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Echolalia

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KANNER'S EARLY OBSERVATIONS

In his first publication describing characteristics of the autistic syndrome, Leo Kanner (1943) noted that "the children's inability to relate themselves in the ordinary way to people and situations" (p. 33) and an obsessive insistence on sameness were the most prominent features of the syndrome. Yet, as one reads Kanner's early detailed clinical descriptions, it becomes evident that his great fascination and interest in his clients was due, to a large extent, to their specific patterns of speech and language behavior. In his second published article on autism, Kanner (1946) stated that "among numerous other features, the peculiarities of language present an important and promising basis for investigation" (p. 45).

In this chapter, Kanner's early observations will provide the starting point for examining and reevaluating our understanding of echolalia in autism. Since Kanner's observations, considerable new knowledge has accumulated. This new knowledge, which reflects contributions from a number of academic disciplines, will be reviewed critically in discussions of a number of pertinent topics. The classification of echolalic behaviors on the basis of their functional properties will be discussed in relation to matters of definition and intervention. This perspective will also provide a means to reexamine the extent to which autistic echolalia differs from other types of echolalia and from speech repetition, as, for example, observed in the context of normal language acquisition. Differences between more rote and automatic versus more functional

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forms of echoes will be discussed in reference to neurolinguistic considerations. Finally, echolalia will be reappraised from a broader developmental and biological perspective in an attempt to explain autistic echolalia in the context of the developmental and, particularly, the cognitive discrepancies associated with the syndrome.

Kanner's attention to speech and language symptomatology was dominated by his interest in echolalic behaviors, defined briefly as the rote and literal repetition of the speech of others. Kanner's (1943, 1946) examples of echolalic behavior in autism demonstrate that such utterances took many forms, occurred across many situations, and were used for a variety of purposes. His first use of the term "echolalia" appeared in a description of an affirmative response by his first case, Donald T.; "Don expressed his agreement by repeating the questions literally, echolalia-like" (p. 5) (Kanner, 1943). Later in the same article, Kanner distinguished between utterances repeated immediately, as in the example above, and utterances repeated at a later time, for which he coined the term *delayed echolalia*." Kanner noted that the utterances of others "are sometimes echoed immediately, but they are just as often 'stored' by the child and uttered at a later date. One may, if one wished, speak of *delayed echolalia* (p. 35). Currently, this distinction between delayed and immediate echolalia is acknowledged and discussed frequently in the literature on autism (Schuler, 1976; Fay & Schuler, 1980; Prizant, 1983; Schuler, 1979). The essential similarity between immediate and delayed echolalia is that whole utterances, or parts of utterances, are repeated verbatim; however, differences in memory processing possibly underlie these two types of echolalia (Fay & Schuler, 1980).

In citing the occurrence of immediate echolalia, Kanner (1943) wrote "her [Case 11] reactions to questions—after several repetitions—was an echolalia-type reproduction of the whole question or, if it was too lengthy, of the end portion" (p. 31). Kanner (1943) added that "affirmation is indicated by literal repetition of a question" (p. 35). Although many researchers have come to regard immediate echolalia as a result of an inability to comprehend language (Fay, 1969; Shapiro, 1977), Kanner emphasized that such behavior reflects a more general profile of obsessive and repetitious behavior in autism, alluding to cognitive differences.

Kanner's (1943, 1946) discussions and examples of delayed echolalia produced by his clients comprise his most detailed and enthusiastic account of language behavior in autism. He seemed to imply that delayed echolalia provides a window through which one can observe how individuals with autism process information, organize their experiences, conceive of language, and in some cases, attempt to participate in social exchanges.

Kanner's obervations on echolalic patterns included the use of "metaphorical language," or language with private meanings, and pronominal reversal,

in which "personal pronouns are repeated just as heard, with no change to suit the altered situation" (p. 35) (1943). Pronominal reversal was thus viewed by Kanner as an artifact of delayed echolalia.

Kanner (1943) first used the term "verbal rituals" to describe how Donald T. [Case 1] produced utterances such as "say, 'eat it or I won't give you tomatoes, but if you don't eat it, I will give you tomatoes' " (p. 4). Kanner stated that this utterance "had obviously been said to him [Donald T.] often" (p. 4). In highlighting pronominal problems, which he later referred to as pronominal reversal, Kanner gave the following examples from Donald T.: "When he wanted his mother to pull his shoe off, he said: 'Pull off your shoe.' When he wanted a bath, he said: 'Do you want a bath?' "(p. 4).

Other examples of delayed echolalia given by Kanner demonstrate the diversity in meaning and use of such "memorized" utterances. Kanner spoke of utterances that "were clearly connected with actions," such as one child who sang "cutting paper" while he cut paper, and stated "the engine is flying" while he "ran around the room holding it up high" (p. 14) (1943). Kanner noted that this same child produced complex utterances that "could not be linked up with immediate situations...[but]...could be definitely traced to previous experiences" (pp. 14–15). Another child, Charles N. [Case 9], produced the utterance "I'll give it to you!" when some blocks were taken away from him. Kanner interpreted this as meaning "you give it to me." Probably the example cited most frequently is that of Paul G. [Case 4], who produced the utterance "don't throw the dog off the balcony," which was "used to check himself" from throwing objects (Kanner, 1946, p. 46). According to Kanner, the child had been scolded by his mother for throwing a toy dog off a hotel balcony and he continued to produce the utterance for many years after when he was tempted to throw an object.

