

Community Paediatric Review

Current issues in children's health and development



Centre for Community Child Health

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Language development

Developing language skills is one of the most important tasks of early childhood; language is at the foundation of all of the skills that children need for life. When children have a language impairment, they can struggle to make and keep friends, negotiate new experiences and to self regulate. Long-term, children with a language impairment can have poorer mental health, poorer education and employment outcomes, and are more likely to engage in criminal activity and other anti-social behaviour.

For some children, developing good language skills does not come easily or occur at the same rate as their age peers. For all children, progress towards developing language skills can have considerable natural variability. Connecting children who are experiencing communication problems with the right support and interventions can have a significant impact on their lives. However, the combination of variable natural development and lengthy waiting lists can make referring children and families for additional therapy and assessment complex.

Australian children and language development

The Australian Early Development Census or AEDC (formerly Australian Early Development Index or AEDI) provides a developmental snapshot for over 96 per cent of Australian children who are in their first year of full-time school. Five domains of development are measured: physical health and wellbeing, language and cognitive skills (school-based), communication skills and general knowledge, social competence, and emotional maturity. Of these five, the language and cognitive skills (school-based), and communication skills and general knowledge domains provide a good indication of how Australian children are going with their language development.



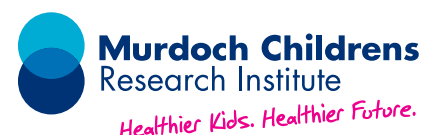
The AEDC was first conducted nationally in 2009, for the second time in 2012, and most recently in 2015. The most recent data that have been released are from the 2012 cohort of children.

In 2012, the AEDC measured 289,973 children from 577 communities all across Australia (Department of Education, 2014). Of these children, 17.4 per cent of children were listed as developmentally vulnerable in the language and cognitive skills domain, equating to 47,636 children. In the communication skills and general knowledge domain 25.3 per cent of children were developmentally vulnerable, which equates to 69,153 children (Department of Education, 2014).

The AEDC does not provide data for individual children, but collects data for groups of children by local government area. In both the language and cognitive skills and the communication skills and general knowledge domains, the highest proportions of developmentally vulnerable children were in remote, very remote and outer regional areas of Australia.

Having data segmented by geographical area allows researchers to determine which communities have the highest concentration of children who are developmentally vulnerable

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or at risk across particular developmental domains. The data on the concentration of developmentally vulnerable children in a particular area can then be overlaid with the location of appropriate specialist services that are available in that area.

Recent research from Charles Sturt University considered where paediatric speech and language professionals are, compared to the geographical areas with the highest concentrations of children who are developmentally vulnerable in the language and cognitive skills (school-based), and general knowledge and communication domains (McCormack & Verdon, 2015).

Their study found 27 communities across Australia that were home to children with high levels of developmental vulnerability in the language and cognitive skills (school-based) domain – none of these communities had access to paediatric speech language pathology services (according to Speech Pathology Australia records).

In the 27 local government areas with high rates of developmental vulnerability in the communication skills and general knowledge domain, just three had access to paediatric speech language pathology services when cross checked with Speech Pathology Australia records; these three local government areas were all in regional or metropolitan Australia.

Language disorders and speech disorders

Difficulties with language development can include issues with receptive language, expressive language, or both. A child with a receptive language disorder may have trouble understanding what people say; a child with an expressive language disorder is likely to struggle with sharing their thoughts and feelings because they cannot find the words. A speech disorder is when a child has trouble producing speech sounds correctly, hesitates or stutters when speaking (National Institutes of Health, 2010).

An audiology assessment is recommended whenever there are language development delays – whether receptive or expressive – to ensure that the delays are not related to problems with children’s hearing.

Late talking

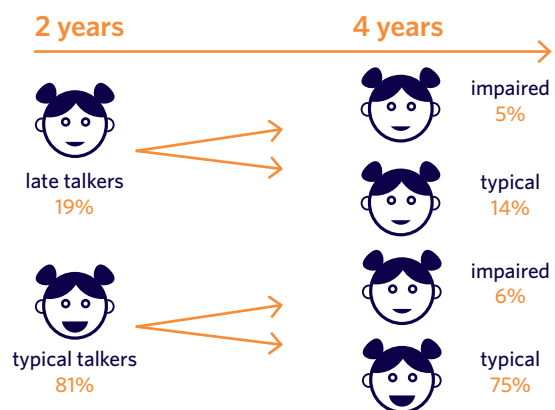
Language difficulties, including late talking, are one of the most common childhood developmental problems, reported in almost 20 per cent of children aged between 2 and 4 (Levickis & McKean, 2014).

