

## **Critical Review: Characteristics of Late-Talkers**

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This critical review examines the evidence regarding the characteristics of children exhibiting transient expressive language delay. Study designs include cohort studies and case-control studies. Overall, the evidence gathered in this review found several possible common characteristics among late-talkers. Discussion regarding the implications for clinical practice is provided.

### ***Introduction***

Many young children who initially present with delayed expressive language have these difficulties resolve and become indistinguishable from their peers as they age (Rescorla, Roberts, & Dahlsgaard, 1997; Williams & Elbert, 2003). These so-called late-talkers are often defined as having 50 or fewer words by two years of age (Rescorla and Roberts (1997). This is, in fact, the basis for Rescorla's Language Development Survey, a parental checklist screening tool (Weismer & Murray-Branch, 1994).

With the establishment of the preschool initiative, much focus in Speech-Language Pathology as been put on early intervention as the key to success. However, the financial and temporal restrictions placed upon speech and language services have caused the necessity of a triage situation within service provision. In times when the utmost ecological dissemination of resources is paramount, it would be almost unethical to provide service to those children who will resolve their speech or language problems without intervention (Dale, Price, Bishop, & Plomin, 2003). These facts demonstrate a need to examine the existing research in order to discern the possible characteristics of those who are simply 'late-talkers' and need no intervention, allowing room for those who truly need treatment

### ***Objectives***

The primary objective of this paper is to critically evaluate existing studies examining possible characteristics of so-called 'Late Talkers.' The secondary objective is to provide clinical implications from the findings presented here.

### ***Methods***

Search Strategy: Journal articles related to the topic of interest were found using the following computerized databases: CINAHL, Scopus, and PsychINFO. Key words used in searching these databases included:

(early language delay) and (characteristics)  
(late-talkers) and (predictors)  
(late-talkers) and (characteristics)

The search was limited to articles in English.

Selection Criteria: Articles chosen for inclusion in this review were required to examine characteristics of children demonstrating a transient expressive language delay, also referred to as late-talkers.

Data Collection: Results of the search yielded 7 studies that met the above criteria. These studies consisted of five longitudinal, prospective cohort studies, one case-control study, and one cross-sectional case-control study nested in a cohort study.

### ***Results***

#### Longitudinal Prospective Cohort Studies

Longitudinal prospective studies are best used for gaining knowledge about a characteristic or feature over a period of time, and are appropriate for discerning the course of development of language. Similarly, cohort studies are useful for making comparisons between groups of individuals from the same generational time period. However, without direct individual matching of participants, comparisons made can not be as precise as possible.

Williams and Elbert (2003) conducted a cohort study to examine phonological characteristics of children whose language delays resolve as opposed to those whose do not. A group of 5 children identified as having an expressive language delay were assessed monthly for approximately one year. Results of the study indicated that the 3 children whose language delays resolved displayed both quantitative (e.g. smaller phonetic inventories, lower PCC scores) and qualitative (e.g. atypical error patterns, chronological mismatch of errors) variables in common.

The selection criteria for this study were never explicitly stated. While it was stated that subjects were recruited via parental response to fliers, no mention was made of how many potential participants were turned away, nor why. As well, this method of recruitment, via parental concern of speech development, omitted the important category of those children who may have an expressive language delay but whose parents were as yet erroneously unconcerned.

The sample size of this study was extremely small, consisting of only five participants. With this small pool of subjects, Williams and Elbert (2003) divided these subjects into even smaller subgroups of younger (22 months) and older (30 months) subjects. This division caused the subsequent analyses to be performed on even smaller subsets of the population being studied when, in fact, this division was not necessary to the study nor the results presented.

No standardized assessments were performed within this study; instead, a number of descriptive analyses, such as phonetic inventory and error patterns, were examined from a conversational observation. Williams and Elbert falsely claimed these speech samples to be naturalistic, even though some interactions were with clinicians (as opposed to others with parents) and all occurred within non-natural settings for the children (clinic room). However, transcription reliability from these observation sessions, on which the validity of the measures depends, was acceptable, with a mean of .85. As well, the continuous follow-up sessions provided a more complete picture than an initial assessment and single follow-up assessment only.