Despite Kanner's varied examples of delayed echolalia, his statements as to their significance reflect inconsistencies and, in some cases, contradictions. For example, in comparing the abilities of his original 11 subjects, Kanner (1943) stated that "as far as the communicative functions of speech are concerned, there is no fundamental difference between the eight speaking and the three mute children" (p. 35) and "in none of the eight 'speaking' children has language over a period of years served to convey meaning to others" (p. 34). Yet in Kanner's examples, some of which are cited above, there is clear evidence of echolalic forms functioning communicatively and being used to convey meaning. (It should be noted that all of Kanner's eight "speaking" children were reported as being echolalic.)

Regarding delayed echolalia, this apparent contradiciton is softened in Kanner's 1946 discussion of the concept of metaphorical language in which "the autistic child has his own private, original, individualized references" (p. 47) resulting in language forms that may not be communicative because the

meanings are not conventional or shared by a community (Bates, 1979). After giving ample examples of metaphoric use of whole phrases as well as of single words, Kanner went on to indicate that "once the connection between experience and metaphorical utterance is established. . .does the child's language become meaningful"(p. 49). In other words, such utterances may function communicatively if a listener can interpret their meaning based on shared experience with the child or can refer to accompanying nonverbal behaviors or situational features. The apparent contradictions and confusions on communication, language, and meaning are most likely the result of unclear, or rather, private use of these terms, as Kanner at that point in time could not refer to an established literature dealing with normal speech, language, and communicative development and disorders thereof. In fact, the term echolalia was never clearly defined and has, up to this point, remained a source of confusion. (For a detailed review, see Schuler, 1979.) Another source of confusion on Kanner's writings pertains to the sample of autistic individuals described, which did not include the more severely retarded. Consequently, many instances of more automatic and meaningless echoing were not described, which may have obscured the continuum that exists along the dimensions of communicativeness and intentionality; this will be discussed in greater detail later in the chapter.

The significance of Kanner's contribution was due to his rich descriptions and clinical insights into the speech and language behavior and, specifically, echolalic behavior of his clients. Not only did he carefully describe the speech and language behaviors observed, he also hypothesized and speculated about the unobservable cognitive and linguistic processes underlying echolalic behavior. Kanner's extensive clinical expertise and his intuitive understanding of language use, speech development, and development in general could have been the source of an invaluable and fruitful line of research. Yet over the past four decades, few systematic research efforts have followed up on Kanner's provocative speculations. Recent changes in methodological and philosophical approaches to the study of communicative development in normal children promise to clarify and extend many of Kanner's valuable and, in some cases, extraordinary insights into language behavior in autism. The next section of this chapter will describe how a systematic functional analysis of echolalia may serve to clarify the extent to which the behaviors involved may be communicative and/or meaningful.

DIMENSIONS AND FUNCTIONS OF ECHOLALIA

The complexity and diversity of echolalic behavior was amply demonstrated in the examples of echoic utterances as provided by Kanner (1943, 1946). At this point, it would be useful to consider how echoic utterances may vary by referring to the many dimensions of echolalic behavior. In fact, we are

suggesting that a unidimensional approach that considers language structure alone (e.g., number of words repeated, exactness of repetition) has contributed little to our understanding of echolalia. Unfortunately, many researchers in both theoretical and applied disciplines have focused primarily on language structure, which has led to misleading and erroneous assumptions about echolalic behavior (e.g., it is *only* meaningless parroting, it is a nonfunctional behavior).

In recent years, changes in both underlying philosophies and research methodologies have had great influence on the study of language and communicative behavior of normal children. For example, it is now considered essential to account for social aspects of language production (e.g., purposes, and functions of utterances), cognitive aspects (e.g., underlying meaning, conceptual underpinnings) as well as structural aspects (e.g., the observable form of utterances) when studying language acquisition and use (Bloom & Lahey, 1978; Lund & Duchan, 1983; McLean & Snyder-McLean, 1978). In reference to echolalia, issues analogous to social, cognitive, and linguistic dimensions noted above would include (a) whether an an utterance is repeated for any specific purpose or function (i.e., is it produced with or without communicative intent); (b) whether there is any comprehension of the utterance that is repeated; and (c) whether any structural changes are made in repetition that are indicative of mediating linguistic processes. A consideration of language structure alone, which until recently was the predominant approach to studying echolalia in autism, provides little information regarding issues of social use and language comprehension. A common research strategy exemplary of this approach is the presentation of a list of stimulus sentences for repetition that have no relevance to the situational or communicative context (Buium & Steucher, 1974; Schreibman & Carr, 1978). Furthermore, because researchers were not interested in studying the occurrence of echolalia in natural interactions, there were no attempts to record or document extra-linguistic and situational factors associated with the production of echolalia.

