

Supplemental Material S1. Inclusion and exclusion criteria.

Study	Instrument used to determine late talking status	Cut-off	Exclusionary criteria
Armstrong, 2007, & Lee, 2011	CDI	< 10th percentile	<ul style="list-style-type: none"> • mother < 18 years old • mother did not speak English • child was hospitalized for more than 7 days following birth or had an obvious disability • mother had a substance-abuse problem • Bayley-II Mental Development Index < 70
Bishop et al., 2012	OCDI	< 10 words	<ul style="list-style-type: none"> • serious birth complications • abnormal hearing or vision • more than occasional exposure to non-English language • WPPSI-III Nonverbal IQ < 85 at follow-up
Carson et al., 2003	LDS	< 50 words or no word combinations	—
Dale et al., 2003	CDI UK Short Form	< 15 words	<ul style="list-style-type: none"> • singletons (all participants were twins of known zygosity) • major medical disorders, perinatal hazards, or genetic syndromes • primary language other than English
Feldman et al., 2005	CDI	< -1 <i>SD</i> below mean	<ul style="list-style-type: none"> • low birth weight or small for gestational age • serious neonatal illness or congenital malformations • mother < 18 years old • mother known to abuse drugs or alcohol • placement in foster care • any language other than English spoken in home
Fernald & Marchman, 2012	CDI	< 20th percentile	<ul style="list-style-type: none"> • pre-term birth or perinatal complications • serious illnesses • cognitive delays

Study	Instrument used to determine late talking status	Cut-off	Exclusionary criteria
			<ul style="list-style-type: none"> • impairments in hearing or vision • significant exposure to languages other than English
Fischel et al., 1989, & Whitehurst et al., 1991	EOWPVT	< -2.33 below mean	<ul style="list-style-type: none"> • nonverbal IQ < 85 on Leiter • receptive language < 85 on PPVT-R^a • autism indicated during child observation or parent interview
Hadley & Short, 2005, & Hadley & Holt, 2006	CDI	< 16th percentile	<ul style="list-style-type: none"> • any language other than English spoken in home • recurrent otitis media (> 6 ear infections) • neurological, emotional, or behavioral impairments by parent report • abnormal hearing test • abnormal oral motor screening • below normal range nonverbal abilities on Leiter-R
Henrichs et al., 2011	CDI-N	< 10th percentile	<ul style="list-style-type: none"> • family lives outside the study area
Levickis et al., 2014	UK Sure Start language measure	< 20th percentile	<ul style="list-style-type: none"> • known cognitive delay or major medical problem • non-English-speaking parents
Lyytinen et al., 2005	Composite of CDI, Bayley-II Expressive, and RDL-4 Expressive	< -1 <i>SD</i> below mean	<ul style="list-style-type: none"> • any abnormalities on detailed neuropsychiatric examination conducted soon after birth
Moyle et al., 2007	CDI	< 10th percentile	<ul style="list-style-type: none"> • abnormal hearing test • abnormal oral motor abilities • delayed development in areas other than language on Denver II or parent report on background history questionnaire
Paul et al., 1991, & Paul, 1993	LDS	18–23 months < 10 words OR 24–34	<ul style="list-style-type: none"> • parent or pediatrician report of any developmental abnormalities other than speech delay

Study	Instrument used to determine late talking status	Cut-off	Exclusionary criteria
		months < 50 words	<ul style="list-style-type: none"> neurological or behavioral abnormality apparent to psychologist during assessment Bayley or SB2 < 85 abnormal hearing test
Petinou & Spanoudis, 2014	CYLEX	< 70 words	<ul style="list-style-type: none"> any language other than Greek spoken in the home parent report of developmental abnormalities or significant medical history abnormal hearing test
Peyre et al., 2014	CDI French Short Form	< 10th percentile	<ul style="list-style-type: none"> mother did not speak French maternal diabetes or pregnancy with multiples known condition associated with speech/language delay, such as hearing or neurological impairment
Reilly et al., 2010	CDI	< 10th percentile	<ul style="list-style-type: none"> non-English-speaking parents serious disabilities or developmental delays
Rescorla & Schwartz, 1990	LDS	< 50 words or no word combinations	<ul style="list-style-type: none"> Bayley-II Mental Development Index < 85 RDLS Receptive age equiv. not within 3 mo. of chronological age^a abnormal hearing test abnormal social/emotional functioning according to psychologist observation abnormal neurological status as established by medical history
Thal et al., 1991	LGI	< 10th percentile and no word combinations	<ul style="list-style-type: none"> history of abnormal hearing test or repeated ear infections intellectual disability, behavioral disturbance, or neurological (oral/motor/sensory) deficits according to parent and pediatrician questionnaires
Vuksanovic, 2015	Informal parent report	< 50 words and no	<ul style="list-style-type: none"> family does not speak Serbian

