniell for assisting with the preparation of this manuscript.

²Address all correspondence to Jacqueline M. A. Roberts, Vern-Barnett Diagnostic Teaching Centre, 41 Cook Street, Forestville, New South Wales 2087, Australia.

the age of 2½–3 years) is associated with some form of language retardation. Echolalia has been reported particularly as part of the syndrome of childhood autism since the disorder was first described as such by Kanner (1946). The frequency of echolalic utterances is higher in the autistic population than in the normal population (Cantwell, Baker, & Rutter, 1978). In addition, there are qualitative differences; for example, Fay (1980) reported that the echolalia of autistic subjects shows unusual "parasitic fidelity."

Atypical echolalia, in its multiple manifestations, is thought to be "the result of difficulty in communication due to impairment or lack of understanding and an attempt at overcoming this difficulty by identification with the interlocuter" (Stengel, 1964, p. 287). Persistent atypical echolalia almost invariably occurs in association with severely reduced receptive language, indicated by poor test performance on standardized language tests and marked discrepancy between measured verbal and nonverbal intelligence quotients. Autistic children have been identified as having particular difficulty in acquiring receptive language; for example, Cantwell et al. (1978) found that autistic children showed a marked comprehension deficit when compared to dysphasic children. Fay (1969) looked at etiological explanations for echolalia and suggested the relationship of verbal comprehension to imitative output is a primary variable. He compared three echolalic children and found that in two cases echolalia decreased as comprehension improved, while one child did not change. Rutter and Lockyer (1967) found that 75% of autistic children go through a period of marked echolalia. This implies that echolalia is a transitional phase that autistic children move through as they develop functional language. Howlin (1982) found that the frequency of echolalic utterances declined as the autistic children she studied gained linguistic competence. Lovaas, Koegel, Simmons, and Stevens-Long (1973) noted that children who were echolalic before starting language programs had a more positive prognosis for functional language development than those who were mute prior to the program.

The development of rule-governed speech and echolalia may be related in the autistic population. Baltaxe and Simmons (1977) hypothesized that autistic children are unable to develop rule-governed speech in the normal fashion and that functional speech behavior develops from echolalia, by processes which may be different from those observed in normal development. Kanner (1943) said that between the ages of 5 and 6 years, autistic children gradually abandon echolalia and learn to use pronouns spontaneously with adequate reference. Fay (1969) suggested the term "abatement" rather than "abandonment." The critical observation here is that children should have ceased echoing, alone or with clinical assistance, by 6 years of age. Follow-up studies indicate the importance of this landmark, and prognosis is poor for those children who are nonspeaking or echolalic after the age of 5.

When Kanner (1943) discussed the tendency of autistic children to repeat rather than construct original remarks, he noted that repetition could occur immediately after a verbal stimulus or be removed from it in time. He designated these repetitions "immediate" and "delayed" echolalia. Kanner also observed that autistic children sometimes alter aspects of the utterance echoed. Specifically, they may reverse pronouns or repeat what is heard adding affirmation or negation, rather than say "yes" or "no." This has since been described as "mitigated echolalia," a term used by Pick (1924) to define the slightly modified echoic responses observed in the speech of some of his aphasic patients. Fay (1967) was the first to investigate mitigations per se and develop an operational definition. He distinguished between "pure echolalia," the literal repetition of a word or group of words just spoken by another person, and "mitigated echolalia," a structurally unique form or supplement to a pure echolalic response. Mitigated echolalia was classed as one of three types:

- I. Pure echoic segment with the exception of pronominal reciprocation, with or without comprehension.
- II. Pure echoic segment preceded or followed by affirmation or negation, or by reply, remark, query, with or without comprehension.
- III. Combination of Types I and II or miscellaneous grammatical conversions to, or syntactical supplements to the pure echoic segment, with or without comprehension. (Fay, 1967, p. 306)

Fay (1967) transcribed the speech samples of 69 echolalic children. Forty of these children used mitigated echolalia to varying degrees, showing that mitigation is not a rare occurrence. He explored the qualitative differences between pure and mitigated echolalia and suggested in the broadest terms that mitigated echolalia reflects developmental progress in spontaneous speech and comprehension. Fay and Butler (1968) found that children whose echolalic utterances are predominantly mitigated have higher IQ scores and better language performances than those children whose echolalia was predominantly pure. Marked mitigation seems to suggest an increment in syntactic-semantic function expressively and receptively (Fay & Coleman, 1977; Shapiro, Roberts, & Fish, 1970).