In recent years, ethological approaches to the study of child language have stressed the importance of studying language behavior in dynamic and natural contexts, which demands accounting for such extra-linguistic features as gestures, gaze behavior, and body orientation and objects, people, and events in the situation. Such approaches emphasize that any particular behavior can only be understood in its context of occurrence and that "context-stripping" or context-controlling approaches result in invalid assumptions when attempts are made to generalize findings to naturally occurring behaviors (Mishler, 1979). In order to make judgments regarding the purpose or function of echolalia, and the extent of comprehension underlying echoing behavior, it becomes apparent that research procedures should account for such behavior in more natural interactions and across communicative contexts (Schuler, 1979).

Kanner's (1943, 1946) discussions and examples of echolalic behavior, as

well as examples from echolalia in other clinical populations (Prizant, 1978; Schuler, 1979), alluded to a variety of forms and functions of echolalia. Furthermore, informal parental and teacher interviews further substantiated clinicians' anecdotal accounts that pointed to the diversity of echolalic behavior (Prizant & Duchan, 1981). For both immediate and delayed echolalia, the salient dimensions include degree of comprehension of the repeated utterance, whether an utterance is produced interactively or noninteractively, and whether any structural changes are imposed in repetition. For delayed echolalia, an additional factor is the relevance of an utterance to the situational or conversational context.

By the mid-1970s, there appeared to be two schools of thought regarding echolalic behavior in autism. The first position stated that echolalia is aberrant, nonfunctional behavior or a communicative disorder symptomatic of childhood psychosis. Because of its undesirability, efforts should be made to eliminate echoing or at least reduce its frequency of occurrence. The alternative approach viewed echolalia to be a consequence of a severe communicative impairment, which, at the very least, should be viewed as a child's strategy to maintain social contact, thus serving a primitive "phatic" or social facilitation function (Caparulo & Cohen, 1977; Fay, 1969; Shapiro, 1977). Because clinical observations and anecdotal accounts suggested a broader range of echolalic behavior than implied by these two positions, more in-depth, ethological studies of echolalic behavior were called for (Schuler, 1979).

With this impetus, a series of studies were undertaken to attempt to delineate patterns of usage of immediate and delayed echolalia by individuals with autism (Prizant, 1978; Prizant & Duchan, 1981; Prizant & Rydell, 1984). Pragmatic research, or studies of language use in context (Dore, 1975; Halliday, 1975), provided a methodological foundation for studying the use of immediate and delayed echolalia by autistic individuals. In examining the production of echolalic utterances in these studies, determinations of interactiveness and comprehension of the utterances were made by analyzing and documenting such factors as body orientation, gaze, gesture, and actions upon objects, as well as objects and events in the immediate context. The timing of the production of the echoic utterances in relation to any actions or gestures was also documented for each utterance. Based upon these analyses, a variety of functional categories of echolalia were derived.

In the immediate echolalia study (Prizant, 1978; Prizant & Duchan, 1981), seven functional categories were derived from a videotaped analysis of 1,009 echoes produced by four autistic children over an 8-month period. The inital breakdown resulted from analyzing the echoes and accompanying nonverbal and situational features in the dimensions of interactiveness and comprehension evidence. This yielded four *structural categories:*

1. Echolalia produced noninteractively with no evidence of comprehension
2. Echolalia produced interactively with no evidence of comprehension
3. Echolalia produced noninteractively with evidence of comprehension
4. Echolalia produced interactively with evidence of comprehension

With further consideration of the timing of nonverbal behavior in relation to the production of the echoic utterances, seven *functional* categories were derived from the initial breakdown including: (a) nonfocused (from category 1); (b) turn-taking (from category 2); (c) rehearsal and (d) self-regulatory (from category 3); and (e) declarative, (f) *yes*-answer, and (g) request (from category 4).

From a functional perspective, the *nonfocused* category included echoes that were extremely automatic, that were often produced during states of high arousal (e.g., pain, anxiety), and that sometimes appeared to be self-stimulatory. *Turn-taking* echoes enabled the children to fill their turn in dyadic interaction when they did not comprehend utterances directed to them. *Declaratives*, *yes answers*, and *requests* served the respective functions of directing others' attention through labeling, affirming a prior utterance, and requesting specific objects or actions. *Rehearsal* and *self-regulatory* echolalia served the cognitive functions of repetition of utterances for further processing and regulations of body actions, respectively. In all, the categories represent behavior ranging from nonintentional and highly automatic repetition (e.g., nonfocused) to clearly intentional communicative behavior (e.g., request). The significant features of the categories are summarized in Table 1.

The results of the delayed echolalia study (Prizant & Rydell, 1984), based on an analysis of 387 delayed echoes of three autistic individuals, revealed a greater variety of use across the subjects than in the immediate echolalia study. As in the immediate echolalia study, the functions ranged from relatively automatic and nonintentional utterances (i.e., *nonfocused* and *situation-association* functions) through utterances serving turn-filling or conversational functions (i.e., *turn-taking*, and *verbal completion*), and cognitive functions (i.e. *rehearsal*, *self-directive*, and *non-interactive labeling*) to echolalia serving communicative functions (i.e. *protest*, *request*, *interactive labeling*, *calling*, *providing information*, *directive*, and *affirmation*). For a summary of the significant features of these categories, see Table 2.