One of the most commonly used tools for assessing whether children are late to develop expressive language – or are late talkers – is the Words and Sentences Form of the MacArthur Communicative Development Industries Scale (Reilly et al, 2014). The tool asks parents to record the words that their child uses spontaneously, and whether they combine words to make phrases.

It defines late talkers as those children who, at age 2 years:

- have fewer than 50 words in their vocabulary
- use no words in combined phrases, or
- achieve a score that is equivalent to the bottom 10 per cent of the assessment sample.

However, because of the natural variability in child language development, not all children who are assessed as late talkers at 2 years will continue to have language difficulties at 4 years, and some of the children who are developing language typically at 2 years, may be considered impaired at 4 years.



Language pathways between 2 and 4 years (Reilly et al, 2014).

'Girl' graphic courtesy of Peacock Dream, The Noun Project

In light of this natural variability, and the severe imbalance between where children with language disorders are located and where speech language pathology services are located, the Early Language in Victoria Study (ELVS) set out to determine:

- the number of children who are late talkers at 2 years old
- family, child or environmental factors that are associated with late talking
- the number of late talkers whose language difficulties persist at 4 years old.

Late talkers at 2 years old

ELVS monitored the language development of 1,910 children using parent surveys and language assessments and found:

- The average spoken vocabulary size at 2 years old was 261 words.
- There was significant variation in the number of words spoken; some children had 600 words and some had none.
- On average, girls spoke more words than boys; girls averaged 288 words, and boys averaged 235 words.
- In total, 17 per cent of children used no word combinations.
- Around 14 per cent of children spoke few words in total and had no word combinations.

- 19 per cent of children were assessed at a level equivalent to the bottom 10 per cent on the MacArthur Communicative Development Industries scale, meaning that 19 per cent of children in ELVS were considered to be late talkers. (Reilly et al, 2014.)

The children were followed up at 4 years old, where ELVS found:

- Of the 19 per cent of children in the sample who were classified as late talkers at 2 years old, almost 70 per cent had typical language development by 4 years old, indicating that late talking at 2 years is not a reliable indicator for later language difficulties.

More than 7 per cent of the children considered to have typical language development at 2 years old had a low level of language at 4 years old. (Reilly et al, 2014.)

These results point to the difficulty in reliably detecting those children who will turn out to have persistent language problems, and the clinical challenge of identifying those children who would benefit from early intervention. ELVS found no family, child or environmental factors that were associated with early language delay (Reilly et al, 2009).

Intervening with a late talking child

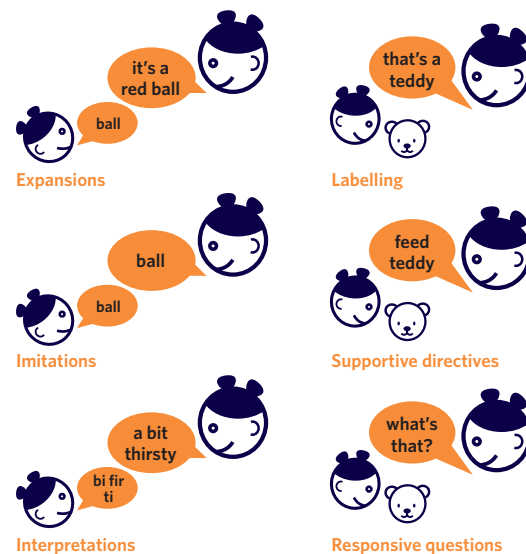
There is natural variability in language development, and data that show that the majority of late talking resolves between 2 and 4 years. However, for those children whose late talking does not resolve and who go on to have persistent language difficulties, there is a small amount of evidence that suggests earlier detection could lead to more timely speech and language interventions, and fewer children going on to require specialised intervention at school age (Wake, Tobin, Girolametto et al, 2011).

