

## **An Investigation of Overlap in Children's Speech**

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*The simultaneous speech of six 4-year-old girls was investigated within three-party conversation. The data reveal two major types of overlap, one providing instances of turn completion projections and the other reflecting tension for the turn at speaking. The data are discussed in terms of the Sacks, Schegloff, and Jefferson (1974) model of conversational interaction.*

### **INTRODUCTION**

A major aspect of conversational organization is the orderly exchange of the speaker role. Within adult discourse an intricate system of rules entailing the integration of linguistic and pragmatic knowledge regulates turn exchange (Sacks et al., 1974). The Sacks et al. (1974) model, developed from adult multiparty conversations, proposes an ordered set of rules that depend upon the listener-responder's ability to predict turn boundaries well enough to exchange turns at "transition-relevant places." Transition-relevance place is the first possible completion of a current speaker's turn. This need not be the end of the current speaker's turn if the remaining portions of his turn are predictable. Accurate prediction of turn boundaries requires that the structure of the current speaker's turn be projected early enough to allow minimal gaps or speech overlap at the turn exchange. Accurate prediction, therefore, depends crucially on the listener-responder's knowledge of the semantics, syntax, and pragmatics of the current speaker's speech.

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It is these reasons—the central role turn exchange plays within conversational interaction and its dependence upon semantic, syntactic, and pragmatic integrational skill—that investigation of turn exchange behaviors raises interesting questions regarding the young child's developing communicative abilities. Is there evidence that, following the period of rapid semantic-syntactic development in the child, his integrational skills are great enough to facilitate prediction of transition-relevant places in running speech? Is he able to participate successfully in peer multiparty conversations or is the allocation of speaker role (more complex in this situation) too demanding for his communicative abilities? Are the turn exchange mechanisms employed by the child more primitive than those inherent in adult conversation?

While turn exchange mechanisms have received considerable attention within adult discourse (Sacks et al., 1974; Schegloff & Sacks, 1973; Duncan, 1972, 1974; Duncan & Niederehe, 1974; Mohan, 1974; Speier, 1972; Weiner & Goodenough, 1977; Argyle, Ingham, Alkema, & McCallin, 1973; Kendon, 1967; Halliday & Hasan, 1976; Jefferson, 1972, 1973), studies of child discourse have primarily investigated contingency relationships across utterances within adult-child and child-child dyadic contexts (Bloom, Rocissano, & Hood, 1976; Keenan, 1974, 1977; Keenan & Klein, 1975; Craig & Gallagher, 1979; Garvey, 1975, 1977, 1979; Gallagher, 1977, Dore, 1974). Successful and unsuccessful turn-taking in children has received limited attention.

Craig and Gallagher (1982) explored the role of gaze and proximity as nonverbal turn regulators in the speech of same-aged, same-sexed child triads and dyads. The data indicate that 4-year-old girls are sensitive to speaker-based and listener-based nonverbal turn exchange mechanisms.

Ervin-Tripp (1979) also examined children's turn-taking behaviors within triads and dyads. Her subjects ranged in age from 1–3 to 9–6 years of age. Samples included telephone and videotaped child-child, child-adult, and child-parent interactions. Unsuccessful turn transitions or "interruptions" were analyzed within monologues as well as dyads and triads. The interactions were mixed age and mixed sex in composition. This relative status differential was reflected in the data. Ervin-Tripp reported that older children overlapped younger children more frequently than vice versa, particularly when vying for the attention of an adult. She also observed a greater likelihood of overlap in triads and preliminary evidence of possible transition-relevance places as loci for overlap. She reported that "interruptions at syntactic or prosodic boundaries," possible examples of the kind of prediction hypothesized by Sacks et al. (1974), represented approximately 27% of the overlaps observed in the speech of children over 4½ years of age. It is not possible to determine the potential facilitating or debilitating effects that variable status differences

among participants had upon the trends reported. The data on the whole suggested, however, that children do not overlap each other or adults at excessively high frequencies, an observation consistent with those of Craig and Gallagher (1982) and Garvey and Berninger (1981).

