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Patterns Of Development in Late Talkers: Preschool Years

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A group of children was identified as "late talkers" (LT) on the basis of small expressive vocabulary size at 20-34 months of age and matched to a group of normally speaking age-mates. The subjects were followed yearly throughout the preschool period in order to track growth in language and related skills. Results showed that although significant improvement in speech and language skill occurred during the preschool period in the late talkers, a substantial minority of children retained deficits throughout the preschool years. By kindergarten age, these children, as a group, scored within, but at the low end of the normal range in terms of reading readiness. Data suggest that the longer a language delay persists into the third year of life, the less the chance of spontaneous recovery during the preschool period. Late talking girls seem to have less chance for spontaneous recovery than do late talking boys. The implications of these findings for making early intervention decisions will be discussed.

One of the most puzzling problems confronting clinicians is the child who, at age two, appears normal in every way, but fails to begin talking. While it is well-known that children with learning disabilities frequently have histories of slow language growth (Catts & Kamhi, 1986; Maxwell & Wallach, 1984; Weiner, 1985), and that older preschoolers with delayed language tend to have chronic deficits (Aram, Ekelman, & Nation, 1984; Aram & Nation, 1980; Garvey & Gordon, 1973; Griffiths, 1969; Hall & Tomblin, 1978; King, Jones, & Lasky, 1982; Shriberg & Kwiatkowski, 1988), very little is known about the prognosis for two year olds with delayed onset of speech. Traditional wisdom has counseled a "wait and see" attitude and parents are still frequently told that their late talking two year old will grow out of the delay. While, no doubt, this spontaneous improvement does frequently occur, there are some two year olds for whom early expressive delay presages long-term difficulty in language and school achievement. The problem for clinicians is to be able to adequately assess risk for chronic delay, to decide which two year old with slow speech development can confidently be left alone to outgrow the problem, and which should be monitored closely or provided with some form of intervention.

The Portland Language Development Project (PLDP) has been following a group of these late talkers, and a control group of peers with normal language history, since 1986, when the subjects were toddlers (See Paul, 1991a,b for details). The purpose of the PLDP has been twofold: 1) to track the development of children who present with small expressive vocabularies in the third year of life, and 2) to identify factors that will help to predict outcome in such children. That is, we would like to find "danger signals" that can clue us as to which late talkers are at risk for long-term difficulties, and to differentiate these from the "late bloomers"

who will fully overcome their deficits before school age. In the present report, some of the follow-up data that have been collected on the PLDP cohort through their preschool years, to begin to shed light on these questions.

METHODS

Subjects

For the purpose of the present report, late talking toddlers (LTs) are defined as children between the ages of 20 and 34 months who produce fewer than 50 different words, by parent report. This criterion was chosen to select the lower end of the normal distribution of language development. Nelson (1973) has shown that the majority of middle class children produce more than 50 different words by 20 months of age. Dale, Bates, Reznick and Morisset (1989) reported that average expressive vocabulary size at 20 months (in a large sample of children geographically and socio-economically similar to the PLDP) is 155 words with a standard deviation of 87. Thus, an expressive vocabulary size of 50 words at 20 months falls more than one standard deviation below the norm in their sample.

Rescorla's (1989) *Language Development Survey (LDS)*, a parent checklist consisting of 300 of the most common words in children's early vocabularies, was used to assess expressive vocabulary size. Reznick and Goldsmith (1989) found that a parent checklist is a valid indicator of expressive vocabulary size in the third year of life. Rescorla has shown high reliability, validity, specificity and sensitivity for the LDS when used to identify expressive language delay in toddlers.

Thirty-seven children between the ages of 20 and 34 months who were diagnosed as LT by this criterion were identified by means of preliminary questionnaires distributed in pediatricians' offices and through radio and newspaper

advertising. The LT group was matched to a control group of children on the basis of age, SES, race, and sex ratio. (See Table 1) All control group subjects were identified through the questionnaires distributed in the pediatricians' offices. A total of about 300 questionnaires was distributed, and control subjects were selected from those whose families indicated interest in the study on the questionnaire. There were 32 children in the control group.