These studies demonstrated a wide range of functional use of immediate and delayed echolalia. Further research is needed to determine how functional use of echolalia varies across individuals with a wider range of cognitive and linguistic abilities and how functional profiles may change over time. The findings of these studies actually reaffirm many of Kanner's early clinical observa-

Table 1. Features of the Functional Categories in Immediate Echolalia

Echo category	Evidence of attention	Echo directed to person	Degree of change	Timing of echo: Behavioral change	Evidence of comprehension	Expectation of response from adult	Comments
Nonfocused	No[a]	No[a]	Minimal	—	No[a]	No	
Turn-taking	Yes[a]	Yes	Minimal	—	No[a]	No	
Declarative	Yes[a]	Yes	Variable	During or subsequent to	Yes[a]	Checking gaze possible	Demonstrative gesture indicating object, location[a]
Self-regulatory	Yes[a]	No, with exceptions	Variable	During[a]	Yes[a]	No	
Rehearsal	Yes[a]	No, with exceptions	Selective; high information segmentals	Prior to[a]	Yes[a]	No	Delay[a] between echo and verbal or nonverbal behavior
Yes answer	Yes[a]	Yes[a]	Minimal	—	Yes[a]	Yes[a]	Verbal or nonverbal evidence of affirmation[a]
Request	Yes[a]	Yes[a]	Variable; usually elements are added	—	Yes[a]	Yes	Verbal or nonverbal evidence of child's desire to obtain an object or have action performed[a]

[a]Core attributes.

Table 2. Fourteen Functional Categories of Delayed Echolalia and Core Attributes of Each Category

Echo categories	Relevance to linguistic or situational context	Evidence of interactiveness	Evidence of comprehension	Other core features	Comments
Nonfocused	No	No	No	Not accompanied by meaningful behaviors	Does not appear to serve any apparent purpose. May be self-stimulatory
Situation association	Yes	No	No	Utterance triggered by object, person, situation, or activity	
Rehearsal	Yes	No	Yes	Practice of linguistic form for subsequent interactive response	Utterance usually spoken in low, soft tone
Self-directive	Yes	No	Yes	Utterance produced prior to or in synchrony with activity, often with low volume	Appears to serve cognitive function of regulating own actions
Label (noninteractive)	Yes	No	Yes	Label in reference to action or object	Similar to label (interactive), but labels to self
Turn-taking	Yes/no	Yes	No	Utterance used as turn filler in alternating verbal exchange	No evidence of communicative intent
Verbal completion	Yes	Yes	No	Completion of verbal routine	Response to verbal routine initiated by other

(*continued*)

Table 2. (Continued)

Echo categories	Relevance to linguistic or situational context	Evidence of interactiveness	Evidence of comprehension	Other core features	Comments
Label (interactive)	Yes	Yes	Yes	Label in reference to action or object (demonstrative gesture)	No further intentions indicated other than to point out referent
Providing information	Yes	Yes	Yes	Offers new information to listener	Utterance may be initiated or in response to other's initiation
Calling	Yes	Yes	Yes	Call attention to oneself or to establish/maintain interaction	Persistence often demonstrated if child does not get listener's attention
Affirmation	Yes	Yes	Yes	Affirmative response to prior utterance	Subsequent behavior indicates affirmative attitude (e.g., takes object)
Request	Yes	Yes	Yes	Requesting in order to obtain object	Focus on object desired. Persistence until goal is achieved
Protest	Yes	Yes	Yes	Protests actions of others	May also be used to prohibit others' actions
Directive	Yes	Yes	Yes	Used to direct others' actions	Goal is to instigate others' actions, rather than obtain object (see Request)

tions, and dispel the belief that echolalic behaviors in autism are cognitively and communicatively insignificant.

The functionality of at least some forms of echoing invites speculation on similarities between autistic echolalia and speech repetition, which occurs in the context of normal language acquisition. It also demands a critical examination of the status of autistic echolalia as compared to similar behaviors observed in other conditions, which raises definitional issues.

AUTISTIC ECHOLALIA, LANGUAGE ACQUISITION, AND COGNITIVE CONSIDERATIONS

Marked differences between more automatic and more intentional forms of echoing, which may cover a whole range of communicative and cognitive functions, explain why controversies regarding definition and terminology are not easily settled. Precise operational criteria, separating echolalia from more normal speech repetition, as observed in the context of normal language acquisition, for example, are not readily imposed upon continuum phenomena. With regard to these matters, autistic echolalia has often been described as deviant. For instance, DeHirsch (1967) suggested that "the echolalic speech of schizophrenic children with its mechanical, birdlike quality carries a feeling entirely different from that of the occasional echolalic utterances of children with severe and specific language deficits." Fay (1969) used the term "parasitic fidelity" in reference to autistic echolalia. He also commented on the monotonous vocal delivery of autistic echoes, as well as on their often indiscriminate and automatic nature.