Both Craig and Gallagher and Ervin-Tripp concluded that young children could successfully engage in three-party conversations, although, as Ervin-Tripp noted, the frequency of overlapped speech may increase. This suggests that further investigation of the loci characteristics of simultaneous or overlapped speech may be facilitated by the study of triadic interactions.

Contrary to Ervin-Tripp (1979), however, Garvey and Berninger's (1981) recent study of the pause durations between nonsimultaneous and overlapped turn exchanges questions the 3- to 5-year-old child's ability to project transition-relevant places. Their investigation of same-aged and same- and mixed-sex dyadic peer conversations concluded that "children may be utilizing the cues of terminal juncture (and other information available after turn completion) to determine when to respond, rather than beginning the process of projection from turn onset." They suggest that the issue would be further clarified by studying overlap loci relative to the previous-current speaker's turn, an analysis they did not perform.

The present study performed such an analysis on the simultaneous, overlapped speech of 4-year-old children in triadic conversations. Triads were selected for investigation because they provide a more critical turn allocation context than dyads, and previous literature has indicated the potential of this type of interactive context for providing clear cases of selective turn exchange. The purpose of the present study was to examine whether the structural characteristics of young children's overlapped speech suggest that they are able to integrate linguistic and pragmatic information sufficiently to project transition-relevant places, potential turn boundaries, in natural peer conversation. Four-year-old children were selected for study because they have acquired basic linguistic competence.

## METHOD

### *Subjects*

The subjects were six 4-year-old girls. Some of the data obtained from these subjects was reported in Craig and Gallagher (1982). All of the children had normal developmental histories based upon parental interviews and, according to Brown's (1973) criteria, were developing

language at a normal rate. The children's ages (4-3 to 4-6 years) differed by only 3 months to reduce language variation related to age (Shatz & Gelman, 1973; Gleason, 1973; Sachs & Devin, 1976; Graziano, French, Brownell, & Hartup, 1976) and general cognitive development. Same-sex subjects were used also to minimize potential differences in language use between same-sex and opposite-sex partners (Maccoby & Jacklin, 1974; Connor & Serbin, 1977; Anderson, 1977, 1978). Previously acquainted children were selected to increase their social interaction (Mueller, 1972; Garvey & Hogan, 1973) and to minimize potential biases toward asymmetrical interactions.

Seven potential subjects were identified from a preschool classroom in a local nursery school program. The children were interviewed in their homes and asked to point to individual photographs of their classmates as one of the experimenters named them. The children were then asked to point to their "best friend" if she was pictured in one of the photographs, or to any children they did not like to play with. One child was eliminated from the study because she was unknown to three of the children and named as "best friend" by a fourth child. The remaining six children formed two subject groups. Each child had 1 year of nursery school experience.

### *Presentation Procedure*

Language samples were collected from the two subject groups while they were playing in a studio arranged as a playroom. The samples were videotaped using two cameras mounted at ceiling level, equipped with pan and tilt and zoom lens remote controls. Video images were modified with a special effects screen-splitter as necessary to keep all of the children in view and by a digital counter that projected motion by frame number on one margin of the picture. This increased transcription and scoring precision. One of the experimenters also made supplementary notes from an adjoining observation room equipped with a one-way mirror and a loudspeaker.

Alternations of two 20-minute three-party and three 15-minute two-party interactions of each of the two subject groups were videotaped on 2 consecutive days. This yielded a total language sample of approximately 3 hours. Dyadic samples were included to clarify the triadic interactions. No adult was present in the studio playroom during the tapings.

*Scoring Procedure*

The children's verbal and nonverbal behavior was transcribed and scored for the presence or absence of speakers overlapping in time. Simultaneous language events were scored as verbal/verbal overlaps when utterances cooccurred in time. The following is an example (simultaneity is marked by an asterisk and the overlapped words are underlined).

- |  |   |  |
|--|---|--|
| A: "I can take her out"<br>(reaches for doll in shopping cart; looking at doll)  | B:<br>(holding handle of shopping cart; looking at child A/doll)                | C:<br>(stands still across room; looking at child A and B)                                 |
| *A: " <u>I'll take</u> "<br>(picks doll up and cradles it; looking at self/doll) | B:<br>(steps back pulling shopping cart after herself; looking at child A/doll) | *C: " <u>Yup everybody shares the baby</u> "<br>(standing still; looking at child A and B) |

An utterance overlapped by a nonverbal behavior with a linguistically contingent relationship to an adjacent utterance was scored as a verbal/nonverbal overlap. The following is an example (simultaneity is marked by an asterisk and the overlapped words and behaviors are underlined).

