

## Self-Initiated Speech Repairs: A Reflection of Communicative Monitoring in Young Children

Mary Ann Evans

University of Guelph, Guelph, Ontario, Canada

The present study demonstrates the frequent occurrence of self-initiated repairs in the speech of 18 kindergarten children and 18 second-grade children. Their speech during 15 sessions of "Show & Tell," a classroom sharing time was scored for the spontaneous occurrence of repetitions; corrections of word choice, reference, and syntax; postponements; and abandonments. Second-graders more frequently repeated words, inserted ideas, and corrected words within their utterances than the kindergarteners, but all forms of repair were found among the kindergarten children as well. The findings are consistent with older children's greater ability to monitor the messages of others but at the same time reveal considerable communicative monitoring in 5-year-olds.

Research in the development of speaking skills may be broadly clustered into four areas matching the processes thought to underlie the production of utterances themselves: planning, execution, monitoring, and repair. The vast majority of research has examined children's execution or formulation of messages that will adequately specify a referent or create an intended outcome in their listeners (see reviews by Asher, 1978; Dickson, 1981; Glucksberg, Krauss, & Higgins, 1975; Schatz, 1983). This research has amply documented the greater incidence of ambiguities, omissions, and incoherence, and greater importance of contextual support in the messages of younger versus older children. More recently and less frequently, the ability of children to act as listeners, monitoring and evaluating the messages of others, has been addressed (e.g., Bearison & Levey, 1977; Flavell, Speer, Green, & August, 1981; Ironsmith & Whitehurst, 1978; Markman, 1977; Markman & Gorin, 1981; Patterson, Cosgrove, & O'Brien, 1980). Although young children have displayed nonverbal indicants

of puzzlement after problematic messages, they generally have been unable to specify whether and how messages sent to them are faulty. This has led to the suggestion that speaking and listening skills may to some extent be isomorphic and that the capacity to analyze, evaluate, and edit messages underlies both successful listener adaptation by speakers and listener skill in recognizing problematic messages (Flavell, 1977). Indeed there is some empirical support for this suggestion in that children who are better at producing referential messages also tend to be better at detecting inadequacies in messages that they listen to (Asher, 1976; Meissner, 1978; Pratt & Bates, 1982).

A third area deals with children's reformulations of their speech in response to listener feedback during laboratory referential tasks (e.g., Fishbein & Osborne, 1971; Peterson, Danner, & Flavell, 1972) and spontaneous free play (Gallagher, 1977; Kasermann & Foppa, 1981; Spilton & Lee, 1977; Wellman & Lempers, 1977; Wilcox & Webster, 1980). Often contrived misunderstanding is induced by the experimenter by interjecting "Hmm?", "What?" or "I don't understand" at selected points between the child's utterances. Although 4- and 5-year-olds have appeared to be relatively insensitive to listener feedback on laboratory tasks, responding to only the most explicit of feedback (such as "Tell me something different"), even 1- and 2-year-old children have been observed to recode their

---

This study was funded by the Social Science and Humanities Council of Canada through a Research Advisory Board Grant to the University of Guelph.

The assistance of Karina Forsythe in scoring transcripts and the Wellington County Board of Education in providing two classrooms for study was greatly appreciated.

Requests for reprints may be addressed to Mary Ann Evans, Department of Psychology, University of Guelph, Guelph, Ontario, Canada N1G 2W1.

utterances most of the time during free play in response to only a vague "Hmm?" or "What?"

