Conversational Skills of Children with Hearing Loss and Children with Normal Hearing in an Integrated Setting
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This study examines the conversation skills used by children with hearing loss and their chronological-age-matched hearing peers in an integrated setting. Data were collected from a naturalistic (integrated kindergarten context) as the children interacted with their peers, and a quasi-naturalistic setting (tutorial room context) as they interacted in dyads. A modified version of the Social Organization of Discourse Checklist/Conversational Skills (Beattie, 1990) was used to code both sets of data. Children with hearing loss were matched to their hearing peers based on chronological age. The Wilcoxon Signed-Rank Test, a nonparametric test that is used to test the null hypothesis that two populations are the same in terms of their ranks, was used to compare the results of the chronological age-matched pairs in each of the dyad and integrated kindergarten contexts. Analysis of the data documented that there were no significant differences in the majority of the conversational skills used by the children with hearing loss and the children with normal hearing.

Introduction

Conversational Organization Theorists stress that each speech community has expectations or rules concerning how conversation will be conducted (Kretschmer & Kretschmer, 1989) and each communication event has specific rules of organization (Brown & Yule, 1983; Srubbs, 1983; Tannen, 1984). The components associated with Conversational Organization Theory may be studied by examining the social organization of discourse. Beattie (1990) defines social discourse as the ability to initiate and maintain a dialogue with communicative partners over several conversational turns. These communication components constitute the rules of being "social" that are essential to successful social interactions. For Beattie, these rules focus on the roles of the listener and the speaker in conversation and include topic initiation, maintenance, shifting, and termination. Roth and Spekman (1984) were among the first to introduce the concept of social organization of discourse, which they describe as the child's ability to function inE2 80 94 and contribute toE2 80 94 aa ongoing conversation.

Initiation is one component of the social organization of discourse. It concerns the communicator's ability to initiate topics successfully as well as the type of initiation strategies used. Mueller (1972) studied the conversation of preschool children in dyads and concluded that several variables determine the success or failure of a message: articulation clarity, use of attention-getting devices, relevance of the content, eye contact, and physical proximity. Mueller found that although securing the communication partner's attention was the best overall indicator of success, other variables such as mutual desire for communication and intelligibility of the speaker contributed to the dynamics of the conversation.

Conversational maintenance is also a component of social organization of discourse and can indicate a communication partner's linguistic competence as well as his or her communicative competence. Roth and Spekman (1984) stress that topic maintenance generally depends on the contingency of the response to a preceding message. Bloom, Rocissano, and Hood (1976) and Keenan (1975) point out that some maintenance attempts simply continue the topic without adding new information, while others not only maintain the conversation but make a significant contribution by providing new information.

According to Roth and Spekman (1984), studying maintenance in child conversation attempts can provide insight into how the child's ongoing monitoring of the conversation takes place. It will also identify how the child is able to make sense of ambiguous messages in addition to using strategies that signal listener or speaker confusion.

Another factor in the social organization of discourse is the way in which a topic is terminated. However, though it is recognized that it is important to exit a topic in a socially acceptable manner, little research to date has addressed the type and appropriateness of termination strategies that children use.

The quality of a social discourse interaction depends on many contextual factors. Some of these factors include environment, communication partner, and the mood of the participants. The context in which the interaction occurs is also related directly to social discourse expectations and outcomes (Bloom, 1970; Halliday, 1975). There are many possible social contexts. Peer culture is one context in which identifiable rules are necessary for effective communication. For successful communication to occur, knowledge of the social rules within the peer culture is essential.

Social discourse research involving children who are deaf or hard of hearing is scarce. Most studies involving children with hearing loss focus on specific syntactic components of language; few consider social discourse performance (Wood & Wood, 1991). Those studies that do focus on social interaction concentrate on the nonlinguistic behaviors of the children at play and not on language (e.g., Doyle, Connolly, & Rivest, 1980; Higginbotham & Baker, 1981; Lederberg, 1991; Lederberg, Ryan, & Robbins, 1986; Vandell & George, 1981).