Table 1
Subject Demographic Characteristics: Age 2

	Normal	Delayed (LT)	Significant Difference Between Groups? (p < .05)
Mean expressive vocabulary size reported on Language Development Survey (Rescorla, in press)	194	28	YES
Mean age (and SD) in months at time of first evaluation	25.1 (4.6)	25.3 (4.1)	NO
Proportion of males	66%	75%	NO
Proportion of first-borns	40%	36%	NO
Mean SES*	2.7	2.8	NO
Proportion of subjects from non-white racial groups	16%	8%	NO
Proportion of subjects for whom English is only language spoken in home	100%	97%	NO

*on a scale from 1 to 5, with 1 being the highest, based on Myers and Bean's (1968) modification of the Hollingshead four factor scale of social status

As Table 1 shows, average age for the LT group at the start of the study was 25.3 months and for the normals, 25.1 months. Sex ratios for the LT group was 3:1 males to females, and 2:1 males to females for the control group. There was no significant difference in birth order between the two groups. The mean socioeconomic levels on the *Hollingshead Scale* (Myers & Bean, 1968) were similar, with the mean falling at the middle- to lower-middle class level and a similar distribution of levels between the two groups. The proportion of homes in which English was the only language spoken was also similar. Ninety-two percent of the LTs were of the White ethnic group, with 5% African-American and 3% other ethnic groups. In the normal group, 84% of the children were White, 3% African-American, and 13% other. All subjects passed a hearing screening at 15 dB or threshold testing at 25 dB. All had IQs on the *Bayley Scales of Infant Mental Development* (Bayley, 1969) of 85 or better, and the groups were not significantly different in terms of the number of nonverbal items passed on the Bayley, suggesting the LT toddlers were similar to the controls in terms of nonverbal intelligence. All subjects passed informal observational screening for neurological disorders and autism.

Procedures

Intake evaluation. At the intake evaluation, all subjects were given an intensive battery of assessments for receptive language, cognitive development, oral motor function, and adaptive behavior (See Paul, 1991a for details). Parents also filled out questionnaires regarding demographic information, medical history and child behavior. A videotaped free play interaction between parent and child was analyzed for maternal linguistic input, child communicative behavior, and child phonological characteristics. A detailed report of the profiles of the late talkers derived from this initial assessment is presented in Paul (1991a).

Follow-up at Age Three. The subjects have been seen for follow-up assessment once a year since intake into the study. The first follow-up assessment for each subject occurred at least one year after the intake evaluation, following the third birthday. The measures taken at age three (See Paul 1991b for details.) examined receptive vocabulary, expressive vocabulary, expressive syntax in spontaneous speech as indexed by the *Developmental Sentence Score* (DSS) (Lee, 1974), receptive syntax, articulation in single words on the *Goldman Fristoe Test of Articulation* (GFTA) (Goldman & Fristoe, 1969), intelligibility in connected speech, and socialization skill as indexed by parental report on the *Vineland Adaptive Behavior Scales* (VABS) (Sparrow, Balla, & Cicchetti, 1984). These data have been presented in detail in Paul (1991b). They will be reviewed here briefly in order to serve as a basis for comparison when examining the data from the next years' follow-ups.

Follow-up at Age Four. Subjects were seen again at least one year after their three year assessment, between their fourth and fifth birthdays. At this assessment, the *Test of Language Development-Primary* (TOLD-P) (Newcomer & Hammill, 1988) was the standardized test used. Free speech and narrative samples were also collected. Various measures of narrative skill were derived from these narrative samples, and results of these analyses appear in Paul and Smith (in press). In addition, DSS and a rating of intelligibility in connected speech were also derived from the free speech samples.

Follow-up at Kindergarten Age. All subjects were seen, again, during the year they were in kindergarten. All measures administered at the four year follow-up were administered again. In addition, subjects were given the *Developmental Skills Checklist* (DSC) (CTB-McGraw-Hill, 1990), an individually administered, nationally standardized assessment of academic readiness.

RESULTS

Follow-Up Assessment at Age Three

Table 2 presents some data on the proportion of subjects in the LT group, as compared with that in the normal group, who remained delayed (i.e., scored below the 10th percentile) at age three on standardized measures of expressive language, receptive language, articulation, and socialization as indexed by the VABS. It can be seen there that there were no significant differences between the normal and LT groups in terms of any receptive language skills, nor were there differences in

expressive vocabulary, even though small expressive vocabulary size was the presenting complaint a year earlier. Significant differences, though, in expressive language, phonology, and socialization were observed.

Over half the LTs scored below the normal range in terms of socialization on the VABS. Data on VABS scores in our cohort at ages two and three are presented in detail in Paul, Spangle-Looney, and Dahm (1991). These data show, using item analyses, that deficits in socialization skill in this population cannot be attributed solely to their communication problems. Even when socialization items requiring verbal performance (such as saying *please*, or calling individuals by name) are removed from the analysis, LT two and three year olds scored significantly lower than peers with normal language skills.