Claims regarding the deviant status of autistic echolalia are often coupled with speculations on the associated causes. Various explanations have been posited. Baltaxe and Simmons (1981) implied a basic perceptual deficit with regard to the prosodic features of speech. The memorization of "unanalyzed chunks" is viewed as the result of an inability to segment speech sequences on the basis of prosodic cues.

Differentiations between echolalia and more normal forms of literal speech repetition are becoming increasingly muddled, as the prevalence of such behavior in the speech of normal 2-year-olds is becoming more and more apparent (Weir, 1962; Clark, 1973; Crystal, 1975; Keenan, 1977). Utterances produced by young children are not necessarily the product of creative linguistic processes, but rather literal repetitions and/or slight modifications and expansions of previous adult utterances. This becomes particularly clear when language samples are analyzed in context and more extensive samples of both child and adult speech are collected over time. Analogues of delayed echolalia

are easily missed if the researcher analyzes utterances out of context without being sufficiently familiar with the child being studied.

With regard to the prevalence of rote speech in normal children, researchers of normal language development have recently reported on so-called "gestalt language styles" (Clark, 1977; Ferrier, 1978; Peters, 1977) and have emphasized that such styles are probably much more prevalent in young children than has been realized previously. Such children acquire language by memorized multiword units, which are eventually segmented to allow for an appreciation of constituent language structure and the induction of productive linguistic rules (see Nelson, 1981, for a review). A "gestalt" mode contrasts with an analytic mode, which has been accepted by researchers as being the most common approach to language acquisition (Bloom & Lahey, 1978). In an analytic mode, a child progresses in language through movement from single to two- to three-word utterances and beyond, by the acquisition and application of productive linguistic rules. An analytic approach in early language development allows for greater creativity and flexibility than is apparent in the early language of "gestalt" children. Other chldren who demonstrate "gestalt" strategies include second-language learners (Fillmore, 1979) and some blind children, especially those blinded by retrolental fibroplasia (RLF) (Prizant & Booziotis, in press).

In autism, it is the extreme nature of "gestalt" processing that may account for the extensive use of echolalia (Prizant, 1983). Normal children who demonstrate an early "gestalt" style need to shift to a more analytic made in development. In fact, Bates (1979) and Peters (1977) suggested that normal children who begin with a "gestalt" style may be slower to develop language due to their processing mode. Autistic children appear to remain primarily "gestalt" processors and are truly at a disadvantage. Accumulated clinical observations of autistic students persisting in elaborate phrases, once they have learned them, or producing a chain ("juice," "want," "cookie," "eat," "more") illustrate the applied ramifications of the "gestalt" language processing concept. Autistic students failing to generalize because taught phrases were part of the contextual "gestalt" in which they were originally produced illustrate this concept in a broader instructional context. The "gestalt" notion also helps to clarify the interrelations between cognitive and communicative peculiarities. Echolalia and related behaviors have been associated with cognitive rather than perceptual peculiarties (Prior, 1979; Prizant, 1983), cognitive style, in which experiences are "processed" and retained in a rather superficial and holistic manner in close association with one particular contextual cue. Information is "taken in" simultaneously with little further analysis or depth of processing (Fay, 1983). An analytic mode, however, allows for a sequential analysis of constituent components and part/whole relationships, resulting in an appreciation of hierarchical, nonsequential structure, as exemplified in language and symbolic play. The gestalt processing style is clearly not language-specific; visual information tends to be analyzed in terms of its spatial organization, with little appreciation of its temporal qualities (Hermelin, 1976; DeMyer, 1976; Schuler, 1979; Schuler & Bormann, 1983). The pervasive problems with not only verbal, but also nonverbal aspects of communication, such as gesture and gaze, and the reliance on spatially coded information testify to this point. Such an extreme gestalt mode, confounded by the presence of cognitive deficiency in over 80% of the autistic population, may account for the high incidence of echolalic behavior, both immediate and delayed, in verbal autistic individuals, and the lack of language development in approximately 50% of the autistic population (Ritvo & Freeman, 1977).

Some autistic persons, however, do move out of primarily echolalic language to more productive and flexible language. For these individuals, language acquisition appears to involve movement to a more analytic mode allowing for rule induction and resulting in the analysis and segmentation of gestalt forms, with linguistic rule induction (Baltaxe & Simmons, 1977; Prizant, 1978; Schuler, 1979), as well as other rules pertaining to, for example, symbolic play and social interaction. Echolalia may play an important role in this process, for the first indication of flexibility and linguistic rule governance usually takes the form of the substitution of elements within previously memorized patterns. Such mitigated echolalia (i.e., echolalia with structual change) may be the bridge between primarily echolalic language and true creative language. For example, one child we observed generalized the memorized form "Do you want a cookie?" to requests for other items. At first, he used this exact intact utterance to request a cookie and, later, a drink of water, etc. His nonverbal behavior indicating regard toward environmental referents and his persistence in his requests clarified his actual intent. He eventually segmented this utterance into two primary units, a request frame ("Do you want a _____?) and a slot to specify the object of desire ("cookie," "water," etc.). This early productive rule (i.e., request frame + desired object/activity) was used to generate such utterances as "*Do you want a* water?" "*Do you want a* build the tower?" "*Do you want a* time to go home?" Such patterns appear to represent the beginning of generativity, governed by simple combinatorial rules. Further linguistic growth may depend, to some extent, on further analysis and segmentation of such gestalt forms (Prizant, 1983; Schuler, 1979). However, immediate and delayed echolalia may remain a part of the verbal repertoire of even relatively higher functioning autistic adolescents and adults.

