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Twenty-one apparently normal children between 18 and 34 months of age with slow expressive language acquisition were compared to a group of normally speaking children matched for age, SES, and sex ratio, on the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984) The late talkers (LTs) scored significantly lower not only in expressive communication, but also in receptive communication and socialization. A follow-up study of the same subjects, seen at age 3, showed nearly half the 3-year-olds with a history of LT remained delayed in expressive communication and socialization, while one third remained behind in receptive language. The data suggest that social skills are particularly vulnerable to disruption in children with late expressive language development, even after communication skills have moved into the normal range. They suggest, further, that receptive deficits do not seem, in themselves, to increase the risk of continued language delay Clinical implications of these findings are discussed.

KEY WORDS: toddlers, language delay, communication, socialization, adaptive behavior

The prognosis for toddlers who are late in acquiring their first words and word combinations is currently unknown. Although families often are told by pediatricians that 2-year-olds with apparently circumscribed expressive language delay will "grow out of" the early lag, recent reports (Paul, 1989; Rescorla, 1990; Scarborough & Dobrich, 1990; Thal, 1989) suggest that these children are at risk for continued language delay.[1]

Rescorla (1989) reports that 10%–15% of middle-class toddlers fail to achieve the standard language milestone of use of 50 words and production of two-word combinations at 24 months, suggesting that "late talking" is a relatively common phenomenon. However, prevalence studies of expressive language delay at school age (Silva, 1980; Stevenson & Richman, 1976) suggest rates of 3%–5%. Thus, it appears that many "late talkers" do achieve normal language use by school age. The problem, then, is to identify toddlers at risk for chronic language delay and to distinguish them from young children for whom slow language development is a transient phenomenon.

This study examines toddlers who appear to parents and pediatricians to be normal in every way, except that they are behind in acquiring words and word combinations. The purpose of the study presented here was to determine, first, whether toddlers with slow expressive language development, as indexed by small expressive vocabulary size, were showing truly "specific" expressive delays, or whether concomitant areas of deficit could be identified. It could be hypothesized that children with truly circumscribed delays would be less at risk for persistent deficit than those showing

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delays in other areas of development. Study 1 examines several areas of development, in addition to expressive language, to investigate the existence of such delays.

Two areas of development were thought, a priori, to be likely candidates for concomitant deficit. First, it seemed reasonable that receptive language might be impaired in children with slow expressive language growth. Whereas parents of both normal and delayed children frequently believe that their toddlers "understand everything," Chapman (1978) and Paul (1990) demonstrate that this performance is often based on attention to extralinguistic cues. If some toddlers with slow expressive language development have difficulty that is associated with poor receptive skills, these comprehension deficits might not be obvious to parents due to the child's use of nonlinguistic strategies.

Second, it seemed likely that deficits in social skills might accompany expressive delay. This apparent likelihood is based both on theoretical discussions of language as a primary means for engaging in social intercourse (Anglin, 1980; Garvey, 1984), and on empirical findings (Paul & Shiffer, 1987) that toddlers in this sample made fewer attempts than normally speaking peers to initiate social communication, either verbally or nonverbally.

In Study 1, we hypothesize that late-talking toddlers (LTs) would show deficits in receptive language and social skills.

Study 2 looks at outcomes at age 3 in this sample, at performance on the same measure as that used in Study 1, the Vineland Adaptive Behavior Scales (Sparrow, Balla & Cicchetti, 1984). This study examines the hypothesis that children with slow expressive language growth are at risk for persistent deficits. Whereas we expect that some late-talking children (LTs) will "outgrow" their delays, we suspect, based on pilot studies (Paul, 1989), that a good portion will not. For children whose delays persist to the preschool period, there is evidence (Catts & Kamhi, 1986; Maxwell & Wallach, 1984; Schery, 1985; Weiner, 1985) to indicate that the risk for chronic deficits in language and academic achievement is high. Study 2 also reexamines outcome data as a function of the concomitant deficits identified in Study 1. Here we investigate the hypothesis that toddlers with deficits in addition to expressive language will be at a higher risk for persistent delays—i.e., will be less likely to "outgrow" their slow start—than will children whose deficits were restricted to expressive communication. Outcomes at age 3 are contrasted for the children who had circumscribed expressive language deficits at the first assessment (Study 1) with those who had deficits in other areas at that time.