Table 2

Percentage of Subjects In Two Diagnostic Groups Falling Below The Tenth Percentile On Standardized Tests At Age Three

Test	Group Normal	LT	Significant difference between groups? (p < .05)	Inter-rater Reliability*
PPVT-R ¹	3.1	8.3	NO	100%
EOWPVT ²	3.1	13.9	NO	99%
Goldman-Fristoe	15.6	50.0	YES	90%
Intelligibility Rated "Poor"	15.6	57.1	YES	100%
TACL-R ³	0.0	11.1	NO	100%
DSS	12.9	60.0	YES	89%
VABS Socialization	3.3	51.4	YES	98%

*Inter-rater reliability for each measure was computed by having a second rater independently score subject performance on each measure for a 10% sample of the evaluations. A point-to-point method was used.

¹Peabody Picture Vocabulary Test-Revised. L. Dunn & L. Dunn (1981). Circle Pines, MN: American Guidance Service.

²Expressive One Word Picture Vocabulary Test. M. Gardiner (1981). Novato, CA: Academic Therapy Publications.

³Test of Auditory Comprehension of Language-Revised. E. Carrow-Woolfolk. (1985). Allen, TX: Developmental Learning Materials.

Moreover, a substantial proportion of three year olds with a history of LT scored below the tenth percentile on standardized measures of both articulation and syntax in free speech. To look at these data a somewhat different way, patterns of deficit were identified in the LT three year olds by looking at the combination of speech and expressive language deficits seen. The DSS was used as the index outcome measure for expressive language; the GFTA percentile score was used as the outcome measure for articulation. (Although the GFTA is a citation form articulation test, it should be noted that GFTA results and subjective ratings of intelligibility in free speech for LT subjects were virtually the same. That is, children who scored below the tenth percentile on the GFTA were also rated as having "poor"

intelligibility in free speech. Ratings of intelligibility in free speech were completed before GFTA test results were known to the raters.)

Patterns of Outcome at Age Three. Figure 1 shows the outcome patterns for the LT group at age three. About one quarter of the three year olds with a history of late talking scored above the tenth percentile (i.e., within the normal range, in both expressive language and phonology). This quarter of the LT population can be seen as having outgrown their late start in language by age three. The pattern with the greatest prevalence (37%) was the one in which children showed deficits in both articulation and expressive language. About 14% of the sample scored below the tenth percentile in articulation only, while another 22% were low in expressive language but not articulation. In summary, more than a third of the LT subjects scored below criteria on both expression and articulation at age three. Three quarters of the sample showed a deficit in one of these two areas or the other or both at three years of age.

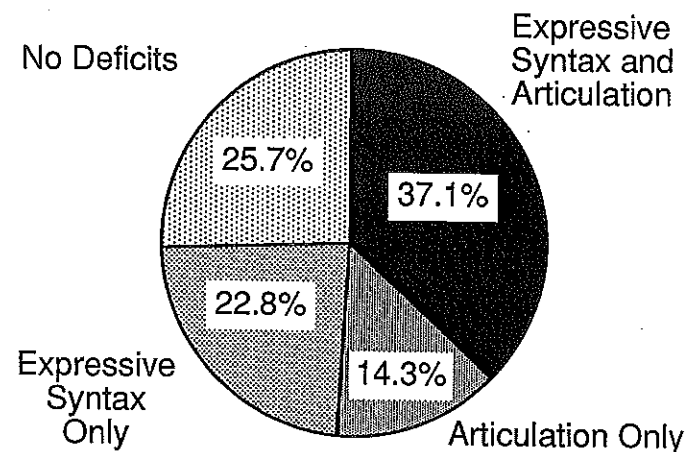


Figure 1. Proportion of LT subjects who scored below the tenth percentile at age three.

Table 3

Percentage of Subjects In Two Diagnostic Groups Scoring Low On Measures At Age Four

Measure	Group Normal	LT	Significant difference? (p < .05)	Inter-rater Reliability
TOLD-P Listening Quotient (below standard score of 80)	.0	3.1	NO	97%
TOLD-P Word Articulation (below standard score of 80)	7.4	34.4	YES	92%
Intelligibility Rated "Poor"	3.7	29.0	YES	86%
DSS (below 10th percentile)	14.8	46.9	YES	92%

Follow-Up Assessment At Age Four. To get a parallel picture of the cohort at age four, it is necessary to examine the proportion of subjects who fell below the normal range on the measures used.

Table 3 shows that similar proportions of normal and LT children fell below a standard score of 80, which corresponds to the tenth percentile, on the TOLD-P's measure of receptive language. This indicates again, as was observed at age three, similar performance between the two groups on comprehension skills. Both TOLD-P Word Articulation subtest results and subjective ratings of intelligibility in connected speech revealed that children with a history of LT were more likely than children with a normal language history to have phonological difficulties. One third of the LT group fell below the tenth percentile on the TOLD-P Word Articulation Subtest, more than four times the proportion of children with normal language histories who did so. Twenty-nine percent of the LT group was rated as having poor intelligibility in connected speech, while only one four-year-old with normal language history was so rated.