- |   |  |  |
|---|--|--|
| A:<br>(standing still beside table; looking at child B and C) | B:<br>(standing still beside table; looking at child C, then shifting to look at dishes on table on the word <i>pour</i> ) | C: "you can pour"<br>(walks toward child B waving arm back toward dishes on table; looking at child B)       |
| A:<br>(standing still; looking at child B/pitcher)            | *B:<br>( <u>reaches for pitcher</u> on table; looking at self/pitcher)   | *C: " <u>Here I'll pour</u> "<br>(stops and reaches back toward table and picks up cup; looking at self/cup) |

Other combinations of overlapping nonverbal behaviors and utterances were also scored. These included a nonverbal behavior overlapped by an utterance and any cooccurrence of nonverbal behaviors and utterances involving all three children. In addition, exclamations such as "yuck," "whoa," and "whoops," audible laughs forming a contingent relationship with an adjacent utterance, and sound play (for example: "/du: du:

dudu/'') were scored as vocalizations. Overlaps involving vocalizations and nonverbal behaviors or vocalizations and utterances were also noted.

### *Reliability*

Two independent observers each transcribed 10 minutes of triadic interaction randomly selected from the tapes. The percentages of agreement between these observers and the experimenters' original transcriptions were high, approximately 95% and 90%.

## RESULTS AND DISCUSSION

The average frequency of overlap within Triad I and Triad II was 16%. This was comparable to, though somewhat higher than, the frequencies observed within the dyads of Group I (10%) and Group II (15%). Most simultaneous language events were verbal speech overlapping verbal speech. This type of overlap occurred approximately 7% and 10% of the time within Triads I and II, respectively, and 7% and 6% within Dyads I and II, respectively (see Table I). These data suggest that when triads are composed of children who are sufficiently matched to reduce status differences, simultaneous speech does not occur with significantly greater frequency than it would if those same children were paired to form dyads.

Verbal/verbal overlaps, the most frequent type of simultaneous speech, were further analyzed. These involved two children most of the time (Triad I, 100%; Triad II, 93%), one of whom had been the speaker in the previous utterance (Triad I, 86%; Triad II, 100%) rather than both previous listeners. The large majority of verbal/verbal overlaps, therefore, involved the transfer of turn at speaking from current speaker to next speaker. They were not instances of competing listener self-selections (Sack et al., 1974). Was there evidence that sentence internal overlaps represented premature turn exchanges at potential transition-relevant places?

Two types of verbal/verbal overlap were observed. One type (sentence initial overlap) involved a double start—one utterance by the previous speaker and the other by one of the previous listeners. An example follows (simultaneity is marked by an asterisk and the overlapped words are underlined):

<p>A: (picks up can from bottom of shopping cart; looking at self/bag)</p>	<p>B: "we put it in here—we put it in here" (taps top edge of child C's bag with one finger; looking at self/bag)</p>	<p>C: (settles one bag in shopping cart and picks up another bag; looking at self/bag)</p>
<p>A: (puts can in bag; looking at self/bag)</p>	<p>*B: "<u>we</u> (steps to other end of shopping cart; looking at child C)</p>	<p>*C: "<u>d'you want me</u> to carry your baby home?" (picks up doll from shopping cart; looking at self/inside shopping cart)</p>

The second type, sentence internal overlap, involved an interruption of the current speaker's utterance. An example follows (simultaneity is marked by an asterisk and the overlapped words are underlined).

<p>D: (stands still holding flower; looking at child E's activity)</p>	<p>E: (stands at table turning handle of cash register, bell rings and drawer opens; looking at self/drawer)</p>	<p>*F: "I need a pony-tail <u>with barrettes</u>" (pats own hair; looking at child D)</p>
<p>*D: "<u>Hey</u> you" (walks toward child E; looking at cash register)</p>	<p>E: (stands still; looking at self/drawer)</p>	<p>F: (pats own hair; looking at child D)</p>

This latter type seemed to be "precision-timed" turn exchanges.