For communicative growth and language acquisition, immediate and delayed echolalia may provide a means by which many autistic children learn how they can affect the behavior of others, manipulate their environment, and use specific forms to accomplish specific goals. Furthermore, echolalia may

provide the requisite tools for many autistic children to be active participants in social interaction and conversational exchange, which provides the structure and framework for further communicative growth. For individuals with greater cognitive potential, echolalia may provide the raw linguistic material that will serve as the basic ingredients in the construction of a more generative and flexible rule system. Clearly, detailed longitudinal research is needed to prove or disprove these hypotheses by documenting the progression from early echolalic behavior to more creative language. This would provide much needed guidance for language remediation and would help to delineate differences between autistic and nonautistic echoing.

THE AUTOMATICITY–INTENTIONALITY CONTINUUM: NEUROLINGUISTIC CONSIDERATIONS

So far, the more functional forms of echoing have been emphasized. At this point, the discussion will be shifted toward more automatic and nondiscriminate forms of echoing that seem to lack communicative intentions and contextual sensitivity. The occurrence of so-called "nonfocused" echoing, as discussed earlier, as well as clinical reports on more "pathological" forms of echoing, which often occur in the context of other self-stimulatory behavior, require further examination.

Occasionally, nonfunctional echolalia persists despite relatively more advanced knowledge of the structure of language. In other words, the persistence of echolalic behavior is not always accounted for by limited comprehension or expressive skills. A brief case summary may help to illustrate this point. We studied the echoing behavior of a 14-year-old girl diagnosed as autistic. She typically echoed anything that "caught" her ear, exhibiting a rich repertoire of both delayed and immediate echolalia. Some common functions served by the echoing were requesting and turn-taking. Although the majority of the delayed echoes were of the situation-association type, a number of them appeared nonfocused. Spoken instructions, which are commonly repeated for rehearsal purposes, were echoed in a highly erratic, nonfunctional manner. For instance, when asked to pick up a comb, a cup, and a brush, the whole instruction was repeated verbatim. Meanwhile, the girl's manual response was completely at odds with the concurrent verbalization. She would almost always pick up the brush first, followed by the comb and the cup in variable order. What was most striking about her performance was the baffling lack of synchrony between verbal and motor behavior. As far as the girl's hand motions were concerned, a recency effect may have accounted for the last-named object being picked up first. Such extreme isolation between verbal and motor behavior may be indicative of a primitive, nonintegrated speech reflex, and it raises questions

as to the neuropsychological organization of such behavior. The ability to repeat speech, or any sound for that matter, is implied without any conscious analysis and/or awareness of the speech produced.

Another illustration of the discrepancies between structural knowledge of language and rote echoing may be found in the clinical observations of isolated grammatical abilities within otherwise extremely automatic and noncommunicative echoing. In her detailed case description of a case of echolalia not associated with autism, but rather with presenile dementia, Whitaker (1976) postulated the notion of a "grammatical filter." The subject of Whitaker's study was observed to correct utterances that were wrong from a syntactic or morphophonological point of view while she was echoing them. Yet, she would leave semantically erroneous utterances unaltered, being apparently unable to make the relevant conceptual judgments. Although overall cognitive performance was severely impaired, in conjunction with an overall lack of initiation and volitional behavior, an automatic level of reflex-like speech had been retained. In this case, discrepancies among speech, language, and cognition were clearly attributable to acquired organic damage. Such extreme discrepancies due to acquired loss of function are not readily observed in cases of developmental echolalia. Nevertheless, a recent case description of echolalic behavior in an autistic-like girl does suggest that grammatical performance may be divorced from cognitive and communicative performance. Tomlinson (1982) reported on the presence of relatively advanced syntactic and morphonological abilities despite extreme limitations in communicative and semantic development and severe retardation, as evidenced by a pervasive absence of goal-directed behavior. Despite the fact that at least 90% of utterances sampled were of the nonfunctional type, some grammatical judgment could be inferred from the ways in which pieces of speech were correctly interconnected or conjugated.

With regard to the interpretation of the observed discrepancies, one might speculate that the urge to mimic speech may initially be a product of primitive reflex-like mechanisms, not unlike parroting reflexes in birds. An automatic rudimentary ability to mimic words and phrases *along* with some "gut" knowledge of morphological and syntactic mechanisms may be in operation, even if these speech reproduction skills are not used for communicative purposes and are not integrated with other perceptual and cognitive processes.