In looking at expressive syntax, again, using the DSS as the index measure, 15% of the children with normal language histories fell below the tenth percentile, while nearly half of the children with a history of LT did so. In summary, it appears that some four year olds with a history of LT continue to show difficulties in phonology and expressive language, although the proportions of those showing problems in these areas are somewhat less than they were at age three.

Patterns of Outcome at Age Four. Figure 2 illustrates the distribution of deficits seen in the LT group at age four, parallel to Figure 1 for this group at age three.

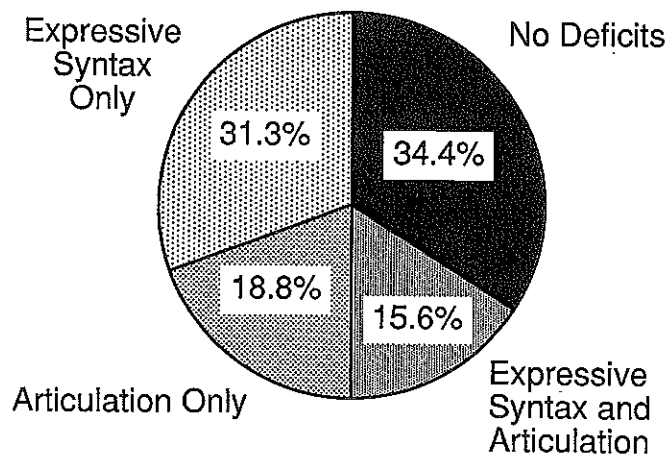


Figure 2. Proportion of LT subjects who scored below the tenth percentile at age four.

Expressive syntax was again indexed by DSS and articulation was indexed by the TOLD-P Word Articulation score. It can be seen that about 16% of the LT group fell below the normal range in both expressive syntax and articulation. This compares to 37% seen at age 3, a substantial reduction. About a third of the LTs had low DSSs with normal articulation scores, an increase over the 23% seen at age three. Nineteen percent had normal DSS scores with low performance on

word articulation. This proportion is similar to that found at age three. About a third of the LTs scored in the normal range in both areas, compared to one quarter at age three.

Changes Between Ages Three and Four. Comparing these distributions suggests that LTs are moving from having deficits in both expressive syntax and articulation at three to having deficits in expressive syntax only at age four. Also, there is some increase in the proportion of children with a history of LT who fall within the normal range of both expressive syntax and articulation at age four. To examine this change in more detail, the rates of improvement (i.e., proportion of LTs who moved into the normal range at each age level on each measure) were tabulated. Individual subject data were examined to determine which subjects moved into the normal range at which age. The same index measures that were used in Figures 1 and 2 were employed, in order to make the results as comparable as possible.

Table 4*

Distribution of Subjects by Status at Various Points in Time

	% Remained low age 3 and 4	% Improved by age 3	% Improved by age 4 (given low performance at 3)	% in normal range at 3 and 4	Total % in normal range by 4
Expressive Language (DSS)	32.3	41.9	44.4	25.8	53.1
Word Articulation	18.8	50.0	62.5	34.4	65.6

*The percentages in this table do not add up to 100 because the percentage of children who move into the normal range by four, if they haven't done so by three, is not a percentage of the total group. It is only a percentage of the subset of those LTs who remained delayed at the three year assessment.

Table 4 displays these data. For expressive syntax, about a third of the LT subjects were below the tenth percentile on DSS scores at both ages 3 and 4, or were chronically delayed in expressive syntax. About a quarter were above the tenth percentile on this measure at both ages. Recall that about 40% of the LT toddlers functioned within the normal range of expressive syntax performance by age three. Of the LTs who were still below the tenth percentile on the DSS at three (the other 60% or so), 44.4% moved into the normal range by age four. Thus, the chances of moving into the normal range by four, if a subject had not done so by age three, are about the same as they were for subjects to move into the normal range between two and three years. In other words, the rate of improvement observed between 20 and 36 months remains fairly constant from 36 to 48 months in terms of expressive syntax. Children are continuing to move into the normal range in terms of expressive syntax at a steady rate over this two year period, and if a child has not achieved a normal level by age three, s/he still has close to a 50/50 chance of doing so by age four.

Table 4 draws a similar picture for performance on articulation tests. Here it can be seen that close to a fifth

of children with a history of LT scored below the tenth percentile on articulation tests at *both* ages three and four, or were chronically delayed in articulation performance. About one third scored above the tenth percentile at both ages. Of those who were below the normal range at age three (i.e., half the LT subjects), nearly two-thirds moved above the tenth percentile by age four. (This trend is exactly paralleled if we examine intelligibility in connected speech, a more ecologically valid measure of phonological skill.) These data suggest that there is considerable improvement in phonological skills between the ages of three and four years in LTs. Moreover, it suggests that LT children whose deficits persist to age three have a greater chance of acquiring age-appropriate *phonological* skills by age four than of moving within the normal range in *productive syntax*.