STUDY 1: INTAKE ASSESSMENT–TODDLERS

Purpose

The purpose of this study was to examine scores of the Vineland Adaptive Behavior Scales on each of its domains (Receptive Communication, Expressive Communication, Socialization, Daily Living, and Motor Skills), and to compare these scores between the two diagnostic groups. It was hypothesized that differences would be found in Expressive and Receptive Communication and Socialization.

Method

Subjects

Subjects included 42 children between the ages of 18 months and 34 months, selected from a pool of about 300 children recruited in local pediatric clinics and by local media sources. Each family recruited was asked to fill out the Language Development Survey (LDS) (Rescorla, 1989). Thirty-five subjects were classified as LTs. This designation was given to children whose parents and pediatricians reported them to be normal in all aspects of development except for speech and had, at 18–23 months, expressive vocabularies of 10 or fewer words on the LDS; or had expressive vocabularies of 50 or fewer words or no use of two-word combinations at 24–34 months, by parent report on the LDS. Twenty-one of these subjects constitute the longitudinal sample reported here. They were selected because their data sets were complete for both the 2-year (Study 1) and 3-year (Study 2) evaluations. A group of 21 children from the pool of participating normal subjects was chosen to match the LT subjects as closely as possible in terms of age, sex, and socioeconomic status (SES).[2] Children in the normal group had expressive vocabularies of more than 10 words at 18–23 months; or expressive vocabularies of more than 50 words and the use of two-word combinations at 24–34 months, by parent report on the LDS.

The Language Development Survey (*LDS*) (Rescorla, 1989) is a checklist of 300 words common to children's early vocabularies. Parent report of expressive vocabulary employing a checklist format such as that used in this study has been shown by Dale, Reznick, Bates, and Morisset (1989) and Reznick and Goldsmith (1989) to be an excellent index of expressive vocabulary size. Rescorla (1989) has reported that the Language Development Survey, using the criteria described above, is highly reliable, valid, sensitive, and specific in identifying language delay, when compared to standardized language measures, in toddlers.

The LT group consisted of 15 boys and 6 girls (71.4% boys) with a mean age of 25.6 months (*SD* 3.9). The normal group also consisted of 71.4% boys with a mean age of 26.1 month (*SD* 4.5). SES score for each subject was computed using a four-factor index combining occupation and education status of the parent(s) (Myers & Bean, 1968). Weighted scores were obtained, and an overall score from 1 to 5 was derived for each subject (with 1 being the highest SES level and 5 the lowest). The LT group had a mean SES of 2.7 (*SD* 1.0) and the normal group had a mean SES of 2.6 (*SD* 1.4), indicating a middle-class sample. *T* tests revealed there were

[2]It should be noted that many children classified as *normal* were not willing to participate in the long-term study, in which we requested that they commit to yearly in-depth assessments for 5 years. Thus, the entire pool of normal subjects who had filled out the vocabulary questionnaires was not available. Thirty-three families of normal children were willing to participate in the long-term study, and the 21 normal subjects in this study were chosen from that pool.

no significant differences between the two subject groups in terms of chronological age, proportion of boys to girls, or SES.

Children in both groups were included in the study only if they showed no physical or neurological handicaps on informal behavioral observation and if they showed no serious behavioral disorders (e.g., autism), which might preclude normal development of language. To verify intellectual functioning, a psychologist administered either the Bayley Scales of Infant Development (Bayley, 1969) or the Stanford-Binet Intelligence Scale (Terman & Merrill, 1960), whichever was appropriate for the child's chronological age. Subjects were included in the present study only if their standard scores were 85 or higher on either of those tests. It should be noted that both the Bayley and the Stanford-Binet contain a large number of verbal items at the 18–24-month level. This fact may be the reason that there was a significant difference ($p < .01$) in IQ between the two groups in Study 1, when the mean for the LT group was 97.7 (*SD* 16.6), whereas that of the normal subjects was 116.3 (*SD* 17.6). Data from the Harris-Goodenough Draw-a-Person Test (Harris, 1963) given in Study 2 suggest that when a nonverbal measure is used, the IQ differences between the groups are less pronounced. It should also be noted that although the normal group's mean would appear to be in the superior range, recent data on the Bayley (Campbell, Siegel, Parr, & Ramey, 1986) suggest that its norms are outdated and that it yields inflated scores in normal children. Again, the Draw-a-Person scores given in Study 2 suggest that the normal group does perform within the normal range.