In evaluating literalness of repetition, it is important to distinguish between intentional versus nonintentional deletions and additions (Schuler, 1979). If evidence can be found for deliberate changes, such as appropriate deletions, expansions, and alterations, or even intonational changes, it would indicate an ability to recognize constituent structure and to separate relevant from irrelevant stimulus input. A number of authors have discussed the function of echolalia for the autistic child (Phillips & Dyer, 1977; Prizant and Duchan, 1981; Shapiro, 1977). This issue is not addressed here however; we assume that for the autistic child echolalia is usually a communicative strategy.

The present study systematically examined the relationship between comprehension ability, echolalia, and mitigated echolalia in the speech of

10 autistic children. Receptive language skills were assessed and language samples collected and analyzed. The following hypotheses were tested:

1. There is an inverse relationship between comprehension skills and proportion of mitigated echolalia; that is, the more age-appropriate the child's receptive language, the lower the total percentage of echolalia in his speech.

2. There is a direct relationship between comprehension skills and the proportion of mitigated echolalia; that is, the more age-appropriate the child's receptive language the greater the percentage of total echolalia that is mitigated.

The data were also examined to determine the nature of the mitigations and their incidence in comparison with that in the study of Fay (1967) and also to determine any relationship between chronological age, receptive language skills, and echolalia.

METHOD

The Subjects

Ten children enrolled in the schools of the Autistic Association of New South Wales were selected. All had a diagnosis of Infantile Autism from referring medical authorities and also an independent diagnosis by the Autistic Association of New South Wales for Infantile Autism Full Syndrome Present (DSM III; American Psychiatric Association, 1980). The mean chronological age of children was 8 years 9 months (range 4 years 10 months–17 years 5 months). The children varied in level of functioning from the severe to the mild range of mental handicap. Mental age in months was established at the time of the study using a variety of standardized tests. These data are shown in Table I. However, they are not used for analysis because of the variety of IQ tests used. All children were required to produce a minimum of 25% echolalia on a screening procedure. Given the children's chronological ages, this clearly placed them in the disordered language category (Zipf, 1949; Howlin, 1982).

Procedure

Echolalic subjects were selected by teaching staff. Those diagnosed as having Full Syndrome Present were given a screening procedure. Those with 25% echolalia or more were then tested on the receptive section of The Sequenced Inventory of Communication Development (Hedrick, Prather, & Tobin, 1975). The test has an age range of 4 months to 4 years and is stan-

Table I. Chronological Age Comprehension

Child	Age in months	Mental age in months	RCA (in months)	Utterances		
				Total no.	% Echolalic	% Mitigated (no. of utterances shown in parentheses)
1	63	48	36	80	36 (29)	45 (13)
2	68	68	24	141	37 (52)	23 (12)
3	150	61	28	100	44 (44)	36 (16)
4	58	37	28	98	45 (58)	5 (5)
5	109	62	16	89	52 (47)	13 (6)
6	172	64	28	54	59 (24)	9 (9)
7	209	45	16	100	59 (59)	0 (0)
8	56	43	16	102	67 (68)	1 (1)
9	87	57	16	84	74 (62)	3 (2)
10	75	48	16	90	80 (72)	8 (6)

*RCA = receptive communication age.

standardized for normal and retarded populations. The children were assigned an RCA (Receptive Communication Age) on the basis of their test results. Most of the children showed a scattered performance with inconsistent successes and failures which produced an age range rather than a single figure result. The lower figure of the age-range score was used as it was considered that the child was not understanding language reliably at more advanced levels. Standard language sampling procedures were used to stimulate expressive language and all utterances were recorded during the sessions. The recordings were transcribed as soon as possible after each session. Each utterance by the child was transcribed as was the preceding utterance(s) by the examiner. Approximately, 100 utterances from each subject were transcribed with only one subject producing a corpus of less than 85 intelligible utterances.

For the purpose of this investigation echolalia was defined operationally as "recognizable imitation occurring within two utterances of the model." Utterances were classed as echolalic if they occurred immediately or within two utterances of the model and were congruent (literal) or mitigated. Repetitions of the child's own utterances were not considered echolalic. It is important to note, however, that immediate, literal, and mitigated echolalia only were noted and studied. There are numerous problems inherent in any attempt to discuss delayed echolalia and distinguish it from the rote, stereotyped, bizarre, or otherwise inappropriate speech also reported in this population. Baltaxe and Simons (1977) found similarly that existing definitions for propositional (creative) speech and echolalia were not useful in determining which of the utterances constituted propositional speech and how instances of propositional speech could be differentiated from delayed echolalia. Temporal criteria for echolalia were clearly defined in this study and this problem was avoided. In the case of echolalia, mitigated or literal, only recognizable imitation was noted. If there was any doubt the utterance was not included.