The purpose of this study is to examine an aspect of social discourseE2 80 94 conversational skillsE2 80 94 used by children with hearing loss in order to determine whether the conversational skills are similar to or distinct from their chronological-age-matched hearing peers within an integrated educational setting. Method Setting

The two groups of participants involved in this study were children with normal hearing and children with hearing loss exposed to oral language enrolled in the integrated kindergartens at the Speech and Hearing Centre in Wembley, Perth,

Western Australia (the Centre), Enrollment in each of the three integrated kindergartens ranged from 19 to 22 children. Two of the integrated kindergartens enrolled children who were 4 years of age, and one integrated kindergarten enrolled children who were 5 years of age. Children with hearing loss from throughout the Wembley metropolitan area attend the parent -infant, childcare, and kindergarten programs available at the campus, while children with normal hearing who attend the various programs offered at the Centre are from Wembley and neighboring suburbs. According to the "Methods and Philosophies" statement the Centre published in 1990, "the Speech and Hearing Centre subscribes to a philosophy which promotes auditory-verbal learning for hearing-impaired children." The Centre has been committed to providing maximum opportunities for children with hearing loss to develop to their fullest potential.
Participants 20

In one group, there were 1.0 children with profound hearing loss and one child with a severe hearing loss (five males and six females total); their age range was 3.6-5,9 years (see Table I). Criteria for inclusion of the children with hearing loss in this study were: (1) hearing loss of 80 dB or greater (better-ear pure-tone average at 500, 1000, and 2000 Hz) (ANSI, 1969); (2) no other known impairments; (3) regular attendance in an integrated kindergarten; and (4) location within the normal intelligence range, as determined by the school psychologist. The mean better-ear pure-tone average for the participants with hearing loss was 103 dB HL, the mode was 100 dB HL, and the range was 80 dB HL-1dB HL. All of the children with hearing loss wore bilateral behind-the-ear hearing aids when the data was collected.

All of the children had been profoundly or severely deaf since birth except for two who lost their hearing prelingually due to meningitis (3 months and 4 months, respectively). None of the children had parents with hearing loss except one whose mother had a unilateral hearing loss that was profound in nature but did not have an obvious effect on her expressive or receptive language. None of the children had been exposed to a formal signed communication system. All had been in a program in which their residual hearing had been stimulated. At the time the data were collected, they were considered oral in their communication function.

The hearing group consisted of 11 children (five males and six females), ranging in age from 3.7 to 5.3 years (see Table II). Criteria for inclusion of the children with normal hearing in this study were: (1) normal hearing; (2) regular attendance in an integrated kindergarten; and (3) no known impairments (placement within the normal range of nonverbal development), as determined by the school psychologist.

For this type of study, Bedrosian (1985) indicates that it is necessary to select students with normal hearing who are appropriate participants based on specific criteria. The main criteria for the selection of preschoolers with normal hearing in this research were that all children had to have an age-appropriate language-comprehension level as well as an age-appropriate expressive-language level. The

Peabody Picture Vocabulary Test-R (PPVT-R) was used to screen the participants. Participants with normal hearing were included if their PPVT-R age norms were equal to or higher than their chronological age.

The number of participants was restricted to a small group of orally educated preschool children with profound hearing loss. Eleven was a relatively large proportion of the overall population of the preschool children with profound hearing loss in an integrated setting. When the data were collected, there were only an estimated six additional children with profound hearing loss integrated in schools throughout Western AustraliaE2 80 94 most in remote country schools. Increasing the sample size was not possible.