In discussing the observed discrepancies with regard to the neuropsychological organization of echoing behavior, we will not limit our discussion to echolalia in autism. Echolalia has been observed in a number of other conditions, including developmental disorders as well as acquired pathologies. (For an extensive review, see Schuler, 1979.) Given the response latencies involved, and the link with acquired cortical damage, it could be argued that lower brain, that is, subcortical, mechanisms may be responsible for the more

automatic forms of echoing. Such a position would be in line with other evidence for the subcortical organization of automatic aspects of speech. (For a detailed review, see VanLancker, 1975.) Reports on echolalia in the context of documented cortical damage also suggest that more primitive echoing responses reappear when more volitional propositional speech abilities are lost. In humans, increased cortical organization of behavior is associated with increased volitional control and more formalized knowledge. More primitive echoing responses have been reported in the context of altered states of consciousness, and drowsiness, as well as specific brain lesions. (See Schuler, 1979, for a review.) In this context, the more volitional inhibition of such responses may be disrupted. The latter conditions, as well as cases of more generalized brain damage, including the frontal lobe, may trigger a more generalized recurrence of primitive reflexes, including both echolalia and echopraxia, which is defined as the automatic imitation of the actions of others.

The occurrence of echolalia only, combined with well-preserved motor initiation and planning, may reflect more specific damage to the speech areas, as intact echoing mechanisms are used intentionally and communicatively. As far as developmental echoing (echoing not associated with specific organic damage and/or sudden loss of speech) is concerned, persistence of echoing may result from developmental stagnations and discrepancies. For instance, the ability to reproduce purposefully the speech of others may lag behind, as behavior in other domains (e.g., gesture) may become increasingly intentional. Although increased cortical control is acquired over other behaviors, speech may remain largely mediated by lower brain mechanisms.

Inferences about brain mechanisms underlying echoing behavior, based on anecdotal, single-case reports, remain highly speculative. If echoing and its neuropsychological correlates are to be truly understood, it is imperative that careful functional, as well as structural, analyses of echolalia, as described in this chapter, are carried out and that echolalic behavior is examined in conjunction with other aspects of communicative behavior and with linguistic and cognitive status.

Notwithstanding the lack of clinical and empirical knowledge, the next section of this chapter will present a reappraisal of echolalia, based on what has been learned about autistic echolalia in reference to normal cognitive and linguistic development. The analogies between the automaticity–intentionality continuum and the gradual substitution of reflexive behavior by increasingly intentional behavior, as observed in normal development, invite such an endeavor.

ECHOLALIA REAPPRAISED

The concurrent analysis of echolalia along the dimensions of both form and function allows for a closer reexamination of the status of echolalia, of the

relationships between autistic and nonautistic echolalia, and of speech repetition mechanisms in general, including their neurological organization and evolutionary history. The comprehensive framework provided by such a multidimensional analysis explains how primitive echo reflexes become increasingly internalized and integrated with unfolding communicative and cognitive abilities. Preintentional and automatic vocal mimicry, as observed when sounds are indiscriminately repeated solely for sound effect and repetition's sake, become gradually replaced by increasingly discriminate and intentional mechanisms, characterized by increased response latencies. This process seems analogous to the emergence of goal-directed behavior in the context of merely repetitive sensorimotor behavior as described by Piaget (1962). Based on our preliminary observations, it seems that more automatic, reflex-like echoing is followed by echoing that is situation-specific. This type of echoing, described as "situation-association," is in turn followed by increasingly intentional and functionally diversified communicative acts. Along with the emergence of more generative speech alternatives, inhibitory control is acquired over more primitive echoing, limiting its occurrence to socially sanctioned contexts.

Regression to more automatic forms may result from disruptions in cortical control mechanisms, as may be observed in cases of brain damage, extreme fright, and altered states of consciousness. (See Schuler, 1979.) More primitive forms of rote repetition of others' speech may also occur if socially sanctioned, such as in the context of choral singing, or the telling of a joke. We can only speculate about the precise course of development from automatic vocal mimicry to intentional and functionally diversified speech repetition and to propositional and grammatical speech. Yet some tentative claims can be made, based on (a) funtional analysis of autistic echolalia, as described above, (b) the role of speech repetition in normal language acquisition, and (c) analogies with vocal behaviors in other species.

Nondiscriminative echoing void of communicative intent, such as the echoing of TV commercials in states of agitation, is most likely mediated by older, lower brain structures. These more primitive forms of echoing appear closely affect-related, analogous to, for example, many types of animal vocalization. Although no specific semantic content is being conveyed, meaning may be derived in terms of emotional state. More complex levels of neurological organization may be indicated in those more discriminative echoes that are tied to particular contextual cues, which indicate a form of learning not unlike what has been described as the classical conditioning paradigm. Yet more sophisticated cortical mechanisms appear involved in intentional forms of echoing serving a range of communicative and cognitive functions. The gradual differentiation of vocal mimicry mechanisms into complex verbal behavior may reflect the increased involvement of relatively newer cortical structures, as well as the inhibition of more primitive vocal reflexes indicative of the increased encephalization of the human brain (for further neurolinguistic considerations, see Wetherby, 1984).