As well as these studies of monitoring and repair, which focus on giving and responding to feedback, is the study of what might be termed *feedforward*. This term denotes the ability to plan and anticipate what one is about to say in light of what one wants to say, what one has said, and the situational context. There are very few developmental studies in this area. Of singular note is a series of studies summarized by Sabin, Clemmer, O'Connell, and Kowal (1979). They observed that filled pauses, false starts, and repeats declined in frequency from age 6 to 16, these being phenomena believed to reflect insufficient planning and organization of the utterance. In addition to other types of self-initiated repairs, which will be described below, these false starts also indicate that speakers monitor their own ongoing speech. Without such planning and self-monitoring, discourse with others runs the risk of being full of listener interruptions when feedback can be provided and totally unsuccessful when feedback cannot be provided such as when speaking to an audience or writing text. As such the examination of self-initiated repairs in children's speech, the purpose toward which the present study is directed, provides valuable data to complement studies of children's ability to monitor the speech of others and has significant theoretical merit as an indicator of metacommunicative activity and potentially, though not necessarily, decentration.

### Nature of Self-Initiated Repairs

Slips of the tongue have long been regarded as a valuable and unique form of evidence for various theories regarding the nature of thought and language behaviors (see collections of papers edited by Fromkin 1973; 1980). Considerably less attention has been given to the detection and repair of speech errors, yet this corrective behavior is equally important as its instigating counterpart. As Bolinger (1953) has noted, "Correction, the border beyond which we say 'no' to an expression, is to language what a seacoast is to a map," defining the limits beyond which

an utterance is no longer deemed acceptable. Laver (1973; 1980) has suggested that during the planning and execution of an idea into words, a monitoring function evaluates that planning and execution for distortion of the idea, disobedience to lexical, phonological, and grammatical constraints *and* (italics mine) success of communication to one's listener. As such the concept of speech error repair is extended beyond the repair of slips of the tongue, which significantly distort the sense and grammatical correctness of the utterance, to include the alteration of lexical items and the ideas themselves, which left unaltered might otherwise weaken communicative performance.

Although there are a number of papers addressing the issue of speech errors and self-repairs in adult speech, there has been very little discussion of this issue with respect to children. Isolated studies are those of Scollon (1976), who noted repetitions of words that improved their phonological form and reformulations of word order in a case study of a 1-year-old, and Levin, Silverman, and Ford (1967), who observed that the speech of kindergarten children appeared to have fewer self-initiated repairs than that of older children but whose small sample size of six children in kindergarten, Grades two, four, and six precluded any statistical validation of their informal observation. In addition, Rogers (1978) observed self-initiated corrections in approximately 7% of the utterances of children ages 5 and 6, and MacWhinney and Osser (1977) observed more prespeech hesitations in 5-year-old boys than girls, but more repetitions and midsentence corrections in girls than boys. Studies of second-language learners have also examined self-initiated repairs, two studies of children being that of Fathman (1980) and Hulstijn (personal communication, June 22, 1983).

The present study was conducted to add to this sparse literature by examining naturally occurring self-initiated repairs in the speech of kindergarten and Grade two children. Given the recent research emphasis on children's ability to monitor, detect, and correct the messages of others and the suggestion that children as old as 8 have limited metacommunicative skills, the focus of the present study is on the reformulation of *one's own*

speech as a window to communicative monitoring. As the children are familiar with what they want to say, this approach removes the confounding factor of figuring out the communicative intentions and conclusions of others in order to detect their communicative errors.

## Method

### *Research Participants*

The sample consisted of 18 children (7 boys and 11 girls) in each of a kindergarten and Grade two classroom located in a mixed lower to middle-class neighbourhood. These children were selected from the classroom enrollment as they had been present across the entire span of data collection, spoke English as a first language, had no known disturbance, such as stuttering, that would interfere with their speech production, and had received permission to participate in the study. The mean age of the kindergarten children was 5 years, 5 months and the mean age of the second graders 7 years, 9 months.

### *Data Collection*

The children were observed and audiotaped during a naturally occurring classroom activity called "Show & Tell" or "News." In this oral language-arts activity, the children alternately took turns in telling the general audience of their classmates about their experiences, observations, and possessions. As such it maximized the occurrence of relatively long turns at speaking and natural speech in which children expressed their own ideas, as well as allowing for inobtrusive data collection. Repeated observations of "Show & Tell" were undertaken, with five sessions in each of the fall, winter, and spring terms being observed. This yielded an average speech corpus of 16 topics of speech, 77 utterances, and 540 words per child.