Children with hearing loss were matched with children with normal hearing according to chronological age and gender, and data were collected in two contexts: integrated kindergarten and dyad. All matches were made within a range of plus or minus six months. There were 11 pairs of children matched by chronological age. See Table III for a detailed list of chronological-age-matched pairs.
Instrumentation

The Social Organization of Discourse Checklist/Conversational Skills (Beattie, 1990) was developed using the organizational framework of Roth and Spekman (1984). The checklist is based on sound empirical and theoretical literature (Bates, 1976; Day, 1986; Miller, 1978; Roth & Spekman, 1984). A modified version of the Social Organization of Discourse Checklist/Conversational Skills (Beattie, 1990) served the purpose of analyzing social discourse information in a socially rich context.

Detailed definitions of each category, subcategory, and sub-subcategory can be found in Table IV. The category of conversational skill has three subcategories: initiation, maintenance, and shift, The initiation subcategory has seven sub-subcategories: percent initiation, initiations auditory, initiations visual, initiations physical, initiations combinations, initiations appropriate, and initiations successful. The maintenance subcategory has six sub-subcategories: percent maintenance, significant contribution, minimally contingent response, nonverbal device, appropriate maintenance, and successful maintenance. The shift subcategory has three sub-subcategories: percent shift, appropriate shift, and successful shift.
Procedure

The study involved collecting communication samples from two settings. One was in a naturalistic setting (integrated kindergarten) as the children interacted with their peers, and the other was in a quasi-naturalistic setting (tutorial room), which involved the pairing of children. Two communication settings were chosen since communicative abilities and interactional styles can vary as a function of the communication partner (Ervin-Tripp, 1973). Another reason for two communication settings was the lack of control over the distribution of utterances in the naturalistic kindergarten setting. The quasi-naturalistic setting of the tutorial room helped to balance this.

All communication samples were recorded on video to assist in transcribing the complex communicative interactions, to allow a multilevel analysis of the same corpus, and to allow the findings to be verified by two coders for interreliability purposes. Video recordings occurred over a two-week period beginning the second term of a four-term school year. At the time of videotaping, the children had been enrolled in the integrated kindergarten for approximately 12 weeks.

The procedures for collecting the data in the naturalistic setting involved videotaping students on one occasion as they interacted in the integrated kindergarten during "free-choice" activities for minutes. Children were left largely to their own devices and could freely choose their communication partner during this period. They were not encouraged to involve themselves in teacher-directed projects such as art and crafts. Children were given no specific instructions. In fact, none of the children demonstrated an awareness of being filmed. The purpose of this was to examine the interactions of preschool children with hearing loss and those with normal hearing in a naturalistic context.

Two remote-controlled video cameras were mounted near the ceilings of each of the three integrated kindergartens located on the Centre campus. Individual participants wore frequency-modulated lapel microphones. The camera operator sat in a separate video control room near the integrated kindergartens and had visual and auditory access to the information as it was being recorded. This allowed social discourse and linguistic performance to occur in an unobtrusive yet meaningful context.

The procedure for collecting the data in the quasi-naturalistic setting with specific pairs of children required each pair to be videotaped alone on one occasion for 10 minutes. Pairing was made randomly with three constraints: (1) each pair included one child with a hearing loss and one child with normal hearing; (2) partners were from the same integrated kindergarten; and (3) partners were matched for gender.

Each session was conducted in a small tutorial room adjacent to the integrated kindergarten rooms. Toys known to facilitate social interaction were placed in the tutorial roomE2 80 94 McLoyd, Thomas, and Warren (1984) had reported higher levels of interactive behaviors with low-specificity toys than with high-specificity toys. Lego blocks, which McLoyd et al. (1984) identified as a low-specificity toy, were placed on a table in the tutorial room. The two children sat opposite each other at the table with the Legos. A one-way glass mirror on the upper half of one door provided visual access to the room. A video camera mounted on a tripod was located behind the one-way mirror. Sound was recorded on the videotape via a microphone suspended from the tutorial room ceiling. Children were familiar with the tutorial room setting and were instructed that they could play with the Legos while they waited for the teacher.