SUMMARY

Preschool Development

The data on preschool development of our cohort of late talkers, then, suggest the following:

1. LT children showed normal receptive skills by age three and they continued to show normal development in terms of receptive skill at age four. They also functioned within the normal range of expressive vocabulary development by three, even though small expressive vocabulary size was their initial referral problem.
2. A substantial majority of LT children continued to score below the normal range in *either* expressive syntax or articulation by age three, with about a third scoring below the normal range in both areas.
3. Half the children who present as late talkers as toddlers showed significant deficits in social skills at age three. These deficits were not simply the result of poor communicative skills, but reflected an immaturity in social development over and above that seen in communicative ability.
4. For the 60% of LT children who continued to show expressive language deficits at age three, there was still a good chance of improvement by age four. Improvement rates for expressive syntax remained constant at 40-45% over these two time periods. Despite these rates of improvement, a substantial proportion of four year olds with a history of late talking were still producing less complex syntax than their normal history peers.
5. Although half the LTs still had poor articulation at age three, significant improvement is seen between three and four. Close to two-thirds of those whose phonological deficits persisted to age three improved substantially in articulation and intelligibility by age four. Over two-thirds of all the children with a history of

LT performed within the normal range on an articulation test by age four.

6. In examining the combinations of deficits described in Figures 1 and 2, it appears that late talking children changed primarily by having deficits in *both* articulation and expressive syntax at age three years to exhibiting deficits in expressive syntax *only* at four, with only a few having no deficits in either speech or language by four years of age.

These results conflict with the reports of a similar cohort by Whitehurst, Fischel, Lonigan, Valdez-Menchaca, Arnold, & Smith (1991) who claim that the deficits most likely to persist in these children are in articulation. The reason for this discrepancy probably lies in the differences in measurement used by the two studies. While Whitehurst et al. (1991) assessed expressive language with general measures of verbal fluency, as measured by the ITPA (Kirk, McCarthy, & Kirk, 1968), we used a direct measure of grammatical complexity in spontaneous speech to assess productive language performance. This measure appears to be more sensitive to deficits in syntactic skill.

If this interpretation is correct, it implies that it is expressive syntax that poses the greatest threat for long-term delay in this population. While late talkers are more likely than peers with normal language histories to experience slow phonological growth during the preschool years (especially before age three) their phonology is very likely to move within the normal range by four. There is a substantial risk, though, that their expressive syntactic skills will not be within the normal range by this age.

Predicting Outcome in the Preschool Period. Preliminary regression analyses have been completed to examine factors that appear to predict which late talking toddlers will move into the normal range by the end of the preschool period. These results are as yet suggestive only; not all possible factors or models have been examined. But there were two factors that, at first pass, did appear to make a difference in predicting outcome. These results should be interpreted with caution, since the analyses are not yet complete. They are presented only as preliminary findings, that require further exploration and validation.

Age at entry into the study was one of these factors. In other words, the older the child is when s/he is still producing less than 50 words, the poorer the chance for spontaneous recovery. Rescorla and Schwartz (1990) report a similar finding on a similar group of children. A 30 month old saying fewer than 50 different words is at greater risk for long-term deficits than is a 24 month old.

A second factor that seems to make a difference is gender. Three out of four of the late talking toddlers were boys. In other words, there were only nine girls in the LT group. This very small sample size means that any conclusions about sex differences have to be interpreted tentatively. Still, if we examine the proportion of subjects of each gender who scored above the tenth percentile in expressive language and articulation at ages three and four, something surprising

happens. Table 5 presents these data. Boys who were late talkers had about a 46% chance of moving into the normal range on the DSS by age three, and a 60% chance of scoring in the normal range by age four. Girls, though, had only a 22% chance at age three and only a 33% chance at age four. The findings for articulation were not parallel, though. Both boys and girls had very similar rates of normal scoring at both age levels.