Study	Instrument used to determine late talking status	Cut-off	Exclusionary criteria
	and speech pathologist classroom observation	word combinations	<ul style="list-style-type: none"> • Apgar score less than 9 at 5 minutes after birth • preterm birth or prenatal complications • neurological disorders or psychopathological or behavioral issues • psychomotor developmental quotient on Brunet–Lezine scale < 80 • abnormal hearing test
Williams & Elbert, 2003	Informal parent report	< 50 words	<ul style="list-style-type: none"> • any prenatal, sensory, cognitive, or developmental concerns on parent case history form • organic or motor disorders evident during observation • abnormal hearing test • any language other than English spoken at home

Note. Bayley (II) = Bayley Scales of Infant and Toddler Development–Second Edition; CDI (N) = MacArthur–Bates Communicative Development Inventory–Netherlands Edition; CYLEX = Cypress Lexical List; Denver II = Denver Developmental Screening Test–Second Edition; ELI = Early Language Inventory; LDS = Language Development Survey; Leiter (R) = Leiter International Performance Scale–Revised; LGI = Language and Gesture Inventory; ODCI = Oxford University Communicative Development Inventory; PLS = Preschool Language Scale; PPVT-R = Peabody Picture Vocabulary Test–Revised Edition; RDLS (4) = Reynell Developmental Language Scales–Fourth Edition; SB2 = Stanford–Binet Intelligence Scales–Second Edition; WPPSI-III = Wechsler Preschool and Primary Scales of Intelligence–Third UK Edition.

*Study excluded participants with below average receptive language and was included in that moderation subgroup in meta-analysis for receptive language.

References

- Armstrong, E. S. (2007). *School-age cognitive and achievement outcomes for late talkers and late bloomers: Do late bloomers really bloom?* Retrieved from ProQuest Information and Learning database. (Accession number 2007-99008-286)
- Bishop, D. V. M., Holt, G., Line, E., McDonald, D., McDonald, S., & Watt, H. (2012). Parental phonological memory contributes to prediction of outcome of late talkers from 20 months to 4 years: A longitudinal study of precursors of specific language impairment. *Journal of Neurodevelopmental Disorders*, 4, 3. <https://doi.org/10.1186/1866-1955-4-3>
- Carson, C. P., Klee, T., Carson, D. K., & Hime, L. K. (2003). Phonological profiles of 2-year-olds with delayed language development: Predicting clinical outcomes at age 3. *American Journal of Speech-Language Pathology*, 12, 28–39.
- Dale, P. S., Price, T. S., Bishop, D. V. M., & Plomin, R. (2003). Outcomes of early language delay: I. Predicting persistent and transient language difficulties at 3 and 4 years. *Journal of Speech, Language, and Hearing Research*, 46, 544–560.
- Feldman, H. M., Dale, P. S., Campbell, T. F., Colborn, D. K., Kurs-Lasky, M., Rockette, H. E., & Paradise, J. L. (2005). Concurrent and predictive validity of parent reports of child language at ages 2 and 3 years. *Child Development*, 76, 856–868. <https://doi.org/10.1111/j.1467-8624.2005.00882.x>
- Fernald, A., & Marchman, V. A. (2012). Individual differences in lexical processing at 18 months predict vocabulary growth in typically developing and late-talking toddlers. *Child Development*, 83, 203–222. <https://doi.org/10.1111/j.1467-8624.2011.01692.x>