Editing and Transcribing the Communication Sample

A careful transcription process was used to ensure accuracy. The author viewed each videotape three times. First, the videotapes were viewed and time-coded. Then, they were viewed and the transcription of all verbal communication was coded. Finally, they were viewed for nonverbal behaviors, such as gestures and facial expressions, that enhanced the understanding of the discourse. All transcripts were then coded using a modified version of the Social Organization of Discourse Checklist/Conversational Skills (Beattie, 1990).

Two teachers of the deaf, trained in the transcription procedure, served as interreliability coders and completed transcription verifications on 15% of all videotapes. All transcript verification fell within a range of 85%-89% accuracy.

In the initial stages of the coding procedure, the first coder coded five transcripts on five occasions. After each coding, a discussion with the first coder led to refinement of the descriptive criteria for each of the categories and subcategorics of the Social Organization of Discourse Checklist/Conversational Skills (Beattie, 1990). At the conclusion of the coding process, a final interreliability check was conducted using an additional 10% of the transcripts by the second coder.

Both reliability coders participated in an intensive training program designed to teach this coding system. This labor-intensive procedure using two interreliability coders was undertaken because of the relatively subjective nature of coding social discourse and the large number of categories and subcategories.

Using Cohen's Kappa as an index of interrater reliability, exceptionally high agreement was found for coding (among the researcher and the first and second interrater coders) the Social Organization of Discourse Checklist/ Conversational Skills: k3D .83.
Statistical Analyses of Data 20

A nonparametric procedure was chosen for analyzing the data because of the small sample size and because it was necessary to choose a procedure that did not make strong assumptions about the shape of the data's distribution. In addition, nonparametric tests work best with frequencies and rank-ordered scales.

The Wilcoxon Signed-Rank Test, a nonparametric procedure, was used to determine information about the existence and direction of changes in paired data. It is analogous to the paired t test in that it is used to test the null hypothesis that two samples come from populations that are the same in terms of means. It is used instead of the t test because it requires neither the assumption of normal distribution in each of the two samples nor that of equal variance, and it can be used with ordinal scale-dependent variables. An alpha level of .05 was used for all statistical tests.
Results and Discussion Data Analysis

As mentioned above, conversational skills were coded as initiating, maintaining, terminating, and shifting topics. It was expected that the social discourse strategies used by children with hearing loss would be delayed compared with chronological-age-matched children with normal hearing. The overall findings of the study, however, indicate that the social discourse strategies of preschool children with hearing loss were largely similar to those of their chronological age-matched peers with normal hearing. Of the 32 categories and subcategories analyzed, only 8 were significantly different:

  * Percent InitiationE2 80 94 integrated kindergarten context 20
  * Initiations PhysicalE2 80 94 integrated kindergarten context 20
  * Percent MaintenanceE2 80 94 integrated kindergarten context 20
  * Significant Contribution (Maintenance)E2 80 94 dyad context 20
  * Minimally Contingent Response (Maintenance)E2 80 94 integrated kindergarten context 20
  * Appropriate MaintenanceE2 80 94 dyad context 20
  * Appropriate ShiftE2 80 94 dyad context 20
  * Successful ShiftE2 80 94 integrated kindergarten context

Initiation

The conversational skill of initiation is the skill of introducing conversational topics with a communication partner. Initiation was coded as percent initation, percent auditory initiation, percent visual initiation, percent physical initiation, percent combination of auditory-visual-physical initiation, initiations inappropriate, and successful initiations.

As mentioned, the only two significant differences in the initiation skills were within the integrated kindergarten context. There was a significant difference in the percentage of initiations in the integrated kindergarten context (see Appendix A). Of these, a significant proportion was physical initiations in which the children with hearing loss used nonverbal communicative acts to initiate communication. Interestingly, results indicated that there were no significant differences in auditory, visual, or auditory-visual initiation strategies in either the integrated kindergarten context or the dyad context.