Table 5
Percent of Subjects Scoring Above Tenth Percentile by Gender

	Age 3 Boys	Girls	Age 4 Boys	Girls
Expressive Language (DSS)	46.2	22.2	60.9	33.3
Word Articulation	51.9	44.4	65.2	66.7

This might, at first, seem like an unexpected finding. After all, aren't boys supposed to have higher rates of language delay than girls? Clearly, in the general population they do. Late talking is a relatively common phenomenon, and is only indicative of chronic deficit in only a *portion* of children who are slow to begin talking as toddlers. Many children who are late talkers are not truly language delayed. Boys, though, do seem to be more vulnerable -- to both specific language impairment, as evidenced by the greater prevalence of language disorders in boys in the general population, and to the shorter-term, less severe syndrome of late talking. These facts suggest that a relatively small disruption or diathesis -- whether hormonal, neurochemical, or whatever -- in the normal acquisition process may be enough to set a boy back. Given time and maturation, perhaps the most minor of these small setbacks can be overcome, and this is what we see in late talking boys who recover. For girls, though, the language acquisition process appears more robust. It takes more to disrupt it; a relatively larger "dose," we might say, of whatever causes the delay. This larger jolt to the system is harder to overcome. Once a girl manifests to us, by her slow language acquisition, that this large jolt has taken place, the chances she will be able to overcome it with maturation alone are less than they would be for a boy. This pattern is typical of other disorders in which the male: female ratio is large. In autism, for example, although boys are much more likely to be autistic, when a girl has the syndrome, the chances are that it will take a severe form (Lord, Schopler, & Revicki, 1982).

Reading Readiness in Late Talkers. The majority of our cohort has now completed kindergarten, and were seen for re-evaluation during their kindergarten year. DSS analyses of their speech samples have not yet been completed, and so expressive syntax levels for late talkers at kindergarten age cannot be reported. We have examined academic readiness skills, though, using the *Developmental Skills Checklist* (DSC)(CTB/McGraw-Hill, 1990) to examine the relations between early language delay and preparedness for school.

The DSC provides a Prereading score and the results of comparisons based on this measure are presented in Table 6.

The average scores for both groups were within the normal range, but the normal group scored significantly higher ($t = 2.48$; $p < .01$). Looking at the proportion of subjects whose Prereading scores fell below the tenth percentile on the DSC, it appears that a substantial proportion, about 20%, scored in the bottom decile, while only 3% of the children with normal language history did so. These distributions were also significantly different (Chi-square = 3.68, $p < .05$). This would suggest that late talkers come to school with somewhat less well-developed preacademic skills, on the average, and that a significant proportion (about 20%) would appear to be at risk for academic failure.

Table 6
Performance on Prereading Battery of Developmental Skills Checklist

Group	Mean (and SD) Prereading score	Percent of subjects with scores below the tenth %tile
Normal	98.1 (12.2)	3.5
LT	90.1 (12.8)	19.4

Items on the DSC Prereading battery test general information (e.g., knowing name and birthday), digit span, and basic vocabulary (e.g., colors and body part names). In addition, metalinguistic skills (e.g., dividing sentences into words) and phonological awareness abilities (e.g., segmenting words into syllables and phonemes, and identifying rhyming words) are also evaluated. The relatively low scores earned on this test by children with a history of LT could suggest that some of these children may be having problems with such language-based activities. Blachman (1989) and van Kleeck (1984) have shown that the metalinguistic and phonological awareness skills like those tested on the DSC are closely related to reading success.

IMPLICATIONS

What do these data tell us about the way we should manage toddlers who present as late talkers? Some authors (e.g., Whitehurst et al., 1991) have suggested that late talking is a self-limiting condition and, as such, does not require intervention. The data presented here could be interpreted to lend support to this position. That is, the majority of our LT subjects did outgrow their deficits by age four. Two-thirds had normal articulation by then. Over half had normal syntactic production. The rates of improvement reported here, which remained constant or improved from year to year between two and four years of age, suggest that even children who have not moved into the normal range of oral language skills by age four may do so by kindergarten age. Moreover, as a group, the late talkers scored within, although at the low end of, the normal range on a school readiness test by

kindergarten. Don't these data indicate that the traditional "wait and see" attitude toward late talkers is justified?

This author would argue against this position on two sets of grounds. First, even if a child will spontaneously outgrow a language problem, intervention can still play an important role. Olswang and Bain (1991) discuss the importance of *facilitation* in intervention. With facilitation, the rate of growth or learning is accelerated, but the final outcome is not changed. In other words, facilitative language intervention helps children to achieve language milestones sooner than they would if left to their own devices, but it does not mean that they will ultimately achieve higher levels of language function than they would without intervention. If all facilitation does is to increase the rate of acquisition of a particular behavior without altering the child's eventual language status, why bother to intervene? Gottlieb (1976) argues that facilitation can assist a child to increase the ability to differentiate among perceptions. To put it another way, facilitation can bring language to a higher level of awareness. This awareness can be very important for building the metalinguistic and phonological awareness skills so necessary for higher levels of language acquisition, such as reading and writing. In other words, early intervention may not only increase the rate of language growth for late talkers, but may also help to lay the foundation on which more advanced, literacy-related skills can be built. Our preliminary data on reading readiness in our cohort suggest that such facilitation may be very useful. That is, facilitative intervention for late talkers may also have preventive aspects, in terms of "heading off" the learning disabilities so frequently associated with slow language growth during the preschool period (Catts & Kamhi, 1986; Maxwell & Wallach, 1984; Weiner, 1985).