The Let's Learn Language study identified a group of 18-month-old toddlers who were at risk of late talking as they spoke no words or very few words at 18 months (Wake, Tobin, Girolametto et al, 2011). The study monitored the language development of these 251 toddlers between 18 and 36 months, while also observing the mothers' use of six types of responsive behaviours, in order to determine which behaviours, if any, were associated with language development in toddlers who appeared to be late talkers (Levickis & McKean, 2014).

Let's Learn Language found that the more that mothers used expansion, imitation and responsive questioning behaviours, the more the child was able to understand others and to express themselves. The study also found that greater use of expansion behaviours was associated with greater improvement in the child's language between 2 and 3 years.

Promoting language development

Delays in language development are associated with poorer school and academic performance, more limited employment opportunities in later life, and social and emotional difficulties (Wake, Tobin, Girolametto et al, 2011). Yet language difficulties in early childhood are very common, and there is natural variability in the rate at which children develop expressive and receptive language skills.



The six types of response behaviours studied (Levickis & McKean, 2014)

'Girl' graphic courtesy of Peacock Dream, 'bear' graphic courtesy of Kim Eriksson, The Noun Project

Child and family health nurses can safely reassure parents that expressive language delay – late talking – often resolves between the ages of 2 and 4. Late talking *on its own* is not generally indicative of serious developmental problems (Levickis & McKean, 2014), but careful monitoring is advisable, as well as working with the parents to improve the child's environmental language opportunities.

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Stuttering preschool children

Stuttering in the preschool years can be anxiety-provoking for parents, but does it necessarily indicate long-term social and emotional issues for the stuttering child? The Centre of Research Excellence in Child Language has examined stuttering in detail through the Early Language in Victoria (ELVS) study.

The impacts of stuttering

Stuttering is a well-known communication difficulty characterised by interruptions to speech. It can involve repeating sounds or words, prolonging sounds, 'blocks' or trouble making any sounds, as well as non-verbal signs of tension such as blinking or grimacing. A child who stutters may feel that their words 'get stuck'.

Stuttering usually starts in the preschool years. Stuttering that persists into adolescence or adulthood can affect psychological health through social phobias, educational underachievement and reduced social wellbeing.

Despite its relatively high profile, there is limited evidence in regards to:

- why or how stuttering develops
- why it sometimes resolves on its own
- which children will recover naturally.

Although previous studies have been useful in identifying when stuttering often starts, they only included children who stuttered from 3 years of age, toddlers who had been clinically diagnosed with a stutter, and/or whose parents had sought professional help for the child's stutter – rather than all children of a certain age.

The stuttering section of the Early Language in Victoria Study (ELVS) aimed to increase the understanding of stuttering. ELVS studied:

- how many children begin stuttering by 4 years of age
- the factors that predict stuttering onset by 4 years
- how many children recover naturally within a year of starting to stutter
- the factors that may predict stuttering recovery.

Key findings

The study monitored the speech of 1,619 children from 2 to 4 years of age using regular language assessments and parent surveys.

Psychosocial health and language skills of stuttering and non-stuttering 4 year olds

The study found that stuttering:

- affected as many as 11 per cent of children by the age of 4 years old
- started, for the majority of children, between 2 and 3 years of age



- usually developed quite quickly (over one to three days)
- usually started when children began combining words.

With respect to predictive factors, the study found that:

- Stuttering was more likely where a child was male, a twin, or had a mother who had a higher level of education.
- Recovery within 12 months of onset was more likely where a child was male, their stuttering at onset was milder, or didn't involve the repetition of whole words.

As few as 6 per cent of children recovered from stuttering within 12 months of starting.

The most surprising finding however, was that 4 year olds who stuttered fared just as well as, if not better than, their non-stuttering peers.

The study found that children who stuttered:

- had stronger language and non-verbal cognitive skills
- were not more shy or withdrawn prior to or after stuttering onset
- did not seem to experience any of the anticipated negative social, behavioural and emotional effects.

Implications for policy and practice

Health and education professionals can reassure families that preschool stuttering doesn't necessarily threaten a child's health or education outcomes.

Despite their clear speech difficulty, the stuttering toddlers in this study had stronger language and nonverbal cognitive skills, as well as better psychosocial development, compared to their non-stuttering peers. They were also not more shy or withdrawn; this challenges long-held beliefs about the impact of stuttering. While this is true for the majority of preschool children there may be some exceptions to this. Further, children whose stuttering persists into primary school (or beyond) may find it more debilitating.