*Sentence Internal Overlap*

Within Triad I 80% and within Triad II 75% of the sentence internal overlaps followed the speaker's completion or elliptical reference to a simple proposition, Subject + Transitive Verb + Object constructions or Subject + (Potentially) Intransitive Verb constructions. An example of overlap following Subject + Transitive Verb + Object constructions follows (simultaneity is marked by an asterisk and the overlapped words are underlined).

**Table I.** The Frequency Distribution of Simultaneous Speech (SS) and Non-simultaneous Speech (NS) Within the Samples Obtained

Subjects	Verbal/ verbal (%)	Verbal/ nonverbal (%)	All other types (%)	SS T (N)	(%)	NS T	Total
<b>Triad I</b>							
A	7	3	8	29	18	128	157
B	8	5	6	37	19	156	193
C	5	3	1	39	9	379	418
X	7	4	5		15		
Total				105		663	768
<b>Triad II</b>							
D	10	4	3	37	17	187	224
E	9	1	2	30	12	230	260
F	13	4	2	44	19	188	232
X	10	3	2		16		
Total				111		605	716
<b>Dyads I</b>							
A	7	1	2	26	10	245	271
B	6	1	2	21	9	229	250
C	8	1	3	31	12	227	258
X	7	1	2		10		
Total				78		701	779
<b>Dyads II</b>							
D	4	10	2	40	16	209	249
E	8	3	3	36	14	225	261
F	6	7	2	48	15	275	323
X	6	7	2		15		
Total				124		709	833

\*A: "I can do it too"  
(takes step toward cash register; looking at child C's activity)

B:  
(stands at table holding can; looking at child C's activity)

C:  
(pushes chair out of way of table and cash register; looking at child A)

A:  
(stands still at table; looking at child C)

B:  
(stands still at table; looking at child C)

\*C: "~~No—no~~—I'm not gonna—I'm—I'm gonna do it still"  
(steps to table and cash register; looking at self/cash register)



An example of overlap following Subject + Intransitive Verb constructions follows (simultaneity is marked by an asterisk and the overlapped words are underlined).

<p>D: (sitting on chair at table, swinging feet under table toward child F; looking at child E)</p>	<p>*E: "you just don't talk <u>for awhile</u>" (stands up from leaning position on table and turns and walks away; looking at child D; shifting to look ahead on "talk")</p>	<p>F: (sitting on chair at table; swinging feet under table toward child D; looking down under table)</p>
<p>D: (swinging legs; looking at child E's activity)</p>	<p>E: (walking toward chair in corner; looking ahead)</p>	<p>*F: "<u>we're</u> kicking up" (swinging legs; looking down; shifting to child D on "up")</p>

An example of overlap following Subject + Potentially Intransitive Verb constructions follows (simultaneity is marked by an asterisk and the overlapped words are underlined).

<p>D: (sitting at table with dishes; looking at self/dish)</p>	<p>*E: "I'm gonna eat a <u>cookie</u>" (picks food up off plate; looking at child D)</p>	<p>F: (examines doll she holds; looking at self/doll; shifting to look at child E's activity on "cookie")</p>
<p>*D: "<u>wanna</u> make more?" (turns toward E; looking at self/dish, shifting to look at child E on "more")</p>	<p>E: (brings hand to mouth; looking at child D)</p>	<p>F: (pats doll's head; looking alternately between child E's activity and self/doll)</p>

Later portions of the overlapped speaker's utterance might reveal that potentially intransitive verbs were being used in the transitive or auxiliary verb sense, but at the point of overlap the verb could have been intransitive. Brown (1973) has hypothesized on the basis of grammatical morpheme development that distinctions regarding verbal transitivity are developed early in children's language development. This distinction seems to play an important role in the child's ability to project possible transition points in turn transfer. These transition places were not discernible from pause or terminal contour information since approximately 45% of the time (range 40–50%) they occurred within or immediately

following the first word of the next sentence constituent. Other structural cues had to be utilized to account for the consistent pattern observed.