All subjects were given audiological sound-field screenings. Hearing screening levels were conducted for all subjects at 25 dB in sound field conditions using speech stimuli and visual reinforcement audiometry in a sound-proof booth. All testing was done by an audiologist or a graduate-level audiology student. A Maico model 24B clinical audiometer, calibrated to meet American National Standards Institute specifications (1969), was used in determining hearing levels. All LT subjects passed this screening. Normal subjects, with the exception of 2 children, also passed screening at the 25-dB level. One of the normal subjects responded to the testing at 40 dB and the other subject refused to be tested.

Procedures

The primary caregiver of each subject was interviewed using the Vineland Adaptive Behavior Scales (VABS) (Sparrow et al., 1984). Interviews were conducted by the second and third authors, following instructions provided in the Vineland manual. Rapport with the caregiver was established and the purpose of the interview was explained. The interview began with general questions about the child's performance in each domain and was followed by further probes when needed. VABS (Sparrow et al., 1984) is a norm-referenced instrument that assesses adaptive behavior in the domains of communication, daily living, socialization, and motor skills. The format of the VABS is that of an interview with the primary caregiver of the individual who is being assessed. The VABS adaptive behavior domains have been normed on 3000 individuals from birth through 18 years, 11 months, including 200 subjects in each of 15 age groups. It has undergone extensive reliability assessments and analyses of validity, both of which suggest good performance on these indices (VABS Manual, 1984). In addition, Rescorla and Paul (1990) found that VABS scores in Expressive Communication correlated highly ($r = .85$) with LDS scores. Comparisons of VABS Expressive Communication scores with MLUs at this age level revealed a correlation of .78 for the normal group, suggesting the VABS Expressive score is closely related to direct measures of productive language.[3]

In addition, VABS receptive scores at this age level correlated moderately well with direct assessment of comprehension on the Reynell Developmental Language Scale (Reynell, 1984) for both normal ($r = .67$) and LT ($r = .59$) toddlers.

Examination of the test items in the VABS reveals that some items in the socialization domain require verbalizations, for example saying "please" when asking for something, addressing familiar people by name, and imitating adult phrases heard on previous occasions. Naturally, children with delayed expressive language would lose credit in these areas. However, many other socialization items refer to more nonverbal aspects of socialization such as playing social games, imitating complex motor routines in play, using household objects in play, and smiling appropriately. If LTs evidence depressed socialization scores, this could suggest the delay bears some relation to social skill development above and beyond the inability to engage in verbal social routines. This possibility was also investigated more specifically by doing an item analysis contrasting performance on verbal versus nonverbal items on the VABS socialization scale.

Neither of the VABS interviewers was aware of the child's group placement. Six of the interviews done at age 2 (14%) were randomly selected and scored independently by a second interviewer present during the live interview. Interrater reliability was calculated by determining the percentage of agreement for each item scored in the five domains. Reliabilities for the four domains ranged from 96.8 to 100%. Overall average agreement was 97.9%.

VABS raw scores were used in the statistical analysis. The reason for using raw scores rather than standard scores was that standard scores were not presented for subdomains of receptive and expressive language in the VABS manual (Sparrow et al., 1984).

Results

An initial comparison was made between the subjects' chronological ages (CA) and their age-equivalent scores on

[3]Correlations between MLU and VABS Expressive score in the LT group at this age level were low ($r = .32$), due to the fact that two thirds of the LT subjects had MLUs of either 0 or 1, because they were not talking very much. This effect precluded a valid assessment of the relation between direct measures of expressive language and VABS Expressive score at the early evaluation. However, it should be noted that at age 3 the correlation between VABS Expressive score and MLU for LTs was .73, again suggesting that VABS Expressive Communication scores are reasonably valid estimates of expressive language performance.

the VABS receptive and expressive communication scales in order to validate their group replacement. All subjects in the normal group, except for 1, scored within 6 months of their CA or better on both receptive and expressive scales. One child in this group scored 8 months below CA on the expressive scale but within 6 months on the receptive scale. All subjects but 2 in the LT group scored 6 months or more below CA on the expressive language scale. These 2 scored 5 months below CA on this scale. Thus, group placement on the basis of parent report of expressive vocabulary appears to correlate well with VABS expressive communication scores.