No statistical analysis was performed on the data collected in this study. Instead, all data was presented and then visually inspected for patterns or outliers. While this was not unreasonable for a study consisting of five subjects only, this study would have benefitted more as a case-series design, incorporating the 5 subjects as multiple single case reports. The study did not fully acknowledge any of its many limitations.

The level of evidence offered by this study is weak. Small sample size and intrinsic limitations from visual inspection of data only limit the applicability of the results.

Weismer and Murray-Branch (1994) conducted a cohort study to investigate aspects of language acquisition in children identified as late-talkers compared to those considered to be typically developing. A group of 23 children serving as normal controls for a study on Down Syndrome were utilized in this study: four were identified as late-talkers; the remaining 19 constituted the 'typically developing' group. Though the expressive language of the four late-talkers was tested both formally and informally for phonological abilities and vocabulary, Weismer and

Murray-Branch found no common characteristics among their late-talking participants.

The selection criteria for this study left room for improvement, as the participants were simply taken from another study and not recruited for the specific purpose of this study. However, as they were considered a homogenous group for the previous study, the assumption was made that they were representative of the population.

The same tools were used for each assessment at 3 month intervals over a period of 21 months. Inter- and intrarater agreement for all standardized assessments and checklists was good, exceeding 95%; interrater agreement was also good for the transcriptions, at 85% for word agreement and over 90% for phoneme agreement.

No statistical analysis was performed on the data, admittedly by the authors due to small sample size. They offered, instead, detailed descriptive analysis of individual data. This suggested that, due to the small number of late-talkers in this study, a series-case design may have been more appropriate.

Intervention was offered to all, and accepted by 3, of the late-talkers in this study. This addition of treatment acted as a confounding variable to the stated purpose of this study, namely to trace the path of language development in those identified as late-talkers. It was, in fact, a component of another study being done by the same authors on the same participants, at the same time. This intervention obviously altered the course of natural language development that would otherwise have been taken by these late-talkers and necessarily altered the results of this study.

The level of evidence offered by this study is weak. With small sample size and confounding variables, the applicability of the presented results is limited.

Carson, Klee, Carson, and Hime (2003) investigated the possibility of phonetic and phonological developmental differences between late-talkers and their normal language peers. Twenty-eight 2 year olds were chosen from a database of potential participants: 14 who screened negative on a parent-report measure and were assessed to be within normal limits one month later; 6 who screened positive but were assessed to be within normal limits; and 8 who screened positive and were recommended treatment following assessment. These toddlers were then reassessed at age 3 using language scales and transcriptions of conversational interactions. Results indicated that those children who screened positive as late-talkers had less complete phonetic inventories and a simpler vocabulary than their normal language peers.

The selection criteria for participants in this study were not well-detailed. As well, the initial screening and assessment had already been performed, without the

control or approval of those running the current study. This led to little information being available regarding the reliability, validity, etc of the assessments used and the baseline information.

The follow-up assessments were completed by blinded examiners and took place over 2 ninety-minute sessions. Though the sessions were consistent across all participants and attempted to be representative (playing normally with parents), the length and amount accomplished within each session may lead to fatigue of the participant, altering accurate data.

Appropriate statistical analyses, such as multiple one-way ANOVAs, were completed, including associated Bonferroni adjustments, with a p value of less than or equal to .05 for all tests. Late-talkers were found to have significantly smaller phonetic inventories, as well as significantly simpler syllable shapes, such as fewer closed syllables.

While there are limitations arising from the small sample size and initial assessment protocol, the level of evidence provided by Carson et al (2003) is strong. Applicability of results should be approached with caution, as advised by the authors, due to the small number of participants.

Dale, Price, Bishop, and Plomin (2003) presented findings from parental reports in a cohort study in which they attempted to identify characteristics of late-talkers as compared to typically developing toddlers. Language measures from a total of 8386 twins from 4193 families were examined. Results indicated that poorer vocabulary, grammar, and displaced reference skills were not common characteristics among the late-talkers studied.