There were no significant differences in the percentage of initiations in the dyad context. Initiations in this context were physical (nonverbal) more often than auditory (verbal). Children, those with hearing loss and those with normal hearing, tended to wave one of the Legos and touch or tap the communication partner just before the verbal communication.
Maintenance

The conversational skill of maintenance is the participant's ability to keep a conversation going. Maintenance generally depends on the contingency of a response to the preceding message (Beattie, 1990). Maintenance was coded as

percent maintenance, significant contribution, minimally contingent response, nonverbal devices, appropriate maintenance attempt, and successful maintenance attempt.

There was a significant difference of the percentage of maintenance attempts in the integrated kindergarten setting, but not in the dyad setting (see Appendix B). Children with normal hearing made more overall communication maintenance attempts in the integrated kindergarten. This outcome is most likely because the integrated kindergarten context had more background noise and more potential communication partners. The participants with hearing loss often seemed unaware of attempted initiations by their peers and did not attempt to maintain the conversation.

A significant difference was found in the number of maintenance attempts coded as making a significant contribution to the communication in the dyad context. The hearing partners in this context made a larger percentage of significant contributions. Maintenance attempts coded as making a significant contribution or a minimally contingent response identify the sophistication of the communication partner. A significant contribution is one that maintains the topic and adds new information (Beattie, 19%). The new information may include elaboration of any preceding contribution. A minimally contingent response is a contribution that maintains the topic but does not add new information (Beattie, 1990). As a consequence of a minimally contingent response, the conversational responsibility is not necessarily transferred to the partner and may return to the speaker quickly. Minimally contingent responses may be nonverbal devices such as head nods, facilitating expressions, or even body posture.

Although the children with hearing loss attempted to maintain conversation at the same rate as their hearing peers in the dyad context, they used more minimally contingent responses and fewer significant contributions. The children with hearing loss in this context generally used one- or two-word phrases to maintain the communication and did not add new information, whereas the children with normal hearing contributed to the communication by adding new information. The children with normal hearing generally took responsibility for maintaining the communication in the integrated kindergarten context; however, those maintenance devices were minimally contingent responses.

There were no significant differences in the amount of nonverbal maintenance attempts in either the integrated kindergarten or the dyad context. The children tended to use nonverbal communication equally in both contexts.

The children with hearing loss attempted to maintain conversation at the same rate as their hearing peers in the dyad context, but there was a significant difference in the number of appropriate maintenance attempts. An appropriate maintenance attempt can be considered as one that fits the communication partners, the context, and the time (Beattie, 1990). In the dyad context, all maintenance attempts of the

children with normal hearing were appropriate, whereas only 75% of the maintenance attempts of the children with hearing loss were appropriate. Children with hearing loss frequently attempted to maintain the communication with comments that were unrelated to the topic at hand.

In the successful maintenance category, there were no significant differences in either context.
Shift

The conversational skill of shift is the participant's ability to change the topic of conversation to a new topic. Shift was coded as percent shift, appropriate shift, and successful shift.

Overall results indicate that no significant differences were found in the number of shift attempts in either the integrated kindergarten or dyad context (see Appendix C). Children with hearing loss and those with normal hearing in both contexts attempted to shift the conversation topic at the same rate. However, there was a significant difference in the successful shift attempts in the integrated kindergarten setting only. Children with normal hearing made more overall successful communication shifts. After establishing a topic, the children with hearing loss were more likely to stay with the initial topic than to shift the topic.

Similarly, there was significant difference in the number of appropriate shift attempts in the dyad context. Again, children with normal hearing were more successful at shifting conversational topics than their chronological-age-matched peers with hearing loss. Finally, there were no differences in the dyad context in successful shift attempts. There also were generally fewer shift attempts in the dyad context. In most cases, the conversation topic focused on the topic of play: the Legos.

Interestingly, the ability to shift a conversation topic may be attributed to the typical educational style used with most children who are deaf or hard of hearing. Adults interacting with children with hearing loss frequently exhaust one topic before moving on to the next topic. There are many reasons for this, one being the need to expose the child with hearing loss to vocabulary, sentence structure, and the pragmatics associated with specific topics of discourse.
Termination

The conversational skill of termination is the participant's ability to end a conversation appropriately.

