

# A Natural History of Early Language Experience

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**T**alking is important for children, because the complexity of what children say influences the complexity of other people's responses. This article describes how years of focusing on the talk of 4-year-olds in early intervention led to years of observing 1- through 3-year-olds learning to talk during their everyday interactions with their parents at home. Analysis of the observational data revealed how crucial to development is the amount of children's language experience as partners in the social dances of conversation. The parent behaviors observed to support learning to talk have many implications for research and practice.

Often history remembers as pioneers those people who happened to be best prepared when opportunity (funding) opened new territory. When the War on Poverty put money behind a national vision of a better world, the people best prepared to make the vision a reality were the behaviorists who had been trained to analyze what people actually do rather than study what they report or envision. Two of the best, Mont Wolf and Todd Risley, had already succeeded in changing a child's life by analyzing and intervening (Wolf, Risley, & Mees, 1964) in the haphazard conditions of the real world outside the laboratory. I had the good fortune to be their student and so share in their discoveries and inventions.

Todd Risley brought applied behavior analysis (Baer, Wolf, & Risley, 1968) to designing a language intervention program for 4-year-olds at Turner House preschool (Risley, 1968). The behavior of concern was talking—what the children were doing with language in their everyday interactions rather than what they knew about it or could display on a test. He saw that the complexity of what a child says influences the complexity of other people's responses. Children's talk naturally elicits information and correction from adults. Children's practice creates learning opportunities just as does teacher talk. The basis of the Turner House program was the understanding that the children's future experience with people and events would be enriched if talking improved.

The problem was defining 'improved,' specifying how much change was needed in which aspects of talking. We found many descriptions of what children are able to say

at particular ages and skill levels but few of what children actually said during preschool free play. In order to know what the goal of language intervention should be, we needed data on what sophisticated 4-year-olds said during free play. The result was the development of procedures for recording and quantifying children's spontaneous speech (Hart, 1983). When we compared the data from sophisticated 4-year-olds to data of the Turner House children, we realized that first we needed to increase the amount of talking the Turner House children did. Incidental teaching (Hart & Risley, 1975) easily increased the amount of talking during free play. When the children at Turner House preschool were talking as much during free play as were the professors' children in the preschool at the University of Kansas, their talk was equal in the frequencies of different words and complex sentence structures recorded (Hart & Risley, 1980).

What remained unequal was the growth of the vocabulary in use. Not only did the professors' children have larger vocabularies at age 4 years, but they also were regularly adding a greater number of new words, talking about more new aspects of their experience, than were the children at Turner House. We arranged preschool experiences so that the Turner House children used new vocabulary during free play (Hart, 1982), but when we stopped, they stopped. When we watched what the children were doing with language, we saw that in the everyday interactions of people who have learned to talk, there is no demand for a large vocabulary or for precision of expression. When hearers need more specific

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information, they ask, and a basic vocabulary is usually enough to explain. To find out what established a rate of vocabulary growth apparently so resistant to intervention at age 4, we decided to look at what children were doing with language before they were 4 years old.

Again, we found many descriptions and parent reports of what went on in family homes during the years children learn to talk, but we realized if we were to have reliable, quantifiable data, we needed to collect it ourselves. Our years of on-the-job training that focused on recording what people actually do enabled us to go into family homes to observe the everyday interactions between parents and children learning to talk (Hart & Risley, 1995, 1999). Our expectations, based on our education, often led us to be surprised at what we saw in the family environment.

### DIFFERENCES IN TIME AND TALK

An unsettling surprise was how different families were in how often and in what ways they interacted with their children, even though all were similarly raising children to participate in a common American culture. Our education had led us to think that parents needed to maintain close control over language activities in order to keep everything functioning smoothly. Children needed the fine tuning, joint attention, semantic matching, recasts, and reinforcement provided by parents. But we saw that children learn to talk despite immense variation in parent behavior and that most talking depends on interactions between many different factors: context, demand, affect, utterances, and customs. Perhaps the details were less important than the way they fit together over time. Perhaps talking evolved because certain interactions worked reliably to support learning to talk, despite either overactive or underactive parents.