If this preventive focus is one aspect of the intervention program for children with a history of late talking, it suggests that the targets of the intervention be broadened somewhat. Instead of working exclusively on basic syntactic and phonological skills, the intervention might build in some specifically preventive activities. Data from Paul and Smith (in press) indicate that narrative skills of four year olds with a history of late talking are less well-developed than those of children with normal language histories, for example. Since narrative skill is also known to be related to school success (Bishop & Edmundson, 1987), preschool intervention for the child with a history of late talking might work on both syntactic and phonological skills in story-telling contexts, and include listening to, telling, acting out, and writing (by dictation) stories. Similarly, since phonological awareness is known to be related to reading success (Blachman, 1989), phonological intervention might include an awareness focus, using sounds in real words, talking about sounds, playing rhyming games with target words, having children think of words that begin or end with their target sound, and so on.

A second set of grounds for arguing against a "wait and see" position on intervention for late talkers concerns the development of social skills. Our data from the VABS (See Paul, Spangle-Looney & Dahm, 1991) showed that over half the children with a history of late talking retained deficits

in social skills by age three. These deficits persisted even when social skill items requiring verbalization were removed from the analysis. Moreover, some of these children retained social skill deficits even when their language skills have moved within the normal range (Paul, Spangle-Looney & Dahm, 1991). These data suggest that language delays can have long-lasting effects on a child's ability to function in the social environment, even when the language delay itself resolves. This risk for social deficit, in and of itself, is a powerful argument for providing early intervention. Communication impacts many aspects of a child's life. Increasing the maturity of communication, even if a problem would eventually be outgrown, can often result in improvement in interactional skills, behavioral repertoire, self-esteem and family relations that go beyond the language behavior itself.

When should we recommend language intervention for a toddler with slow expressive language development? Scarce intervention resources will probably make it impossible for us to serve every two-year old who presents as a late talker, even if we believe that most of these children could benefit from intervention. How can we best allocate these scarce early intervention resources? Paul (1991b) argues that this decision should be made on the basis of the accumulation of risk factors. That is, children who are found, after careful evaluation, to have only expressive language deficits with intact cognition, nonverbal communication and receptive language skills, would appear to have less urgent need of intervention than children with concomitant deficits in one or more of these other areas. This is particularly true for children with circumscribed expressive problems who come from functional families and have no medical risk factors. However, if a toddler shows concomitant deficits in cognition, nonverbal communication or receptive skills, or experiences a less than optimal social milieu, or has a history of prematurity or other medical risk factors, this client should be given a higher priority for intervention.

The data presented from the preliminary analysis of factors that predict outcome in our LT cohort suggest two other factors that might also be considered in assigning clients priority for early intervention. First, children seen at 27-30 months with a complaint of late talking would appear to be at greater risk than those at 20-26 months of age. If a child with a facilitative social environment and no medical risk factors presents with circumscribed late talking at 20-26 months, a sensible recommendation is to re-evaluate in three to six months. If substantial improvement has not occurred, intervention could be considered at that time. Second, late talking girls might be given high priority for early intervention, since their chances for spontaneous recovery appear to be lower than those of their male counterparts. Although not every toddler who is late to begin talking is in need of intervention, we can begin to make more rational decisions about which toddlers to serve by applying the guidelines generated from this and other research on children with slow expressive language development.