### *Scoring*

All audiotape segments for the respective children when taking the floor were transcribed. Using the audiotapes, the transcriptions were initially marked into utterance units or spurts of speech following Chafe's (1980) criteria. These units usually end with a clause-final intonation (a rise or fall in pitch), are separated by pauses, and consist of a single main clause with or without an embedded relative or complement clause. Self-initiated repairs were defined and identified as interruptions of an utterance unit followed by a repetition or reformulation of part or all of the utterance preceding the stopping point. Simple hesitations or unfilled pauses, and filled pauses consisting of "uh," "er," and so forth were not considered, due to the methodological problems of subjective judgements of the location and duration of unfilled pauses (Sabin et al., 1979) and this study's emphasis on the correction of communicative errors rather than speech planning.

Following the adult speech error and self-repair literature, four general forms of repair were coded—repetitions,

abandonments, postponements and corrections—and all corrections were further coded into corrections of reference, word choice, and syntax. These categories are defined and illustrated as follows. Note that the term *correction* is used to refer to a particular form of "repair."

*Repetition.* This refers to repeating a previous word or previous words of the utterance before carrying on. For example, "I have—I have some tatoos on my arm." Along with pauses, repetitions are covert repairs (Levelt, 1983) and, although it is impossible to tell exactly what is repaired, it is likely that they allow extra time for lexical search and choosing construction frames for ideas yet to be expressed (Hieke, 1981; Fathman, 1980).

*Reference correction.* Replacing a noun or pronoun so as to specify a referent more exactly constitutes a reference correction. For example, a reference may be disambiguated ("Gerald and Kevin threw a snowball at me and I got him right on the snowpants—Kevin right on the snowpants.") or a pronominal reference may be replaced by a noun phrase ("We went to—uh me and Don went to Aunt Judy's.")

*Word choice correction.* Replacing a content word with another of the same morphological form constitutes a word choice correction. For example, "Once my brother was at a store—a big mall," or "Yesterday I leant—borrowed my friend's bicycle."

*Syntactic correction.* This refers to replacing a content word with the same word of a different morphological form, rearranging word order, inserting appropriate function words, altering noun-pronoun agreement, or any other repair that improves the syntactic quality of the utterance. For example, "He felt like there's bells in his ears and he can't—couldn't hear".

*Abandonment.* Discarding all of the interrupted utterance and replacing it anew constitutes an abandonment. For example, "Boy they should get it. Cause my friends—I have a bigger friend." Abandonments, to use the terminology of Chafe (1980), may alternately be referred to as false starts and may represent the correction of multiple surface features of the utterance according to a new formulation, a radical correction so to speak, or abandonment of the idea itself.

*Postponement.* This refers to interrupting an utterance so that additional material may be inserted with a return to the original utterance later on. For example, in describing an accident one girl said "And they thought—there was pig's blood in it and they thought that there was somebody hurt. But it was the pig." The term *postponement* is also Chafe's (1980) terminology, but this form of repair may also be called an insertion or interruption. These repairs are ideational in nature, and perhaps the most complicated in that they are presumably initiated to adjust the interutterance coherence and completeness of the entire conversational topic and require both retrospective and prospective monitoring.

These categories were applied with an interjudge agreement of 90% for form of repair and 91% for type of correction based on a sample of 20% of the transcripts. It might be noted that two further forms of correction are corrections of phonology and prosody. However as in other studies, these were rarely observed. Totals for each child for each of the above categories of self-initiated repairs were calculated as well as the total number of words, total number of utterances, and mean length of utterance.