None of the children used any type of conversational termination skill. As indicated above, the context did not require the use of this type of social discourse skill. This was especially true in the dyad context. There was no need to terminate the conversation because the context set the conversation agenda (e.g., Legos play). In contrast, the children in the integrated kindergarten context drifted from activity to activity without formal termination of conversation. Interestingly, Keller-Cohen

(1977) reported that termination strategies other than merely walking away from the conversation are not learned until much later. When young children have no further comments about the topic, they usually stop and do not fill in or tie the topics together (Kretschmer & Kretschmer, 1980).

Context

In-depth analysis of the data suggests that there were some communication differences between participants that were related to the context. The context-related social discourse difference emerged in several predictable ways. In the dyad context, there were fewer initiation attempts and a larger number of maintenance attempts. Setting out the bucket of Legos predetermined the topic in the dyad context. One, therefore, would expect fewer initiations and perhaps more maintenance attempts, which was indeed the case. There were also more shift attempts in the dyad context. All participants had more communication partners in the integrated kindergarten context and were required to initiate or respond to an initiation more and, as a result, were less likely to shift. Interestingly, hearing participants in the integrated kindergarten context who did attempt to shift made shifts that were either inappropriate or unsuccessful.

Conclusion

The aim of this research was to examine the social discourse/conversational skills of children with hearing loss and those with normal hearing in an integrated setting. Kindergarten data were collected from the natural social context of the participants, and no structured elicitation was used. As was intended, these optimal conditions existed for the participants to exercise their communication skills. For example, all children in both the integrated kindergarten and dyad context engaged in social speech most of the time, and less than one percent of the interactions recorded were nonsocial in nature. This result is a product of the context in which the children were videotaped.

The data collected in the dyad context were only quasi-naturalistic in that pairs of children were randomly chosen, a predetermined context was arranged (Legos), and the length of interaction was timed. Eliciting social discourse in this contrived manner may have produced different results and, therefore, brought a different perspective to the social discourse skills of the children with hearing loss.

There are obvious benefits from having communication samples that were taken from both a naturalistic and quasi-naturalistic context. A combination of the two contexts provided a more comprehensive description of the peer communication within social contexts. It also demonstrated whether the participant's style of communication was flexible and met the needs of the particular context.

This research has demonstrated that children with hearing loss in an integrated setting have similar social discourse skills as their chronological-age-matched hearing peers. Difficulties that were experienced by the children with hearing loss

were due mostly to extraneous factors inherent in the hearing loss and not in the child's communicative competence.

The results reported in this research must be interpreted in the light of the sample studied and the educational setting in which the participants interacted. The children with hearing loss, although profoundly deaf, had been immersed in oral language from an early age. Social integration began immediately after diagnosis in the form of playgroup and/or childcare located at the Centre. In addition, the parents and caregivers at the Centre were involved in an intensive language and communication education program. Teachers of the deaf visited the participants with hearing loss at home and provided them with regular therapy sessions during school hours. Participants with hearing loss had daily access to an educational audiologist who ensured that hearing aids and carmolds were appropriately fitted and working to the child's maximal benefit.

This study has looked at the way children with hearing loss structure conversation through turntaking, topic initiation, and topic maintenanceE2 80 94 and the ability to control these devices, which facilitates cohesion and coherence to conversation. The results of this study identify several potential areas of research. Do children with hearing loss in segregated educational environments have similar discourse strategics as their integrated peers with normal hearing? Longitudinal study of the social discourse skills of children with hearing loss may identify the stages of social discourse skill development.

It is also important to determine how adult communication partners can assist in facilitating the development of conversational competence. This involves examination of child language development and adult interaction. It is well known that before children begin to use formal language they have already learned much about language. From birth, children are learning aspects of social discourse, including turntaking, topic maintenance, and conversation termination. As children interact with their peers and adults, they learn to communicate. Often in deaf education, adults interact with children with hearing loss in a manner that is different from their interaction with children with normal hearing. A clear understanding of the implications of specific interactional styles will have a bearing on the facilitation of the communication development of oral children with hearing loss.