- Fischel, J. E., Whitehurst, G. J., Caulfield, M. B., & DeBaryshe, B. (1989). Language growth in children with expressive language delay. *Pediatrics*, 83, 218–227.
- Hadley, P. A., & Holt, J. K. (2006). Individual differences in the onset of tense marking: A growth-curve analysis. *Journal of Speech, Language, and Hearing Research*, 49, 984–1000. [https://doi.org/10.1044/1092-4388\(2006/071\)](https://doi.org/10.1044/1092-4388(2006/071))
- Hadley, P. A., & Short, H. (2005). The onset of tense marking in children at risk for specific language impairment. *Journal of Speech, Language, and Hearing Research*, 48, 1344–1362. [https://doi.org/10.1044/1092-4388\(2005/094\)](https://doi.org/10.1044/1092-4388(2005/094))
- Henrichs, J., Rescorla, L., Schenk, J. J., Schmidt, H. G., Jaddoe, V. W. V., Hofman, A., . . . Tiemeier, H. (2011). Examining continuity of early expressive vocabulary development: The Generation R Study. *Journal of Speech, Language, and Hearing Research*, 54, 854–869. [https://doi.org/10.1044/1092-4388\(2010/09-0255\)](https://doi.org/10.1044/1092-4388(2010/09-0255))
- Lee, J. (2011). Size matters: Early vocabulary as a predictor of language and literacy competence. *Applied Psycholinguistics*, 32, 69–92. <https://doi.org/10.1017/S0142716410000299>
- Levickis, P., Reilly, S., Girolametto, L., Ukoumunne, O. C., & Wake, M. (2014). Maternal behaviors promoting language acquisition in slow-to-talk toddlers: Prospective community-based study. *Journal of Developmental & Behavioral Pediatrics*, 35, 274–281. <https://doi.org/10.1097/DBP.0000000000000056>
- Lyytinen, P., Eklund, K., & Lyytinen, H. (2005). Language development and literacy skills in late-talking toddlers with and without familial risk for dyslexia. *Annals of Dyslexia*, 55, 166–192.
- Moyle, M. J., Weismer, S. E., Evans, J. L., & Lindstrom, M. J. (2007). Longitudinal relationships between lexical and grammatical development in typical and late-talking children. *Journal of Speech, Language, and Hearing Research*, 50, 508–528.
- Paul, R. (1993). Patterns of development in late talkers: Preschool years. *Communication Disorders Quarterly*, 15(1), 7–14. <https://doi.org/10.1177/152574019301500103>
- Paul, R., Looney, S. 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.
- Petinou, K., & Spanoudis, G. (2014). Early language delay phenotypes and correlation with later linguistic abilities. *Folia Phoniatrica et Logopaedica*, 66, 67–76. <https://doi.org/10.1159/000365848>
- Peyre, H., Bernard, J. Y., Forhan, A., Charles, M.-A., De Agostini, M., Heude, B., & Ramus, F. (2014). Predicting changes in language skills between 2 and 3 years in the EDEN mother–child cohort. *PeerJ*, 2, e335. <https://doi.org/10.7717/peerj.335>
- Reilly, S., Wake, M., Ukoumunne, O. C., Bavin, E., Prior, M., Cini, E., . . . Bretherton, L. (2010). Predicting language outcomes at 4 years of age: Findings from Early Language in Victoria Study. *Pediatrics*, 126, e1530–e1537. <https://doi.org/10.1542/peds.2010-0254>
- Rescorla, L. A., & Schwartz, E. (1990). Outcome of toddlers with specific expressive language delay. *Applied Psycholinguistics*, 11, 393–407. <https://doi.org/10.1017/S0142716400009644>
- Thal, D., Tobias, S., & Morrison, D. (1991). Language and gesture in late talkers: A 1-year follow-up. *Journal of Speech and Hearing Research*, 34, 604–612.
- Vuksanovic, J. R. (2015). Relationship between social interaction bids and language in late talking children. *International Journal of Speech-Language Pathology*, 17, 527–536.
- Whitehurst, G. J., Smith, M., Fischel, J. E., Arnold, D. S., & Lonigan, C. J. (1991). The continuity of babble and speech in children with specific expressive language delay. *Journal of Speech and Hearing Research*, 34, 1121–1129.
- Williams, A. L., & Elbert, M. (2003). A prospective longitudinal study of phonological development in late talkers. *Language, Speech, and Hearing Services in Schools*, 34, 138–153.