Information on participant selection was detailed; the sample size was large and every effort was made to ensure representativeness. However, participants were limited to twins only, even though this was not a 'twin study'. As well, the authors themselves admit that "twinning is known to be associated with delay in early language milestones" (Dale et al, 2003, 556), thus making the data's usefulness in generalizing information questionable.

Data were gathered through parental report, which may leave greater room for error and bias than standardized assessment protocols.

The measures which were created specifically for this study had good reliability and validity. However, some measures gave ordinal scale data only, unsuitable for certain statistical analyses, such as z scores; the authors used percentiles, categorization, and odds ratios to analyze this data. Though appropriate, this type of analysis leads to weaker evidence. Other statistical analyses on other measures, such as logistic regression analyses on categorical data, were appropriate, as well as explained by the authors.

The level of evidence provided by this study is strong, though its clinical application may be somewhat limited due to the limited sample population and specially-created, non-standardized measures.

Rescorla and Roberts (1997) conducted a cohort study examining vocabulary, syntax, and MLU. Thirty-four late-talkers were compared to an age-matched group of 21 normal language toddlers, all 24 to 31 months old. Late-talkers were identified as having 50 or fewer words or no word combinations. Data was gathered from standardized assessments and transcriptions from informal observations. Rescorla and Roberts found that, although late-talkers scored significantly lower than their typically developing peers, they still scored within the average range on MLU, syntax and vocabulary assessments.

In Rescorla's subsequent follow-ups (2002; 2005; 2009), she found that these findings extended throughout all language skills, including reading and writing, as the child aged. In fact, on all language tests administered until the age of 17, Rescorla (2009) found that children diagnosed as late-talkers scored within the average range on assessments, yet scored significantly lower than their matched peers.

The selection criteria used by Rescorla and Roberts (1997) was stated clearly and in detail, with a larger group of late-talkers to compare to a smaller group with normal language. Over the 12 years of the study so far, there has been 65% retention of the late-talkers and 59% retention of the comparison group, allowing for more strongly supported results. Over this time period, as well, several children, from both the late-talker group and from the comparison group, received speech and language therapy. Because this treatment was deemed by the researchers to be solely at the discretion of the parents, this data was not controlled nor analyzed for this study, causing a possible confounding variable.

Standardized assessments, as well as transcription of interactions between mother and child were used to collect data. Interrater reliability of the transcriptions was above 0.95. Appropriate statistical analysis, involving multiple regression analyses with Bonferroni corrections, independent t tests and, in the follow-up studies, aggregate scores when necessary were used.

The level of evidence provided by the authors is strong. With the extensive follow-up, the applicability of the results, though cautioned due to small sample sizes, is very good.

#### Case-Control Study

Case-control studies are appropriate for studying comparisons of two groups; however, finding sizeable groups that are representative is not an easy feat to accomplish. This can make findings difficult to generalize.

Thal and Tobias (1992) investigated the relationship between communicative gesture use and late-talkers. Ten identified late-talkers were compared to normal-language-matched and age-matched peers on the type, function, and accompanying vocalizations of their gestures. Thal and Tobias (1992) concluded that those identified as late-talkers used significantly more communicative gestures and used them more for the answering function than their age- and language-matched controls. However, the authors question whether the communicative gestures used are a characteristic of late-talkers or a compensation of low expressive language ability.

The selection criteria for this study was well-detailed, though referenced through another article. As well, the criteria for separating subjects into categories (late-talkers and their matches) were well-detailed. The sample size, however, as with most studies in speech-language pathology, was quite small.

No standardized assessments or protocols were used in this study. Instead, transcriptions of language and gestural communication were analyzed. Only those gestures that two transcribers agreed were communicative were analyzed. This was made necessary by the poor agreement rate of just 68%. Of those few gestures, however, interrater reliability for type and function was good at 0.95.

Appropriate statistical analyses were performed on the data, with mixed ANOVAs followed by pair comparisons between the late-talkers and their matched comparisons done with Tukey t-tests. As well, appropriately, a Mann-Whitney U test was used to compare subgroups, due to the small number of participants.

The level of evidence put forth by this study is strong. The application of the presented results can be done with only mild caution due to small sample size and difficulty in scoring gestures.