When we enrolled each family in the longitudinal study, we asked that the parents just do what they ordinarily did while they were at home with the child. Since all children learn to talk, we told them, parents must do something during their everyday interactions that supports learning to talk. The goal of the longitudinal study was to record what that was. Over the years of observation, we saw that what parents ordinarily do is speak spontaneously to their children, without planning or monitoring what they say. The data showed that the very casualness of their talk led them to comment on a vast variety of objects, actions, and events ranging from the trivial to the metaphysical. The parents' interest in keeping interaction going led them to expose their children to an extensive vocabulary of basic words for household objects and daily activities, as well as to statements of relationships well beyond the children's comprehension.

The differences we saw among the parents were less in what they said to their children and more in how much they said. For example, we saw all of the parents unhesitatingly deliver negatives and prohibitions to their children. The differences lay in the amount of other kinds of talk. When parents talked a lot with their children, their corrections and prohibitions were usually embedded among suggestions for alternative behaviors and approaches to problems. Analysis of the longitudinal data revealed aspects of parenting that were significantly related to children's language accomplishments at age 3. These were the relative positiveness of everyday interactions, the parents' responsiveness to the children's chosen topics, guidance through questions rather than commands, and the variety of talk about things and relationships. The data showed that these aspects were characteristic of the talk of all 42 parents and, for all 42 parents, increased in frequency when the parents talked more with their children.

A major influence was engagement. In a few families, the observer's most frequent description of the children's activity was "wandering." When the children were unengaged there was little for their parents to talk about other than the children's inappropriate choice of activity ("meddling"), which for reasons of safety and care for persons and property called for prohibition. When the parents engaged the children in looking at a catalogue or an advertising supplement, we saw extended and positive exchanges of talk about what to buy for whom. But more of their interactions occurred in high demand conditions that called for simple statements concerning what was wanted.

We saw that one reason some of the parents talked so much was the amount of effort they devoted to getting and keeping their 2-year-old children appropriately engaged. They did not just give their children toys and then leave them to play. They demonstrated, monitored, and guided the children's efforts as they encouraged the children to build structures, work puzzles, dress dolls, and manipulate toy people, cars, and cups. Keeping their children engaged drew from the parents a variety of talk about the objects the children were using, their properties, and the relationships among them. It drew responsiveness to the child's actions and comments and guidance through questions about how problems might be solved. Only after the children had learned to talk did we see what the amount of the parents' talk had accomplished. The children could both play constructively and describe their play.

Also apparent was the influence of culture and history. We saw families who were naturally taciturn, an attribute associated with crowding (Evans, Maxwell, & Hart, 1999). Some parents seemed uncomfortable talking a lot, as though amount of talk was a signal for a lecture or a test. We saw parents leave the room or send

children to bed when the chatter got too much for them. We also saw the culture described by Heath (1989) and Schieffelin and Eisenberg (1984), in which children are expected to learn from listening to adults converse and speak only when spoken to so that what they say is topic-related and appropriately stated. The parents we observed displayed rich and varied repertoires when they talked with other adults and repertoires for engaging their infants in bouts of turn-taking. But once the children started to walk, the parents' job became one of managing. Family members laughed at the notion of an adult trying to converse with a toddler (even though they sometimes tried anyway). Intergenerational transmission had provided the parents with a repertoire for talking to children that was largely limited to directing and correcting the children's behavior.

### THE NATURAL CONTINGENCIES FOR SAYING WORDS

Of all the surprises awaiting the observers when they went into the family homes, the most unexpected were the circumstances that preceded the children's first words. The children were an average of 11 months old when their first words were recorded. In the months before that time, the observers recorded the children communicating effectively, taking turns, and vocalizing, producing babble, gibberish, or jargon more than 100 times an hour. Opportunities for speech shaping, imitation, and contingent reinforcement abounded. But we saw the parents give the children food, affection, toys, and attention whether the children were vocalizing or not. They prompted, "Say 'juice,'" but gave the child the bottle or cup as they did so, usually without pausing even long enough for the child to vocalize and never imitating the vocalization if the child did. The data showed that the average parent ignored roughly half of the child's initiations by vocalizing. Even after the children began saying words periodically, the average parent did not respond to one of every five of the words the child said.