Mitigated imitations were classified according to the three types described by Fay (1967, p. 306). Shapiro et al. (1970) mentioned nongrammatic, jargon, and telegraphic imitations but of these only telegraphic imitations were heard in the speech samples. Fay (1967), like Shapiro et al. (1970), did not consider telegraphic imitation as mitigated echolalia. In this study echolalia that was different only because of omission of a final /s/ resulting in a change from plural to singular was classed as telegraphic while the changing of articles from *a* to *the* or *the* to *a* in an otherwise literal imitation was classed as mitigation.

"Type I: Pure echoic segment with the exception of pronominal reciprocation, with or without comprehension." For example:

Examiner: "Do you want a drink?"

Child: "Do I want a drink?"

"Type II. Pure echoic segment preceded or followed by affirmation or negation or by reply, remark, query, with or without comprehension." For example:

Examiner: "Do you want a drink?"

Child: "Do you want a drink, yes please."

"Type III. Combination of Types I and II or miscellaneous grammatical conversions to, or syntactical supplements to the pure echoic segment with or without comprehension." For example:

Examiner: "Do you want a drink?"

Child: "Do you want the drink?"

RESULTS

The relationships between the three variables comprehension age, echolalia, and mitigated echolalia (that is the percentage of echolalia that was mitigated) were examined. Linear regression analysis (Winer, 1971) of the data (see Table I) showed that there is an inverse relationship between RCA and percentage of total echolalic utterances, Pearson's $r = -.744$, $df = 8$, $p < .02$, and that there is a direct relationship between the percentage of mitigated echolalia and RCA, Pearson's $r = .751$, $df = 8$, $p < .02$. Analysis also showed that there is an inverse relationship between the percentage of echolalic utterances and the percentage of mitigated echolalia, Pearson's $r = -.706$, $df = 8$, $p < .05$.

Table II shows the frequency of occurrence of three types of mitigated echolalia in the children's speech samples. One child was excluded because he produced no mitigated echolalia.

Table II. Type of Mitigated Echolalia

Subject	Type I	Type II	Type III	D	Rank
1	0	9	4	+5	2.5
2	0	1	0	+1	8.5
3	0	5	1	+4	4.5
4	0	2	0	+2	6.5
5	0	2	0	+2	6.5
6	0	3	2	+1	8.5
7	0	10	2	+8	1
8	0	7	2	+5	2.5
9	0	5	1	+4	4.5

"Type I = pure echoic segment with the exception of pronominal reciprocation. Type II = pure echoic segment preceded by or followed by affirmation or negation, or by reply, remark, query; Type III = combination of Types I and II or miscellaneous grammatical conversions to or syntactical supplements to the pure echoic segment.

No subject exhibited Type I mitigated echolalia. Pronominal reciprocation was evident but only in combination with other mitigations; hence it appears as Type III. The results of the Wilcoxon Signed-Rank Matched Pairs Test (Champion, 1970) comparing Types II and III showed subjects most frequently produced Type II mitigated echolalia ($n = 9$, $T = 0$, $p < .01$, one-tailed test). Thus we can assume that there are not equal proportions of Types I and II mitigations in the corpus of mitigated echolalia.

Comprehension and chronological ages were compared using the Mann-Whitney U Test (Champion, 1970). There was no significant relationship.

DISCUSSION

The results show that high proportions of echolalia in speech are associated with poor comprehension skills, whereas a decreased overall percentage of echolalia is associated with more age-appropriate skills. This trend has been broadly suggested in the literature; however, the relationship had not been systematically examined or established previously. The significant results of this investigation suggest the need for a more comprehensive longitudinal investigation. The data also show that better comprehension is associated with increased mitigation of echolalia. This finding confirms the conclusions of Fay and Butler (1968) that mitigated echoers have higher receptive language scores. Echolalia seems to be a transitional stage connected with poor comprehension; increasing linguistic competence (receptive at least) is reflected in the child's ability to manipulate the echolalic response and produce utterances that are syntactically and semantically modified.

In Fay and Butler's study (1968), the mean number of mitigated utterances per speaker was 8.25; in this study, for those children classed as mitigated speakers (using Fay's criterion of two or more mitigated echolalic utterances per sample), the mean was 7.47 which suggests similar amounts of mitigated echolalia in both groups of subjects. The type of mitigation varied, however, to a marked degree. Fay found nearly equal distributions of pronominal reciprocation (Type I) and affirmation or negation (Type II) with less than a third of that amount for combination Type I and II or miscellaneous conversions or supplements (Type III). The results of the study reported here indicate that there was significantly more Type II than Type I or III. Although no explanation for this discrepancy is immediately obvious, differences in sample size and age range may be contributing factors. In the earlier study (Fay, 1967) the group was younger and apparently largely "outgrew" their echolalia.