To compare the expressive skills of the LT and normal children further, the Language Development Surveys completed by the parents were analyzed. The mean number of different words used by the 7 LT children in the 18–23-month range was 5.6. None of these children used two-word combinations. Mean number of words used by the 6 normal children in the same age range was 111.9. Seventy-one percent of these children combined words to form telegraphic utterances. The 14 LT children in the 24–34-month age range used an average of 30.3 words, with 13.3% of them producing two-word combinations. The 15 normal subjects in the 24–34-month range used an average of 251.6 words. All children in this group produced some two-word utterances. This comparison shows the expressive vocabularies and use of word combinations by the control group was substantially greater than that of the LT group. The finding that 71.4% of the 18- to 23-month-old normal subjects and all of the 24- to 34-month-old normal subjects produced two-word utterances was consistent with literature stating children normally produce two-word utterances between the ages of 18 and 24 months (Dale, 1976; Tager-Flusberg, 1985).

Raw scores in the VABS expressive and receptive communication subdomains and three other major domains (socialization, daily living, and motor skills) were analyzed for the 21 LT and 21 control subjects. Raw score means and standard deviations obtained are presented in Table 1.

An analysis of variance (ANOVA) based on a 2 (groups) by 5 (VABS subscale scores) split-plot design with repeated measures on the score factors was used to compare the receptive, expressive, socialization, daily living, and motor skills age equivalent scores of the LT subjects and those of the control group, using the SAS (1985) computer program. Results revealed significant differences between the two groups of subjects [$F(1, 40) = 33.9$, $p < .0001$], between the domains examined [$F(4, 40) = 225.5$, $p < .0001$], and in the interaction between the subjects and domains [$F(4, 40) = 35.22$, $p < .0001$].

A Tukey multiple comparison procedure, again using the SAS program, was then used to compare the LT subjects to the control subjects and determine which pairs of means were significantly different. The LT subjects scored significantly lower only in receptive communication ($p < .05$), expressive communication ($p < .05$), and socialization ($p < .05$) when compared to the normal group. There were no significant differences between the two groups in daily living or motor skills. Thus, the interaction effect appears to be attributable to the fact that the degree of difference between the groups differed for different domains. Control subjects scored higher in all five domains, but the largest gap between the two subject groups was in expressive communication, followed by receptive communication and socialization. The smallest gap between the groups was in the motor skills domain. Thus, the interaction effect appeared to reflect greater deficits on the part of the LT group in communication and socialization relative to daily living and motor skills.

This finding supports one hypothesis of the study: that receptive and socialization skills are likely to be impaired in late talkers.

An item analysis was performed in the socialization domain to determine the influence of verbal/nonverbal items on scores in both subject groups. An example of a verbal socialization item is saying "please" when asking for something; a nonverbal socialization item, for example, is showing interest in activities of others. Results indicated the normal subjects passed significantly more nonverbal items than did the LT subjects ($t = 5.28$, $p < .0005$).

Summary

As hypothesized, LT children scored significantly lower than normal children in receptive communication, expressive communication, and socialization on the VABS. In the socialization domain, normal subjects had a significantly higher number of nonverbal socialization items passed. There were no significant differences in daily living or motor skills.

STUDY 2: FOLLOW-UP ASSESSMENT

Purpose

The goal of this study was to examine outcomes at age 3 in children who were LTs as toddlers, to determine whether children with this history were at risk for persistent delay. In addition, an attempt was made to relate patterns of concomitant deficit seen in the intake evaluation to language and socialization outcomes, as indexed by the VABS.

TABLE 1. Group mean raw scores and standard deviations on VABS domains for LT and normal subjects at intake.

	Receptive communication		Expressive communication		Socialization		Daily living		Motor	
Subjects	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
LT	20.1	2.2	10.3	2.7	36.2	3.3	31.8	3.9	34.7	3.9
Normal	22.5	1.6*	29.5	9.8*	44.2	4.3*	35.7	4.4	36.8	4.4

*$p < .05$)

Method

Subjects

The same 42 children who participated in Study 1 took part in Study 2. Each child was seen 12–18 months after his or her initial evaluation in Study 1. Average age of the LT subjects was 37.8 months (*SD* 2.2). That of the normal subjects was 39.0 months (*SD* 2.9).