#### Case-Control/Cohort Study

Zubrick, Taylor, Rice, and Slegers (2007) conducted a prospective investigation into late-talkers examining the impact of maternal, family, and child variables on their language abilities. 1766 two year olds were examined through a parental-report postal questionnaire; the data of those identified as late-talkers were then compared to those identified as typically developing. Results indicated that a family history of late language emergence, being male, and low birth weight and prematurity were among possible characteristics of late-talkers.

Though the selection criteria for this study, as well as the criteria for exclusion and the representativeness, were randomized and minutely detailed within this article, the sample was taken from Western Australia.

Immediately, this raises concerns regarding generalization of any significant findings possibly produced. The study attempted to prove its generalizability, however, by providing evidence of a similarity between Western Australia and Midwestern United States.

The measures used were all parent report, with questions related to the three broad categories listed above. This type of measure allowed room for some bias from the parents within this study.

Appropriate statistical analysis, including multivariate logistic regression and odds ratios, was used within this study, with justifications discussed for every decision made in the process of the study.

The authors admit several weaknesses, though they made every effort to take those into account, both statistically and when addressing their findings. They also addressed the confounding variables of the variance in development at this young age, and the emergence of social skills concurrently.

The level of evidence for this study is strong, however the application of the findings should be done with caution, as the sample may not be representative of Western communities

#### *Discussion*

The characteristic of late-talkers is a challenging area for research. The studies examined within this review each examined a unique set of possible characteristics of late-talkers. One study chose to focus on familial variables; the others focused on speech, language, or communication characteristics. Conclusions from this compilation of studies appear to be variable.

Dale et al (2003) found strong evidence suggesting that poorer vocabulary, grammar and displaced reference abilities were not common characteristics among late-talkers. As well, though their level of evidence was weak, Weismer and Murray-Branch (1994) found no evidence to suggest that the language acquisition pattern was atypical, apart from chronological age, from typically developing speakers.

Alternatively, Williams and Elbert (2003) found weak evidence suggesting that phonological characteristics, such as smaller phonetic inventories or chronological mismatch of errors, consistently characterize the speech of late-talkers. However, strong evidence was found by Carson et al (2003) and Zubrick et al (2007) to suggest that incomplete phonetic inventories, simple vocabulary, family history of late language emergence, prematurity, and low birth weight were common characteristics among late-talking children. Strong evidence was also found by Rescorla and Roberts (1997) and by Thal and Tobias (1992) suggesting that low scores on MLU, vocabulary, and syntax

assessments and higher use of communicative gestures were mutual characteristics among late-talkers. Future research is necessary to confirm these possible common characteristics found among late-talkers. However, that future research should take into consideration the size and representativeness of the sample population; thorough and detailed selection criteria; consistent assessment methods; and appropriate and accurate statistical analysis. As well, future research should look more specifically at the causes of the above common characteristics among late-talkers: for example, do children who are late-talkers all have smaller vocabularies and MLUs and more communicative gestures causing the transient expressive language delay or does that same language delay cause these children to have smaller vocabularies and use more communicative gestures compensatorally?

### ***Conclusion***

Incomplete phonetic inventories, simple vocabulary, family history of late language emergence, prematurity, and low birth weight, poorer vocabulary, grammar and displaced reference abilities, low scores on MLU, vocabulary, and syntax assessments and higher use of communicative gestures have all been found to be possible common characteristics of children with a transient expressive language delay.

### ***Clinical Implications***

Due to the limited evidence provided by these studies, clinicians should be cautious in relying on any of the above characteristics to identify late-talking children. However, the low level of evidence found by the current critical review may simply reflect the heterogeneity of the population being studied. Perhaps, as suggested by Weismer and Murray-Branch (1994), late-talkers should be viewed simply as part of a natural variation of language development within the population.

Still, gathering a set of common characteristics of children who experience a transient language delay could be a potential first step in beginning to distinguish between those language delays which require intervention and those that do not. With a set of speech, language, communication and other risk factors that may indicate a transient language delay, stronger and more applicable screenings and assessment tools may be created and utilized to distinguish late-talkers from others seen by speech-language pathologists.

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