## Results

Initial two way analyses of variance (ANOVAS; Grade  $\times$  Sex) indicated no significant difference between the two grades in the average size of the speech samples (i.e., total number of words spoken). However there was great variation between individual children within both grades ( $M = 487.39$ ,  $SD = 515.48$ , and  $M = 592.33$ ,  $SD = 506.04$  for Grades kindergarten and two, respectively). Common sense suggests that the greater the speech output, the greater the number of speech errors, and presumably then the greater the number of self-initiated repairs. In the present sample, the total number of words spoken and total number of repairs was highly positively correlated ( $r = .83$ ). The total number of words was also highly correlated with the various different forms of repair, all of these correlations being higher than those calculated using the mean length of utterance (see Table 1). Hence the number of words spoken was used as the covariate in a series of analyses of covariance, each of which used grade (2) and sex (2) as independent variables, performed with an Apple IIe Computer and the ANOVA II software program, which allows for unequal sample sizes. In no analysis was a main effect for sex, or interaction effect of sex with grade or type of correction observed.

Table 2 displays by grade the means, corrected for total number of words spoken, for each form of repair and total repairs, and the percentage of the total repairs each form of repair comprised. An analysis of covariance (ANCOVA) treating form of repair as a within-subjects variable revealed a main effect for form,  $F(3, 96) = 18.12$ ,  $p < .001$ ; a main

Table 2

*Prevalence of Different Forms of Self-Repair by Grade*

Form of self-repair	Kindergarten		Grade two	
	Mean adjusted frequency	% of total repairs	Mean adjusted frequency	% of total repairs
Repetitions	7.37	53	14.07	51
Corrections	3.21	21	6.08	26
Abandonments	3.04	19	4.29	13
Postponements	1.05	7	2.94	10
Total repairs	15.44	—	26.79	—

*Note.* Frequencies have been adjusted for the total number of words spoken.

effect for grade,  $F(1, 31) = 4.88$ ,  $p < .032$ ; and no grade by form effect. Second graders self-repaired more often, but the distribution of repairs across the four forms was similar in both age groups. Repetitions were significantly more frequent than the other forms of repair (Scheffé  $p < .10$ ). Separate ANCOVAs for each form of repair revealed that corrections,  $F(1, 31) = 5.33$ ,  $p < .026$ , and postponements,  $F(1, 31) = 4.82$ ,  $p < .033$ , were more frequent among the second graders. The grade means for repetitions barely failed to reach significance,  $F(1, 31) = 3.59$ ,  $p < .064$ , and the grade means for abandonments did not differ.

Given that repetitions constituted the most frequent form of repair, a more detailed post hoc analysis was conducted examining their place of occurrence. Repetitions were divided into those occurring at the first function word, a reflection of a need for further planning at the point of beginning the utterance, versus those occurring at any later point in the utterance, and an analysis of covariance (Grade  $\times$  Sex  $\times$  Place of Repetition) was conducted. In addition to no grade difference, as before in the number of repetitions, this analysis revealed no main effect for place. However, a Grade  $\times$  Place effect emerged,  $F(1, 32) = 4.13$ ,  $p < .05$ . The two grades did not differ in the frequency with which they repeated the first function word, but second-graders more often repeated a later word or words of the utterance (Scheffé  $p < .10$ ). In addition, although kindergarteners made an equal number of first and later word repeti-

Table 1

*Correlation of Words Spoken and Mean Length of Utterance With Repair Frequencies*

	Words spoken	Mean length of utterance
Repairs	.832**	.570**
Repetitions	.767**	.563**
Corrections	.825**	.552**
Abandonments	.789**	.466*
Postponements	.674**	.473*

*Note.* Correlation of words spoken with MLU:  $r = .501$ .

\*\*  $p < .001$ . \*  $p < .002$ .

tions ( $M = 4.09$  and  $3.54$ , respectively), second-graders' repetitions were significantly more frequent after the first function word ( $M = 8.56$ ; Scheffé,  $p < .10$ ) than at the first function word ( $M = 5.01$ ).