Procedures

To assess cognitive level, the Goodenough-Harris Draw-a-Person test (Harris, 1963) was administered to each subject at this assessment. The Draw-a-Person test provides an index of cognitive functioning that is relatively independent of verbal ability and has acceptable correlations with other measures of intelligence, such as the Stanford-Binet and Wechsler tests (Naglieri & Maxwell, 1981; Sattler, 1982). The Draw-a-Person was not used in Study 1 because it is only normed down to the 3-year level. The mean IQ on this measure for the normal group was 110.9 (*SD* 16.3; range 85–158). That for the LT group was 105.9 (*SD* 9.2; range 91–133), suggesting that both groups are functioning in the average range of nonverbal intelligence. A *t* test showed no significant difference between diagnostic groups ($t = 1.19$; $p < .375$) on this measure.

Results

Outcomes: Age 3

Table 2 shows the means and standard deviations of chronological ages and raw scores on the VABS for the subjects involved in the follow-up study. A 2 (groups) × 5 (VABS subscale scores) split-plot analysis of variance with repeated measures on the score factors was run again on the SAS program, using the 3-year data. This analysis revealed that there were, again, significant effects for group [$F(1, 40) = 22.1$, $p < .0001$], VABS domain [$F(4, 40) = 177.9$, $p < .0001$] and group by domain interaction [$F(4, 40) = 4.4$, $p < .002$].

Post hoc testing, again using the SAS Tukey procedure, revealed that significant differences between the groups persisted for expressive communication and socialization ($p < .05$), but not for receptive communication. Thus, on the average, the LT group had moved within range of the normal speakers in receptive skills, although expression and socialization continued to average below the norm.

To explore the outcome data in more depth, individual subjects' scores were examined.

To determine which individual subjects were showing deficits in Communication and Socialization at age 3, adaptive level was inspected. The VABS manual describes the following ranges of adaptive level:

High: raw score more than 2 *SD*s above the mean for age
Moderately high: raw score between 1 and 2 *SD*s above the mean for age
Adequate: raw score within 1 *SD* of the mean for age
Moderately Low: raw score between 1 and 2 *SD*s below mean for age
Low: raw score more than 2 *SD*s below the mean for age

The VABS manual does not provide individual standard score conversions for raw scores in subdomains such as Expressive and Receptive Communication. However, the manual does provide the raw score *ranges* for each subdomain that correspond to the above Adaptive Levels. Thus, the Adaptive Levels provide the most consistent method available for evaluating the extent to which children's scores are falling below the normal range on the subscales of interest.

All of the 21 normal subjects participating in the follow-up study had adaptive levels in both Communication and Socialization on the VABS that were adequate or above at both ages 2 and 3.

Results for the LT group in adaptive level for Expressive Language, Receptive Language, and Socialization at age 3 are given in Table 3 (see Age 3). It can be seen that 47.6% of the group (10 subjects) continued to show deficits in expressive communication at age 3. One third (7) had deficits in receptive skill. In the Socialization domain, 47.6% of the subjects at age 3 showed deficits, although, as Table 3 shows, these were not always the same children who continued to show deficits in Expressive Communication. Also, this analysis revealed that even though average Receptive Communication scores had moved within the normal range by age 3, some LT individuals continued to show deficits in this area.

In summary, the results of Study 2 revealed that a substantial portion (nearly half) of children with a history of slow expressive language acquisition as toddlers continue to evidence deficits in both Expressive Communication and Socialization scales of the VABS at age 3. A smaller, but still considerable proportion (one third) evidence deficits in Receptive Communication, as well, even though the average

TABLE 2. Group mean age and VABS raw scores and standard deviations for LT and normal subjects at follow-up.

	Age (months)		Expressive communication		Receptive communication		Socialization	
Subjects	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
LT	37.8	2.0	32.5	7.4	22.8	1.4	49.5	5.8
Normal	39.0	2.9	45.4	6.8*	24.5	4.5	56.0	8.0*

*$p < .05$)

TABLE 3. LT subjects with low to moderately low adaptive levels on the *VABS* at ages 2 and 3.