Gaze and resolution patterns of sentence internal overlaps further support their interpretation as instances of precision timing. Craig and Gallagher's (1982) study of gaze as a nonverbal turn exchange signal indicated that most nonsimultaneous turn exchanges involved a current speaker gazing selectively at the listener who would become the next speaker.

Sentence internal overlap resolution patterns indicated that the overlapping speaker, the child who began speaking before the current speaker had completed her turn, most often gained the floor and became the next speaker. The child whose speech was overlapped surrendered the turn approximately 87% of the time (range 80–94%).

The current speaker gazed at the overlapping speaker before the point of overlap approximately 54% of the time (range 52–56%). While this is not sufficient to account for the turn transfer, this gaze pattern (a current-speaker-selects-next-speaker turn option) is more typical of sentence internal overlaps than it is of sentence initial overlaps. Previous to sentence initial simultaneity the current speaker's gaze is directed only 19% of the time (range 14–23%) at the child who will overlap him. This dramatic increase in the frequency of gaze directed at the child who will become next speaker before sentence internal overlaps and the current speaker's willingness to yield the turn, also observed in other studies (Ervin-Tripp, 1979; Garvey and Berninger, 1981), supports their interpretation as instances of early turn exchange.

Verbal/nonverbal overlaps, although infrequent, parallel these patterns. Most of these back-channel responses were head nods following the completion of a simple proposition within the current speaker's turn. They had the same structural characteristics as verbal/verbal sentence internal overlaps.

### *Sentence Initial Overlap*

Sentence initial overlaps appear to be breakdowns in the turn exchange system proposed by Sacks et al. (1974). The right of the previous speaker to continue speaking should supersede the listener's right to self-select and begin speaking. According to the Sacks model, the listener may self-select only if the current speaker chooses not to continue and not to select the next speaker.

This challenge of the current speaker's prerogatives seems to reflect a tension for the turn at speaking that can be increased by increasing a

child's proportionate share of the talking time. This type of proportional increase characterized the interactions within Triad I compared to Triad II.

Within Triad I child C produced more than twice as many utterances as children A and B (418, 157, and 193 utterances, respectively). Within Triad II, however, the number of utterances produced was evenly distributed among the three children (see Table I). When the frequencies of sentence initial and sentence internal overlaps were compared, the frequency of sentence initial overlaps increased within Triad I compared to Triad II. Within Triad II 54% of the overlapping speech was sentence initial and 46% was sentence internal. Within Triad I 82% was sentence initial and 18% was sentence internal.

This difference did not reflect differences in pause times between Triads I and II. Within both triads 68 to 75% of the sentence initial overlaps occurred within 1 second of the previous utterance. One second has been proposed as a turn-relevant pause by Garvey and Berninger (1981). The current speaker was, therefore, not yielding the turn by virtue of excessive pause times, nor were the pause times of Triad I longer than Triad II.

Although they are infrequent, it is interesting that the only instances of both previous listeners overlapping were almost all sentence initial overlaps involving children A and B following a previous utterance by child C. This seems to be a further indication that the increased frequency of sentence initial overlaps within Triad I reflected the disproportionate share of speaking time available to each child.

Resolution patterns also support the interpretation of sentence initial overlaps as indices of speaker-listener tension for the turn. Resolution patterns, so systematic for sentence internal overlap, appear to be random in these situations. The previous speaker retains the turn approximately 50% of the time (42%–59%) and the overlapping speaker acquires the turn approximately 50% of the time (41%–58%). These patterns indicate that the prerogatives of the current speaker are not clear.

## CONCLUSION

1. A structural analysis of the sentence internal overlaps of 4-year-old girls engaged in triadic interactions provided instances of turn completion projections reflecting the integration of linguistic and pragmatic information.

2. The transition-relevant place was after a simple proposition had been completed.

3. The same structural characteristics were observed for nonverbal back-channel responses.

4. Sentence initial overlaps reflect tension for the turn at speaking that can be increased when there is a disproportionate share of speaking time available to each child.

5. All data trends were observable within dyadic situations but were intensified and clarified by analysis of triadic situations.

In summary, the 4-year-old children observed seemed to be adept in their conversational management. Analysis of their simultaneous speech, rather than revealing conversational inadequacy, suggests interactive competence.

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