It is important, too, to determine how teachers of the deaf can best build on the natural language-learning abilities of children with hearing loss. A clearer understanding of the adult role in communication development will lead to facilitating student learning. If documentation existed that demonstrated the impact of specific styles of communication with children who have hearing loss, it would lead to a better understanding of how learning can be maximized.

An argument of Conversational Organization Theory is that there is a set of rules that governs how social discourse is conducted (Kretschmer & Kretschmer, 19R9).

These rules include turntaking, topic initiation, topic maintenance, topic shifting, and termination of conversation. Mastery of these rules or organizational features facilitates conversational fluency. Implicit in Conversational Organization Theory is the idea that communicative interactions are social. Clearly, the child's social discourse abilities must be analyzed in a social context and in relation to those of his communication partners. In this way, the communicative strength of the child is emphasized. It must be recognized that each individual has a unique style of communication performance, which is related to intelligence, personality, and social experience. This individual and unique characteristic is especially distinct in children with hearing loss. Educators of the deaf are sometimes overly concerned with language input and often forget that children with hearing loss are competent individuals with individual strengths and experiences.

According to Kretschmer and Kretschmer (1990), it is a crucial task for any language learner to acquire a full range of communication functions within one particular language. The children who are profoundly deaf in this study have demonstrated that with early integration and amplification, communicative competence is a possibility. In sum, the educational environment in which the children in this study with hearing loss were enrolled provided the support necessary to facilitate development of all areas of social discourse. It is likely that the modeling by the children with normal hearing provided a positive social influence for the children with hearing loss.

Acknowledgments

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Legend for Chart:

A - Participant No.
B - Date of Birth
C - Gender
D - Chronological Age

E - Better-Ear Pure-Tone Average

Table I. Participants with Hearing Loss

A	B	C	D	E
1	12/3/88	Male	4.5	115 dB
2	10/14/89	Female	3.6	90 dB
3	3/4/89	Male	4.1	100 dB
4	9/30/89	Male	3.8	95 dB
5	6/28/88	Female	4.10	115 dB
6	12/18/88	Female	4.4	1dB
7	2/23/88	Female	5.2	1dB
10	4/1/88	Male	5.0	100 dB
11	10/10/88	Female	4.6	100 dB
12	7/24/87	Female	5.9	80 dB
13	11/9/88	Female	4.5	95 dB

Legend for Chart:

A - Participant No.
B - Date of Birth
C - Gender
D - Chronological Age

Table II. Participants with Normal Hearing

A	B	C	D
14	8/14/89	Female	3.7
16	5/7/89	Female	3.11
18	1/3/89	Male	4.3
19	3/16/89	Male	4.0
20	6/23/89	Male	3.10
21	3/17/88	Male	5.1
22	6/10/88	Female	4.10
23	4/27/88	Female	4.11
24	5/15/88	Female	4.11
25	1/14/88	Female	5.3
26	3/8/88	Male	5.1

Legend for Chart:

A - Participants with Hearing Loss Identification No.
B - Chronological Age
C - Participants with Normal Hearing Identification No.
D - Chronological Age

Table III. Chronological-Age-Matched Pairs

A	B	C	D
1	4.5	18	4.3
2	3.6	14	3.7
3	4.1	19	4.0

4	3.8		3.10
5	4.10	21	5.1
6	4.4	16	3.11
7	5.2	24	4.11
10	5.0	26	5.1
11	4.6	22	4.10
12	5.9	25	5.3
13	4.5	23	4.11

Table IV. Social Organization of Discourse
Checklist/Conversational Skills: Categories and Subcategories[*]
Category   Subcategory
Initiation is the participant's ability to start a conversation
with a communication partner.