The prevalence of Type II mitigation is suggestive of Kanner's observation that echoing may serve as affirmation by repetition in autistic chil-

dren. This has been difficult to prove, as far as literal echolalia is concerned, as the child's intention is always open to interpretation. As children move from literal to mitigated echolalia, however, the most common type of mitigation is echo + affirmation or negation. This suggests that some of the child's literal echolalia may be produced with the same intention suggested by Kanner (1943). All pronominal reciprocation in these samples occurred in combination with other types and was entered in Type III. Therefore, as in Fay and Butler (1968), the amount of pronominal reciprocation is concealed.

It is possible that telegraphic echoes are the result of processing, particularly as it is often grammatical morphemes and less semantically significant words that are omitted. The following example from the data illustrates this point:

Examiner: "What do you play at home?"
Child: "What I play home?"

This is an example of telegraphic mitigation and pronominal reciprocation in one utterance. Obviously, if mitigated echolalia is a language acquisition strategy for autistic children, it warrants more extensive investigation than it has been accorded in the past. There may be implications for assessing and teaching autistic children. Inspection of the data from this study suggests that when discussing types of mitigated echolalia it would be more useful to note (a) pronominal reciprocation; (b) affirmation or denial; (c) telegraphic; (d) miscellaneous—other. If an utterance contains two or three combinations of these, all should be noted to avoid masking features. It would also be useful to note the changes made in the miscellaneous category to determine any other patterns. This could provide further insight into the way autistic children modify echolalia in their attempts to develop functional language.

Baltaxe and Simons (1977) suggested that autistic children develop language using linguistic strategies that are different from those of the normal child. That is, they do not develop language via a gradually expanding system of categories or rules. It seems more probable that quotation-like or rote-learned echolalic patterns are only gradually broken down into individual chunks of varying sizes. These chunks are then conjoined and frequently result in new utterances which can be considered delayed mitigated echolalia. It is possible that, in fact, the distinction between delayed echolalia and spontaneous speech in autistic children is artificial. Rather, their speech is derivative and consists of rote-learned chunks which the child associates with particular contexts and uses when a similar context arises. It is likely that in the face of an inability to generate utterances in the usual fashion via syntactic-semantic processing, the autistic child relies heavily on his associative memory and most of his speech is delayed echolalia. Therefore, mean length

of utterance and syntactic stages mean very little when describing the autistic child's expressive competence (Bartolucci, Pierce, & Steiner, 1980). It is likely that the only way to assess the autistic child's expressive ability is to examine the way he functions in his environment and to look again, as Prizant and Duchan (1981) have suggested, at echolalia and the way the child may be trying to utilize it to get through to his listener.

Chronological age was not found to be related to comprehension age or the associated percentage of echolalia. This finding suggests that echolalia is not inevitably a transitional phase and that some autistic children do not grow out of it. The autistic child's development may arrest at low levels of language functioning characterized by high levels of echolalia and poor comprehension.

In conclusion, this study has shown that for this group of autistic children there is an inverse relationship between comprehension ability and the amount of echolalia in speech. The children with more age-appropriate receptive language use less echolalia. Chronological age has no relationship to comprehension or echolalia. This study also shows that (a) the more age-appropriate the receptive language, the larger is the proportion of echolalia that is mitigated; and (b) echo plus affirmation or denial was the most common type of mitigation in this group.

Although some strong trends show up in the data, caution is required in the interpretation of these results as there was no control for the effect of variables such as the onset or duration of echolalic behavior, chronological age, measured IQ, or the effects of treatment. Some of the children in this study had been involved in remedial speech and language programs of varying kinds for several years. The small sample ($N = 10$) and wide age range suggests caution in generalizing to the "autistic" population as a whole. In a wider sense there are also problems of definition of echolalia and autism. Although these terms have been defined as exactly as possible for this study, these are working definitions only.

It seems that whether the difference between echolalia and imitation is a matter of degree or something more profound, is not important. What is apparent is that autistic children use imitation in a persistent fashion as if it is all they have in the face of a pervasive cognitive deficit. This deficit leaves them unable to process syntax and semantics in the usual fashion and inhibits their ability to develop linguistic competence. Obviously, there are many questions yet to answer and much work needs to be done on the way autistic children acquire the linguistic competence they have, particularly if effective intervention strategies are to be developed.

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