In addition to corrections being more frequent among the second graders, the type of correction made also differed. Table 3 displays the respective means corrected for total number of words spoken and percentage of the total corrections each type comprised. An ANCOVA treating type of correction as a within-subjects variable repeated the aforementioned grade difference in the number of corrections,  $F(1, 31) = 5.33$ ,  $p < .026$ , and revealed a significant main effect for type of correction,  $F(2, 64) = 7.24$ ,  $p < .001$ ; and a significant Grade  $\times$  Type interaction,  $F(2, 64) = 7.82$ ,  $p < .001$ . Collapsing across grades, corrections of word choice and reference were significantly more frequent than corrections of syntax (Scheffé,  $p < .10$ ) but considering each grade separately, second graders made significantly more corrections of word choice than syntax (Scheffé,  $p < .10$ ), whereas the frequency of the three types of corrections did not differ for the kindergarten children. Hence the greater number of corrections among the second graders would appear to stem largely from their more frequent alteration of word choice.

### Discussion

Like adults, the children in the present study often initiated repairs of their speech when communicating their experiences to others. The kindergarten and Grade two children interrupted approximately 7% and 19% of their utterances, respectively, in order to correct an aspect of reference or word choice or syntax, to insert additional material, or to start the utterance in a radically different way. The percentage of kindergarten children's utterances containing a repair is very similar to the 6% reported by Rogers (1978), but no data have been published that may be directly compared with the second-grade children. Based on the report of Sabin et al. (1979), in which repetitions, filled pauses, and false starts were observed to decrease from age 6 to adolescence, and the developmental literature, which suggests increasing monitoring

Table 3  
*Prevalence of Type of Self-Correction by Grade*

Type of self-correction	Kindergarten		Grade two	
	Mean adjusted frequency	% of total corrections	Mean adjusted frequency	% of total corrections
Reference Word	1.56	49	2.10	34
choice	0.90	26	3.04	48
Syntax	0.84	25	1.04	18

*Note.* Frequencies have been adjusted for the total number of word spoken.

skill and reflectivity with age, it might be expected that age and repairs are related in an inverted U-function. That is to say, self-repairs may initially increase in frequency with increasing monitoring skill and then begin to decrease as language skill becomes relatively sophisticated and the ability to plan and organize one's thoughts in advance becomes well developed. The present results are congruent with this hypothesis and warrant an extended cross-sectional study.

In addition to second graders more frequently changing parts or all of an utterance, they also more frequently repeated words within them. As was the case with Fathman's (1980) second language learners ages 8 to 11 years, the second-graders' repetitions most often occurred after the first or second function word and before the first content word. However repetitions of the kindergarten children were equally distributed across the first function word and later words of the utterance. As the mean length of utterance was not differentially correlated to the number of first word versus later word repetitions, the different pattern of repetitions in the two age groups cannot easily be explained by a greater need for further planning within the longer utterances of second graders. Rather it may be that second graders' greater use of repetitions reflected their greater monitoring of the correctness of what they were saying, in which they considered what they had said and repeated particular words, satisfied that it was correct and served the intended function. As has been suggested by Hieke (1981) it may also be that the second graders repeated

words to facilitate bridges between segments of speech that had become separated by pauses and corrections. Such repetitions would serve to reestablish fluency and reflect a more sophisticated speaking style on the part of the older children.

Unlike previous studies, the present investigation examined a particular category of repair termed *postponements*. Although these repairs were the least frequent, their occurrence at all in these age groups is noteworthy in that they entail a complicated form of ideational repair that facilitates the comprehensibility of the entire speech topic. A particularly good example of this is provided in the following quote from a second-grade girl who was recounting an accident her brother experienced.

"We went to—uh me and Don went to Aunt Judy's. And . . . and uh my brother came down on Fri—Friday night, Uh there was a acc—came on the train. And there was an accident. And they thought uh . . . that uh . . . the—there was a accident with a—a van. And they thought—there was pig's blood in it. And they thought there was somebody hurt. But it was the pig.