1. Percent initiation is the overall percentage
   of communication intentions that serve to
   initiate communication.
2. Percent auditory initiations. Examples
   include "Hey"; "Jill ..."; banging/noise
   making.
3. Percent visual initiations. Examples include
   eye contact, waving, gesturing.
4. Percent physical initiations. Examples
   include touching, hitting with object,
   gesturing.
5. Percent combination of
   auditory-visual-physical initiation.
6. Appropriate initiations occur when the
   interaction is considered acceptable for the
   age and interactional context.
7. Successful initiations occur when the new
   topic is "picked up" by the participant and
   a series of communicative exchanges results.

Maintenance is the participant's ability to keep a conversation
going and generally depends on the contingency of a response to
the preceding message.

1. Percent maintenance is the number of
   communication intentions the participant uses
   to continue a topic.
2. Significant contribution is the contribution
   that maintains the topic as well as adds new
   information.
3. Minimally contingent response adds new
   information and the conversational
   responsibility is not transferred to the
   partner or returns to the partner very

quickly.
     4. Nonverbal devices include head nods, facial
       expression, and body posture.
     5. Appropriate maintenance attempt is acceptable
       for the age and interactional context.
     6. Successful maintenance attempt is one where
       the discourse continues naturally, without
       a communicative breakdown.

Shift is the ability to shift the topic of conversation to a new topic.

     1. Percent shift used by the participant.
     2. Appropriate shift for the age and
       interactional context of the participant.
     3. Successful shift occurs when the participants
       picked up the new topic of conversation and
       the exchange continued over several turns.

* Modified from Beattie (1990)

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Appendix A
Social Organization of Discourse/Conversational SkillE2 80 94
Initiation: z Values (Probabilities) for the Wilcoxon Signed-Rank Tests

Conversational Skill	Dyad Chronological Age	Kindergarten Chronological Age
Percent Initiation	z3D -1.36 (p3D .17)	z3D -2.52[*] (p3D .01)
Initiations Auditory	z3D -.14 (p3D .89.)	z3D -.91 (p3D .36)
Initiations Visual	No valid cases (p3D .31)	z3D -1
Initiations Physical	z3D -1.82 (p3D .07)	z3D -2.20[*] (p3D .03)
Initiations Combination	z3D -1.60 (p3D .19)	z3D -1.36 (p3D .17)
Initiations Appropriate	z3D -1.15 (p3D .24)	z3D -.45 (p3D .65)
Initiations Successful	z3D -.84 (p3D .40)	z3D -1.15 (p3D .25)

* Significant at p < .05

Appendix B
Social Organization of Discourse/Conversational SkillsE2 80 94
Maintenance: z Values (Probabilities) for the Wilcoxon
Signal-Rank Tests

Conversational Skill	Dyad Chronological Age	Kindergarten Chronological Age
Percent Maintenance	z3D -.93 (p3D .35)	z3D -2.93[*] (p3D .01)
Significant Contribution	z3D-2.07[*] (p3D -04)	z3D -1.69 (P3D .09)
Minimally Contingent Response	z3D -.65 (p3D .51)	z3D -2.31[*] (p3D .02)
Nonverbal Device	z3D -1.60 (p3D .11)	z3D -1 (p3D .32)
Appropriate Maintenance	z3D -2.02[*] (p3D .04)	No valid cases
Successful Maintenance	z3D -.05 (p3D .96)	z3D -1.22 (p3D .22)

* Significant at p < .05

Appendix C
Social Organization of Discourse/Conversational SkillsE2 80 94
Shift: z Values (Probabilities) for the Wilcoxon Signed-Rank
Tests

Conversational Skill	Dyad Chronological Age	Kindergarten Chronological Age
Percent Shift	z3D -1.36 (p3D -17)	z3D -.36 (p3D .72)
Appropriate Shift	z3D -2.02[*] (p3D -04)	z3D -1.82 (p3D .07)
Successful Shift	z3D -1.68 (p3D .09)	x3D -2.24[*] (p3D .02)

* Significant p < .05

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