Given the rate that the parents continued to respond to the vocalizations that continued to predominate in interactions with their children, it seemed unsurprising that the better part of a year (8 months) elapsed before the average child said 100 mostly one-word utterances in an hour. The data suggested two further influences. First, we saw that rather than displacing vocalizations, words were added to them. As words increased in use, so did the number of vocalizations the children contributed to the gradually increasing frequency of interaction that followed the month the children said their first words. Second, we saw that across 42 different families, the first words the children said, and the responses of their parents, were remarkably similar. The children said, "Mom," and the parents responded, "What?" The children said,

"See," and the parents looked. The children said, "This," and the parents named the object the child pointed to or held up.

A repertoire for getting and maintaining parent attention, plus the children's skills in turn-taking and vocal and gestural communication, seemed to be enough for most of the children for 6 months or more. But one child we observed was more than 2 years old, and 14 months after his first words were recorded he was still saying fewer than 30 words per hour, and nearly all remained words from an attentional repertoire. The parent talked, and the child maintained interaction by saying, "There," when it was his turn. The parent prompted the child to name or imitate, and the child pointed to something else and said, "There." We saw that for this child, as for all of the other children, there was no need to talk in order to get things and influence events. The observer, like the parents, began to be concerned at the delay in starting to talk. For the observer the concern was less the infrequency of words and more the increasing frequency that the parents were responding to insistent vocalizations accompanied by pointing or pulling. Everyday interactions seemed inadvertently strengthening a communicative repertoire incompatible with talking.

We saw children's use both of an attentional repertoire and of a repertoire of vocalizations gradually decrease as the parents drew the children into partnership in the social dances of conversation that would become the primary context of learning to talk. In low-demand conditions, when only social consequences were an offer, the parents began to model the ease and acceptability of repetition. A parent said, for example, "That's a ball," and then repeated the last word, "ball." The parents prompted the children to imitate the parents' words by imitating the children's words (Snow, 1981). The observers began to record brief dances of reciprocal imitation in which both parties merely said, "shoe," for example, several times. Soon thereafter we saw a child, after imitating "shoe," respond to the parent's reciprocal imitation by introducing a previously imitated, topic-related word, "sock," which the parent then imitated, and the child replied, "on." For the child, the context of focused parent attention increased the probability that the parent would recognize and respond to a new word the child said. For the parent, the context was that of the social dance. The child had not only said a word governed by the parent's word ("shoe"), but also had volunteered new topic-related information ("sock," "on") that the parent could use to take a dance step that would advance the conversation.

### THE SOCIAL DANCE OF CONVERSATION

Once what each partner said was governed by what the other said, the social dance seemed to provide optimum

conditions for learning. The dance required each partner to listen, maintain the topic, and elaborate in order to keep conversation going. For the children, the absence of any strong contingencies or consequences allowed them to stop when they ran out of ready answers. For the parents, the low-demand conditions freed them from a need to plan or monitor what they said. They addressed a continual variety of sentence structures and vocabulary words with the children just when the children were most likely to be paying attention to those words and structures as an aid to producing a reciprocal but non-imitated response. As the children's dance steps became increasingly fluent and adult-like, we saw confirmation of the understanding that was the basis of our interventions at Turner House. The reciprocal responses of the parents to the increasing complexity of the comments and topics the children introduced led, without deliberate planning, to advances in the complexity of their conversations.

History may consider our research as pioneering because of its concern with identifying what gives naturally occurring interactions their power: attention, amount, partnership. Based on our prior research (Allen, Hart, Buell, Harris, & Wolf, 1964), we invented incidental teaching for use in our interventions at Turner House in order to focus teacher attention on children talking. We experimentally demonstrated the immediate effects on what the children said (Hart & Risley, 1975), but the general increase in the amount of children's spontaneous speech and use of different words (Hart & Risley, 1980) showed us the power of adult attention to increase talking as a class of behavior. That power has been refined, elaborated, and adapted for application to children with disabilities (Carr & Kologinsky, 1983; McGee, Krantz, & McClannahan, 1986) and to prelinguistic (Warren & Yoder, 1998) and nonvocal behavior (Kaiser, Ostrosky, & Alpert, 1993). Teachers, parents, and peers (Hancock & Kaiser, 1996) have been trained to use that power to the benefit of children in the natural settings of homes (Kaiser, Hester, Alpert, & Whiteman, 1995), preschools (for review see Hepting & Goldstein, 1996), and schools (Arreaga-Mayer, Carta, & Tapia, 1994; Greenwood, Delquadri, & Hall, 1984;).