Whether the repairs observed were made to adjust the communications to perceived listener needs or to meet personal standards for communication effectiveness cannot be determined from the present study. However, the findings suggest that the form of self-repair stems in part from the level of development of the various conceptual tools by which a unit of speech may be evaluated. For example, more highly developed narrative schemata and command of vocabulary in older children may account for their more frequent insertion of ideas and alteration of word choice. (See also the results of Fathman, 1980 and Rogers, 1978.) The question itself may not be as important as it first appears in that self-regulatory standards would also presumably assist the speaker in communicating his underlying intentions. In addition, as both Clarke (1978) and Kasermann and Foppa (1981) have suggested, adult responses to children's utterances may be important contributors to the child's ability to monitor his or her own language and spontaneously produce understandable utterances. In other words, children acquire the criteria by which they monitor their communications via feedback from their listeners and, by using these

criteria, engage in more listener-adapted speech.

As a final note, it may be stated that the present study serves to temper any suggestion that young children cannot take communications as objects to be evaluated. Researchers are agreed that self-initiated repairs indicate that speakers are actively listening to and evaluating what they say. As mentioned earlier, developmental studies have well documented the egocentric qualities of children's speech, such as their difficulty in introducing and relating entities within their texts (e.g., Evans & Rubin, 1983; Martin, 1977; Piaget, 1926/1959). Overall, what is significant about the limited self-repair literature is that it demonstrates that children often detect and repair their own errors.

## References

- Asher, S. (1976). Children's ability to appraise their own and another person's communication performance. *Developmental Psychology*, 12, 24-32.
- Asher, S. (1978). Referential communication. In G. J. Whitehurst & B. J. Zimmerman (Eds.), *The functions of language and cognition* (pp. 175-197). New York: Academic Press.
- Bearison, D. J., & Levey, L. M. (1977). Children's comprehension of referential communication: Decoding ambiguous messages. *Child Development*, 48, 716-720.
- Bolinger, D. L. (1953). The life and death of words. *American Scholar*, 22, 323-335.
- Chafe, W. L. (1980). The deployment of consciousness in the production of a narrative. In R. O. Freedle (Ed.), *Advances in discourse processes: The Pear Stories* (Vol. 3, pp. 9-49). Norwood, NJ: Ablex.
- Clarke, E. (1978). Awareness of language: Some evidence from what children say and do. In A. Sinclair, R. J. Jarvella, & W. J. M. Levelt (Eds.), *The child's conception of language* (pp. 17-54). New York: Springer-Verlag.
- Dickson, P. (Ed.) (1981). *Children's oral communication skills*. New York: Academic Press.
- Evans, M. A., & Rubin, K. H. (1983). Developmental differences in explanations of childhood games. *Child Development*, 54, 1559-1567.
- Fathman, A. K. (1980). Repetition and correction as an indicator of speech planning and execution among second language learners. In H. Dechert & M. Raupach (Eds.), *Towards a cross linguistic assessment of speech production*. (pp. 77-85). *Kassler Arbeiten zur sprach und literatur*, Vol. VIII. New York: Peter Lang.
- Fishbein, H., & Osborne, M. (1971). The effects of feedback variations on referential communication of children. *Merrill-Palmer Quarterly*, 17, 243-250.
- Flavell, J. H. (1977). *Cognitive development*. Englewood Cliffs, NJ: Prentice Hall.
- Flavell, J. H., Speer, J. R., Green, F. L., & August, D. L. (1981). The development of comprehension monitoring