As pointed out earlier, detailed analyses of echolalia, as described in this chapter, serve to clarify the status of autistic echolalia with regard to other forms of echoing. Echolalic behavior in autism bears a striking resemblance to many other forms of speech repetition, such as those observed in normal language acquisition. Yet claims of differences, mostly being a matter of degree, fail to do justice to the clinical picture. Observed differences regarding length and persistence of echoing responses, their "parasitic" vocal quality, and their relation to more analytic segmented speech are not merely explained as developmental delay or extremism at the end of the normal continuum. Instead, differences between autistic and nonautistic echolalia may be viewed as a conglomerate of (a) normal variation along the "gestalt–analytic" continuum, (b) disturbances in affective development, and (c) related developmental imbalances and discontinuities. In contrast to more advanced object cognition (Schuler, 1979; Wing, 1981) and relatively normal, or even superior, perceptual-motor and memory skills, conceptual limitations in social cognition and related areas appear to be the core of the autistic syndrome. This discrepancy explains some aspects of autistic echoing as preintentional communication patterns are coupled with more mature, relatively sophisticated speech imitation and memory skills. Normal infants between approximately 15 and 29 months might exhibit considerably more echoing behavior if their vocal and memory mechanisms would allow them to do so. When they finally are "allowed" to do so, their preintentional communication patterns have been replaced by more advanced communication skills, including gesture and gaze, as well as propositional speech. In fact, the literal repetition of other's speech may be observed quite commonly in normal infants if one listens closely enough to early word and intonation approximations that are not clearly enunciated.

Disturbances in affective and social development might explain the vocal peculiarities and the prevalence of echoing behaviors in at least two ways. First, vocal and nonsegmental variation are directly linked to affect. The communication of affective states is disrupted in autism; autistic individuals fail to understand facial expression, tone of voice, etc., and they also fail to use them for self-expression. Second, the lack of joint attention and focus inherent in deficiencies in social interaction thwarts the attribution of meaning and the segmentation of utterances into their constituent parts. Whole utterances are not readily broken down into their constituent parts if referents of individual words are not recognized and if no or limited attention is paid to the contextually relevant cues. Lack of joint attention and joint action, so typical of autism, will severely impede the recognition of words and the learning of what words mean, and how they can be combined.

The reactions of adults and peers should also be examined if differences between autistic and nonautistic echoing are to be understood. The nonconventional appearance of autistic echolalic utterances may prevent others from reacting in ways that might make echolalic utterances more meaningful. Even when echolalic utterances take on communicative functions, this may not be apparent, the meaning of these utterances remaining nonconventionalized and "private." In addition, the type of adult feedback, such as expansions and mitigations that serve to crack the constituent structure, take place in an interactive context, characterized by joint action and joint attention. Those types of interactions are not easily arranged for with autistic individuals. Because such utterances do not become segmented into separate words and restructured, a gestalt mode may arise, with utterances that fail to be decontextualized. "Communication" through borrowed nonconventionalized phrases tied to specific contextual, often spatial cues illustrate this. Echolalia, idiosyncratic reference, and "metaphoric" language are the net result of limited communicative knowledge and relatively sophisticated speech production and memory skills. Echolalia, as well as gestalt processing, might stem from disorders of social interaction and affect. These matters may well be clarified through future research. The role of the early communication of affect in the language acquisition process deserves further investigation, as the meaning derived may serve as a catalyst for further semantic exploration.

Many questions remain. On the normal end, too little is known about gestalt versus analytic learning styles, particularly pertaining to child-rearing styles, developmental discontinuity, etc. On the autistic end, the nature of social and attentional anomalies needs to be clarified. Which biological deficiencies prevent autistic children from being socially responsive and, ultimately, socially competent? Also, specific breakdowns within the higher auditory processing mechanisms have not been ruled out. The segmentation of speech into its constituent parts requires sophisticated auditory analyses, which at some point of development are carried out without reliance on contextual cues. Controversies about right versus left versus bilateral brain involvement also pertain to this issue, since the ability for temporal analysis is typically attributed to the left hemisphere. Nevertheless, autistic speech idiosyncracies do not appear quite as deviant if the interrelationships between communicative, social, cognitive, and linguistic behaviors are considered, as well as normmal speech repetition strategies.

To determine whether autistic echolalia could indeed be the product of discrepancies between verbal imitation and social and communicative knowledge, as well as of subsequent caregiver responses, rather than of identifiable pathology, much more needs to be learned about normal "echolalia." For instance, Do some of the early prespeech vocalizations of normal children resemble the echoes of autistic children? and What types of functions are served by the "echoing" of normal children? Longitudinal data, documenting changes in proportions and types of echoes over time in relation to other cognitive and

communicative measures, caretaker responses, and personality and temperament variables, are needed. For instance, What are the differences between children who echo, and children who don't? and Which children show primarily delayed echolalia as opposed to immediate echolalia, and how does that relate to communicative functions most prevalent in their repertoire, and ultimately communicative style? The idiosyncracies of speech and language in autism promise to contribute to the understanding of normal language learning mechanisms and their biological underpinnings.

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IV

Approaches to Intervention