My vision of the future is that the expertise that adapted, extended, and refined the power of adult attention may do the same for the power of amount and partnership. I envisage experimental studies that will take the findings from our longitudinal observations and establish the extent to which learning to talk actually works the way we described. We averaged the 2½ years of longitudinal data across families in order to get beyond the variability of local events and immediate responses and so reveal what was consistent about the everyday talk of parents doing what they ordinarily did with their children at home. The data showed us the power of the amount of language experience the parents provided and

the power of the amount of the children's practice in interaction with their parents.

Our observations were recorded in the homes of well-functioning families in which the children were typically developing, and the parents were confident enough of their childrearing practices that they did not mind being watched. Research is needed on how to extend the power of what we saw those parents doing to parents who are interacting with children who are not following a typical developmental course and to parents who are coping with personal and family problems. Research needs to address cultural differences so as to enable taciturn parents to feel comfortable talking a lot and perhaps to discover how parents in other cultures (see Schieffelin & Ochs, 1983) provide their children large amounts of language experience by ensuring that the children listen a lot to adult conversations rather than talking a lot themselves.

Also in need of research is application to childcare settings in which teacher-child relationships, teacher activities, and disposable time differ from the homes in which we observed. In the homes, a great deal of what talkative parents said concerned what the parents were doing. The parents' talk served to maintain the children's engagement in the parents' tasks of cleaning up, sorting the laundry, or making the beds. Teachers in childcare settings often do not have the chores that provided many of the parents with frequent topics for talk. Even when they do, teachers, unlike most parents, need to maintain the engagement of as many as five or more children of similar age but differing interests. Data are needed on how much and on what expert teachers actually say to children during their casual interactions. Some teachers, like some parents, need more information concerning what children should be learning through play and how to arrange environments, materials, and activities that prompt and facilitate talking. Research is needed to add to interventions the power of engagement (Risley, 1977) and to design low-demand environments (Wasik, 1970) that encourage children to talk when the only object is conversation.

The longitudinal data suggested that the power of partnership lay in blending in the social dances of conversation the power of amount of child practice and amount of exposure to the rich and varied talk of the parent. Research is needed to develop means of measuring partnership in order to evaluate the frequency that children, especially children with language delays, are acting as partners rather than turn-takers during interactions. A major question raised by the longitudinal data was why some children take so long before "getting serious" enough about learning to talk that they accept their parents' invitations to dance. The absence of partnership seemed to delay all the interactions that appeared to help children learn words and use sentences.

Much expertise and many efforts have fine-tuned the power of adult attention to make its use in interven-

tion easy and natural for ordinary people. The application of that expertise to refining the power of amount and partnership, so that the promise of that power to improve children's lives may be realized, would be a reward worthy of the longitudinal data and the parents and children who provided it.♦