- and knowledge about communication. *Monographs of the Society for Research in Child Development*, Serial No. 192, 46, No 5.
- Fromkin, V. A. (Ed.). (1973). *Speech errors as linguistic evidence*. The Hague: Mouton.
- Fromkin, V. A. (Ed.). (1980). *Errors in linguistic performance*. New York: Academic Press.
- Gallagher, T. H. (1977). Revision behaviors in the speech of normal children developing language. *Journal of Speech and Hearing Research*, 20, 303-318.
- Glucksberg, S., Krauss, A., & Higgins, E. T. (1975). The development of referential communication skills. In F. Horowitz (Ed.) *Review of child development research* (Vol. 4, pp. 305-345). Chicago: University of Chicago Press.
- Hieke, A. E. (1981). A content-processing view of hesitation phenomena. *Language and Speech*, 242, 147-160.
- Ironsmith, M., & Whitehurst, G. J. (1978). The development of listener abilities in communication: How children deal with ambiguous information. *Child Development*, 49, 348-352.
- Kasermann, M. L., & Foppa, K. (1981). Some determinants of self-correction: An interactional study of Swiss-German. In W. Deutsch (Ed.) *The child's construction of language* (pp. 77-105). New York: Academic Press.
- Laver, J. (1973). The detection and correction of slips of the tongue. In V. A. Fromkin (Ed.) *Speech errors as linguistic evidence* (pp. 132-143). The Hague: Mouton.
- Laver, J. (1980). Monitoring systems in the neurolinguistic control of speech production. In V. A. Fromkin (Ed.) *Errors in linguistic performance*. (pp. 287-306). New York: Academic Press.
- Levitt, W. J. M. (1983). Monitoring and self-repair in speech. *Cognition*, 14, 41-104.
- Levin, H., Silverman, I., & Ford, B. (1967). Hesitations in children's speech during explanation and description. *Journal of Verbal Learning and Verbal Behavior*, 6, 560-564.
- MacWhinney, B., & Osser, H. (1977). Verbal planning functions in children's speech. *Child Development*, 48, 978-985.
- Markman, E. M. (1977). Realizing that you don't understand: A preliminary investigation. *Child Development*, 48, 986-992.
- Markman, E. M., & Gorin, L. (1981). Children's ability to adjust their standards for evaluating comprehension. *Journal of Educational Psychology*, 73, 320-325.
- Martin, J. R. (1977). *Learning how to tell: Semantic systems and structures in children's narrative*. Unpublished doctoral dissertation, University of Essex.
- Meissner, J. (1978). Judgement of clue adequacy by kindergartners and second-grade children. *Developmental Psychology*, 14, 18-23.
- Patterson, C., Cosgrove, M., & O'Brien, R. (1980). Nonverbal indicants of comprehension and noncomprehension in children. *Developmental Psychology*, 16, 38-48.
- Peterson, C. L., Danner, F. W., & Flavell, J. H. (1972). Developmental changes in children's response to three indications of communicative failure. *Child Development*, 42, 1463-1468.
- Piaget, J. (1959). *The language and thought of the child*. (M. & R. Gabain, Trans.). London: Routledge & Kegan Paul. (Original work published 1926)
- Pratt, M. W., & Bates, K. R. (1982). Young editors: Preschoolers' evaluation and production of ambiguous messages. *Developmental Psychology*, 18, 30-42.
- Rogers, S. (1978). Self-initiated corrections in the speech of infant-school children. *Journal of Child Language*, 5, 365-371.
- Sabin, E. J., Clemmer, E. J., O'Connell, D. C., Kowal, S. (1979). A pausological approach to speech development. In A. W. Siegman & S. Feldstein (Eds.), *Of speech and time: Temporal speech patterns in interpersonal contexts* (pp. 35-56). Hillsdale, NJ: Erlbaum.
- Schatz, M. (1983). Communication. In J. H. Flavell & E. M. Markman (Eds.), *Handbook of child psychology* (Vol. 3, pp. 841-889). New York: Wiley.
- Scollon, R. (1976). *Conversations with a one-year old*. Hawaii: University Press of Hawaii.
- Spilton, D., & Lee, C. L. (1977). Some determinants of effective communication in 5-year-olds. *Child Development*, 48, 968-977.
- Wellman, H., & Lempers, J. (1977). The naturalistic communicative abilities of two-year-olds. *Child Development*, 48, 1052-1057.
- Wilcox, M. J., & Webster, E. J. (1980). Early discourse behavior: An analysis of children's response to listener feedback. *Child Development*, 51, 1120-1125.

Received September 28, 1983

Revision received December 5, 1983 ■