Subject	Age 2			Age 3		
	Express. Commun.	Recept. Commun.	Social.	Express. Commun.	Recept. Commun.	Social.
Pattern 1: Expressive deficits only at age 2						
1	X			X	X	X
2	X				X	
3	X					X
4	X					
5	X			X		
6	X					X
7	X			X	X	X
Pattern 2: Expressive and Socialization deficits at age 2						
8	X		X	X	X	X
9	X		X	X		
10	X		X			
11	X		X		X	
12	X		X			
13	X		X			
14	X		X			
15	X		X	X		X
Pattern 3: Expressive, Receptive, and Socialization deficits at age 2						
16	X	X	X	X		X
17	X	X	X		X	
18	X	X	X	X		
19	X	X	X	X		X
20	X	X	X			X
Pattern 4: Expressive and Receptive deficits at age 2						
21	X	X		X	X	X
Number Ss	21	6	13	10	7	10
%Ss	100%	28.6%	61.9%	47.6%	33.3%	47.6%

score for the LT group in this domain moved closer to the norm.

Outcomes as a Function of Subgroup Status

One hypothesis of this study is that late-talking children with deficits in receptive and socialization skills will be at greater risk for chronic language impairment than children with circumscribed delays in expressive language. To investigate this hypothesis, VABS adaptive levels at the 2-year evaluation were tabulated and compared to these levels at age 3. Table 3 shows that, in terms of patterns of deficits at intake, the subjects could be classified within four patterns. The four subgroups that emerged were as follows:

Subgroup 1. These children had deficits in expression only, with adequate receptive and socialization scores at the initial assessment. Seven (33.3%) subjects showed this pattern.

Subgroup 2. These children had deficits in expression and socialization, with normal reception at the initial assessment. Eight (38.1%) of the children displayed this profile.

Subgroup 3. These children showed deficits in all three areas at the initial assessment. Five (23.8%) of the children had depressed scores in these domains.

Subgroup 4. One child (4.8%) had deficits in reception and expression with normal socialization at the initial assessment.

The subgroups can be combined to reveal that 28.6% of the sample had some deficit in receptive language at the initial assessment (Subgroups 3 and 4), and 61.9% of this sample were below the normal range in socialization skill at the initial assessment (Subgroups 2 and 3).

To examine the hypothesis that children with receptive and socialization deficits were at greater risk for chronic delay than those with circumscribed deficits in expression, each of the four subgroups identified in the initial data was examined for communication and socialization outcome at age 3. Table 3 shows only 3 of the subjects (43% of the subgroup) with circumscribed expressive delay at the initial assessment continued to show expressive deficits at 3, and 4 subjects in this subgroup (57%) were below average in socialization skills. (Recall that these subjects had normal socialization scores at the initial assessment.) In Subgroup 2 (Expressive and Socialization deficits as toddlers), 3 (37.5%) of the subjects continued to score below normal in expressive skill, and of those, 2 also maintained their socialization delay. In Subgroup 3 (Expressive, Receptive, and Socialization deficits as toddlers) 3 (60%) of the subjects continued to show

deficits in both expression and socialization. The 1 subject in Subgroup 4 (Expressive and Receptive deficits at the initial assessment) also maintained below-average status in both areas.

To test the hypothesis that children with concomitant deficits would be at greater risk for chronic communication delay than children with a circumscribed expressive lag as toddlers, Subgroups 2, 3, and 4—containing all subjects with concomitant delays—were combined and compared to Subgroup 1. Looking at expressive communication outcome only, one sees that 43% of the group with Expressive deficit only at the initial assessment continued to be delayed in expressive communication skills at age 3. In the subgroups with concomitant deficits in reception and/or socialization as toddlers (2, 3, and 4 combined), 50% (7) of the subjects continued to demonstrate expressive communicative performance below the normal range.

A chi-squared test was run to determine whether the difference in distribution of outcomes were different in these two subgroups: Expressive deficit only at the initial assessment (Subgroup 1) and Expressive and other deficits as toddlers (Subgroups 2, 3, and 4 combined). This test failed to reach significance [χ^2 (df = 1, n = 21) = .024].

Summary

Study 2 showed that children with a history of LT as toddlers are at a substantial risk for continuing to lag behind their peers in expressive language (48%). In addition, some children also continue to show deficits in reception (33%) and socialization (48%). Although concomitant deficits in these latter two areas are common in LT toddlers, these deficits do not appear to differentiate children in terms of expressive outcome at age 3.