## REFERENCES

- Allen, K. E., Hart, B. M., Buell, J. S., Harris, F. R., & Wolf, M. M. (1964). Effects of social reinforcement on isolate behavior of a nursery school child. *Child Development*, 35, 511-518.
- Arreaga-Mayer, C., Carta, J. J., & Tapia, Y. (1994). Ecobehavioral assessment of bilingual special education settings: The opportunity of respond revisited. In R. Gardner, III, D. Sainato, J. Cooper, T. Heron, W. Heward, J. Eskleman, & T. Grossi (Eds.), *Behavior analysis in education: Focus on measurably superior instruction* (pp. 225-240). Pacific Grove, CA: Brooks/Cole.
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 1, 91-97.
- Carr, E., & Kologinsky, E. (1983). Acquisition of sign language by autistic children. II: Spontaneity and generalization effects. *Journal of Applied Behavior Analysis*, 16, 297-314.
- Evans, G. W., Maxwell, L. E., & Hart, B. (1999). Parental language and verbal responsiveness to children in crowded homes. *Developmental Psychology*, 35, 1020-1023.
- Greenwood, C. R., Delquadri, J., & Hall, R. V. (1984). Opportunity to respond and student academic performance. In W. Heward, T. Heron, D. Hill, & J. Trap-Porter (Eds.), *Behavior analysis in education* (pp. 58-88). Columbus, OH: Merrill.
- Hancock, T., & Kaiser, A. (1996). Siblings use of milieu teaching at home. *Topics in Early Childhood Special Education*, 16, 168-190.
- Hart, B. (1982). Process in pragmatic language teaching. In L. Feagans & D. Farran (Eds.), *The language of children reared in poverty: Implications for evaluation and intervention* (pp. 199-218). New York: Academic Press.
- Hart, B. (1983). Assessing spontaneous speech. *Behavioral Assessment*, 5, 71-82.
- Hart, B. M., & Risley, T. R. (1975). Incidental teaching of language in the preschool. *Journal of Applied Behavior Analysis*, 8, 411-420.
- Hart, B. M., & Risley, T. R. (1980). *In vivo* language intervention: Unanticipated general effects. *Journal of Applied Behavior Analysis*, 13, 407-432.
- Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore: Brookes.
- Hart, B., & Risley, T. R. (1999). *The social world of children learning to talk*. Baltimore: Brookes.
- Heath, S. B. (1989). Oral and literate traditions among Black Americans living in poverty. *American Psychologist*, 44, 367-373.
- Hepting, N. H., & Goldstein, H. (1996). What's natural about naturalistic language intervention? *Journal of Early Intervention*, 20, 249-265.
- Kaiser, A., Hester, P., Alpert, C., & Whiteman, B. (1995). Preparing parent trainers: An experimental analysis of effect on trainers, parents, and children. *Topics in Early Childhood Special Education*, 15, 385-414.
- Kaiser, A., Ostrosky, M., & Alpert, C. (1993). Training teachers to use environmental arrangement and milieu teaching with nonvocal preschool children. *Journal of the Association for Persons with Severe Handicaps*, 18, 188-199.
- McGee, G., Krantz, P., & McClannahan, L. (1986). An extension of incidental teaching procedures to reading instruction for autistic children. *Journal of Applied Behavior Analysis*, 19, 147-157.
- Risley, T. R. (1968). Jenny Lee: Learning and lollipops. *Psychology Today*, January, p. 25.
- Risley, T. R. (1977). The ecology of applied behavior analysis. In A. Rogers-Warren & S. Warren (Eds.), *Ecological perspectives in behavior analysis* (pp. 149-163). Baltimore: University Park Press.
- Schieffelin, B. B., & Eisenberg, A. R. (1984). Cultural variation in children's conversations. In R. L. Schiefelbusch & J. Pikar (Eds.), *The acquisition of communicative competence* (pp. 377-420). Baltimore: University Park Press.
- Schieffelin, B. B., & Ochs, E. (1983). A cultural perspective on the transition from prelinguistic to linguistic communication. In R. M. Golinkoff (Ed.), *The transition from prelinguistic to linguistic communication* (pp. 115-131). Mahwah, NJ: Erlbaum.
- Snow, C. E. (1981). The uses of imitation. *Journal of Child Language*, 8, 205-212.
- Warren, S., & Yoder, P. (1998). Facilitating the transition from preintentional to intentional communication. In A. Wetherby & J. Reichle (Eds.), *Transitions in prelinguistic communication* (pp. 365-384). Baltimore: Brookes.
- Wasik, B. H. (1970). The application of Premack's generalization on reinforcement to the management of classroom behavior. *Journal of Experimental Child Psychology*, 10, 33-43.
- Wolf, M. M., Risley, T. R., & Mees, H. L. (1964). Application of operant conditioning procedures to the behavior problems of an autistic child. *Behavior Research and Therapy*, 1, 305-312.