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REFERENCES

- Aram, D., Ekelman, B. & Nation, J. (1984). Preschoolers with language disorders: 10 years later. *Journal of Speech and Hearing Research*, 27, 232-244.
- Aram, D., & Nation, J. (1980). Preschool language disorders and subsequent language and academic difficulties. *Journal of Communication Disorders*, 13, 159-170.
- Bayley, N. (1969). *Scales of Infant Mental Development*. NY: Psychological Corporation.
- Blachman, B. (1989). Phonological awareness and word recognition. In A. Kamhi & H. Catts (Eds.) *Reading disabilities: A developmental language perspective*. Boston: College-Hill.
- Bishop, D., & Edmundson, A. (1987). Language-impaired 4-year-olds: Distinguishing transient from persistent impairment. *Journal of Speech and Hearing Disorders*, 52, 156-173.
- Carrow-Woolfolk, E. (1985). *Test for Auditory Comprehension of Language: Revised*. Austin, TX: Developmental Learning Materials.
- Catts, H., & Kamhi, A. (1986). The linguistic basis for reading disorders: Implications for the speech-language pathologist. *Language, Speech, and Hearing Services in Schools*, 17, 329-341.
- CTB/McGraw-Hill Publishers. (1990). *Developmental Skills Checklist*. Monterey, CA: Author.
- Dale, P., Bates, E., Reznick, S., & Morisset, C. (1989). The validity of a parent report instrument of child language at 20 months. *Journal of Child Language*, 16, 239-250.
- Dunn, L., & Dunn, L. (1981). *Peabody Picture Vocabulary Test-Revised*. Circle Pines, MN: American Guidance Service.
- Garvey, M., & Gordon, N. (1973). A follow-up of children with disorders of speech development. *British Journal of Communication Disorders*, 8, 17-28.
- Goldman, R., & Fristoe, M. (1969). *Goldman-Fristoe Test of Articulation*. Circle Pines, MN: American Guidance Service.
- Gottlieb, G. (1976). The roles of experience in the development of behavior and the nervous system. *Studies on the development of behavior and the nervous system: Neural and behavioral specificity*. New York: Academic Press.
- Griffiths, C. (1969). A follow-up study of children with disorders of speech. *British Journal of Communication Disorders*, 4, 46-56.
- Hall, K., & Tomblin, J. (1978). A follow-up study of children with articulation and language disorders. *Journal of Speech and Hearing Disorders*, 43, 227-241.
- King, R., Jones, D., & Lasky, E. (1982). In retrospect: A fifteen year follow-up of speech-language disordered children. *Language, Speech, and Hearing Services in Schools*, 13, 24-32.
- Kirk, S., McCarthy, J., & Kirk, W. (1968). *Illinois Test of Psycholinguistic Abilities*. Urbana, IL: University of Illinois. Press.
- Lee, L. (1974) *Developmental Sentence Analysis*. Evanston, IL: Northwestern University Press.
- Lord, C., Schopler, R., & Revicki, D. (1982). Sex differences in autism. *Journal of Autism and Developmental Disorders*, 12, 317-330.
- Maxwell, S., & Wallach, G. (1984). The language-learning disabilities connection: Symptoms of early language disability change over time. In G. Wallach & K. Butler (Eds.) *Language and learning disabilities in school-aged children*. Baltimore: Williams & Wilkins.
- Myers, J., & Bean, L. (1968). *A decade later: A follow-up of social class and mental illness*. NY: Wiley & Sons.
- Nelson, K. (1973). Structure and strategy in learning to talk. *Monographs of the Society for Research in Child Development*, 38 (Serial No. 143).
- Newcomer, P., & Hammill, D. (1988). *Test of Language Development-Primary*. Austin, TX: Pro-Ed.
- Olswang, L., & Bain, B. (1991). Intervention issues for toddlers with specific language impairments. *Topics in Language Disorders*, 11, 69-86.
- Paul, R. (1991a). Profiles of toddlers with slow expressive language development. *Topics in Language Disorders*, 11, 1-13.
- Paul, R. (1991b). Assessing communication in toddlers. *Clinics in Communication Disorders*, 1, 7-24.
- Paul, R., & Smith, R. (In press). Narrative skills in four year olds with normal, impaired, and late developing language. *Journal of Speech and Hearing Research*.
- Paul, R., Spangie-Looney, S., & Dahm, P.S. (1991). Communication and socialization skills at ages 2 and 3 in "late talking" young children. *Journal of Speech and Hearing Research*, 34, 858-865.
- Rescorla, L. (1989). The Language Development Survey: A screening tool for delayed language in toddlers. *Journal of Speech and Hearing Disorders*, 54, 587-599.
- Rescorla, L., & Schwartz, E. (1990). Outcome of toddlers with specific expressive language delay. *Applied Psycholinguistics*, 11, 393-408.
- Reznick, S., & Goldsmith, L. (1989). A multiple form word production checklist for assessing early language. *Journal of Child Language*, 16, 91-100.
- Shriberg, L., & Kwiatkowski, J. (1988). Follow-up study of children with phonologic disorders of unknown origin. *Journal of Speech and Hearing Disorders*, 53, 144-155.
- Sparrow, S., Balla, D., & Cicchetti, D. (1984). *Vineland Adaptive Behavior Scales*. Minneapolis, MN: American Guidance Service.
- vanKleeck, A. (1984). Metalinguistic skills: Cutting across spoken and written language and problem solving abilities. In G. Wallach & K. Butler (Eds.), *Language learning disabilities in school-age children*. Baltimore: Williams & Wilkins.
- Weiner, P. (1985). The value of follow-up studies. *Topics in Language Disorders*, 5, 78-92.
- Whitehurst, G., Fischel, J., Lonigan, C., Valdez-Menchaca, M., Arnold, D., & Smith, M. (1991). Treatment of early expressive language delay. *Topics in Language Disorders*, 11, 55-68.