Discussion

Clearly some children do "grow out of" early language delay by age 3. However, the children with slow expressive language acquisition reported here would appear to be at some risk for delay 1 year later, with over 47% showing persistent communicative difficulty. If this is the case, it would be important to determine what factors in toddlers increase the risk of continued delay for late-talkers. Two factors examined in this study, concomitant receptive and socialization deficits, do appear to be associated with expressive deficits. It appears that a substantial proportion of late-talking toddlers do manifest these delays, 28.6% and 61.9%, respectively. It is tempting to hypothesize, as we did, that children who showed these concomitant deficits would be at greater risk for chronic delay than those with circumscribed expressive lags. This does not appear to be the case in our data, however. Children with and without concomitant delays have similar risk levels for expressive deficits that persist to age 3. There may be other factors we did not explore that predict recovery in LTs. But these data suggest that even toddlers with very circumscribed delays in expressive communication have a substantial (nearly 50%) chance of continuing to show these delays at age 3. In fact, Table 3 shows that some LTs develop receptive and socialization deficits at this age, even when these skills appeared normal earlier.

Of special interest in these findings is the prevalence of socialization delays. Although none of the subjects in the control group scored below the normal range in this area at either age 2 or 3, a majority (61%) of the LT toddlers did. Further, nearly half of the children with a history of LT (47.6% of the sample) continued to show socialization deficits at age 3, in some cases even in the presence of communication skills that had moved into the normal range. One possible explanation for these data is that the deficit in social skills is related to the expressive lag through a motivational factor. That is, children with slow speech acquisition may be behind because their drive to socialize is less intense than that of other toddlers, so that both talking and nonverbal socializing are less developed. Paul and Shiffer (1987) reported that LT toddlers make fewer nonverbal attempts to initiate communication than do normal peers, again suggesting the presence of reduced drive for interaction. This possibility could be investigated further by directly examining motivation to interact in nonverbal ways in this population and correlating these measures with growth in language through longitudinal follow-up. Such studies could help to illuminate the relations between expressive language and socialization skill seen in the present sample.

The receptive deficits in this population show that for LT toddlers, receptive delays rarely (only 1 case in 21 in our sample) occur in the absence of socialization problems. LT children who do have receptive and socialization deficits do not appear to have an obviously greater risk of chronic delay than those with socialization deficits alone. (See Table 3.) Although it might seem logical that receptively involved children would be at greater risk than those who are not, the current data do not bear this out, although the numbers in each subgroup are too small for any definitive conclusions. It would seem from these data that socialization deficits in toddlers may be the more important factor.

There are several clinical implications suggested by the present study.

First, LT toddlers do appear to be at substantial risk for continued delay. Even if social skills and comprehension appear to be at age level, nearly half the children with little speech at 2 continued to lag behind their peers at 3. Clinicians should consider these findings when counseling families whether to wait for their toddler to outgrow a language delay. If intervention is not available for an LT toddler, follow-up assessments should take place to determine whether progress toward the normal range is being made.

Second, parent report on the VABS of a child's skills in communication correlate well with a direct measure of language performance (i.e., MLU, in this age group). This would suggest that for children who are difficult to engage in formal testing, the VABS provides an acceptable alternative for indexing language abilities.

Third, assessing receptive language skills is important in this population, because a substantial proportion of late talkers who appear to "understand everything" show significant deficits in comprehension as well as production. Although receptive deficits do not appear to predict outcome,

they should be part of the diagnostic picture, and be considered in developing a treatment plan.

Fourth, the majority of toddlers with expressive language delay show deficits in social development. Therefore, if intervention is offered to this population it seems important that it have a pragmatic focus, because increasing vocabulary size or sentence length may not alleviate the social delay that could be a maintaining factor in the child's language deficit. Rather, these children may need to be given a good reason to communicate. The clinician may need to orchestrate the intervention environment so that things the child needs or enjoys cannot be attained without the use of communicative initiations. Fey (1986) discusses the use of "incidental teaching" procedures in this regard.

In summary, children with slow expressive language development often have deficits in reception and socialization as well, although the presence of these concomitant deficits does not appear to increase their already substantial risk for continued expressive delay, at least until age 3. More research on other factors that might help to predict outcomes in this population will help in identifying those LT toddlers who can benefit from communication intervention.

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