It may be necessary to re-examine when it is best for a child to commence stuttering therapy.

It was previously thought that most children who stop stuttering on their own do so within 12 months of starting. On this basis, the recommendation has been that therapy is warranted once a child had been stuttering for 12 months – unless they are distressed, unwilling to communicate or their parents are highly concerned, in which case stuttering therapy should start sooner.

This study shows that very few children recover within 12 months. Delaying therapy might enable more stuttering children to recover naturally. Further research is needed to confirm the findings of this study, but these findings indicate that families may not always need to enrol their stuttering preschool child in potentially expensive therapy, as well as allocating limited resources to those children most at risk of having a persistent stutter.

Stuttering is twice as common as previously thought and should be monitored.

More than 11 per cent of children in the study started stuttering by 4 years of age; the generally previously accepted rate was about 5 per cent. It's unlikely that stuttering rates have increased between the time these studies were undertaken;

more likely is that this study simply provides a more accurate picture of incidence due to the representativeness of its sample and the earlier recruitment of children. Nevertheless, the fact that stuttering affects more than one in 10 preschoolers suggests that, while not a cause for automatic concern, preschool-age children who begin stuttering should be assessed by a speech pathologist to determine their individual need for treatment.

Adapted from

Kefalianos, E. (2015) The impacts of stuttering, Centre of Research Excellence in Child Language, Research Snapshot 5. https://www.mcri.edu.au/sites/default/files/media/documents/cres/150415_rs5_stuttering1_final.pdf

Full article details

Reilly, S., Onslow, M., Packman, A., Wake, M., Bavin, E., Prior, M., Eadie, P., Cini, E., Bolzonello, C., Ukoumunne, O.C. (2009). Predicting stuttering onset by the age of 3 years: A prospective, community cohort study. *Pediatrics*, 123, 270-277.

Reilly, S., Onslow, M., Packman, A., Cini, E., Conway, L., Ukoumunne, O.C., Bavin, E.L., Prior, M., Eadie, P., Block, S., Wake, M. (2013). Natural history of stuttering to 4 years of age: A prospective community-based study. *Pediatrics*, 132(3), 460-467.

Stuttering and anxiety

We know that adolescents and adults who stutter are typically more anxious than their non-stuttering peers. There is also a perception that people who stutter do so because they are shy or nervous. But is this true? Does an anxious disposition trigger the development of stuttering, or is anxiety a by-product of stuttering? By better understanding the relationship between stuttering and anxiety, we may be able to identify if and when children who stutter are placed at greater risk of developing anxiety.

The combination of your genes, temperament and the environment you grow up in all affect your risk of developing anxiety. Temperament refers to your innate personality and is the way a person reacts to and interacts with their environment, for example how children manage new experiences. Children who have an anxious personality may exhibit shyness and be 'behaviourally inhibited'. This means they are reluctant to explore and tend to avoid new experiences. Anxious children are also described as having a 'difficult' personality where they are nervous, tense, worried, not as happy as other children and/or have difficulty enjoying themselves.

To date there has been limited research exploring the relationship between personality, anxiety and stuttering in children.

Aims

The stuttering component of the Early Language in Victoria Study (ELVS) aimed to determine if there were differences in

personality between stuttering and non-stuttering preschoolers, particularly those personality characteristics considered to be risk factors for the later development of anxiety.

Unlike previous studies, ELVS measured temperament characteristics prior to the onset of stuttering as well as over time. The study also involved a more community-representative sample of toddlers.

Personality traits of stuttering and non-stuttering 2 to 4 year olds**Key findings**

This study used parent surveys to annually monitor the personality characteristics of 1,444 stuttering and non-stuttering 2 to 4 year olds.

It found that:

- There were no consistent differences in personality between stuttering and non-stuttering preschool children after stuttering onset.
- Stuttering preschool children did not show more of the personality characteristics associated with anxiety.

Implications for policy and practice

Health professionals can reassure families that stuttering is not related to having particular temperament traits.

The stuttering preschool children in this study displayed similar personality characteristics to their non-stuttering peers both

before and after they started to stutter. This finding challenges the common misconception that people who stutter do so because they are shy or nervous. These findings also support current treatment approaches for the preschool population that focus on reducing stuttering, unlike treatment approaches for adolescents and adults that also address any secondary mental health issues.

Stuttering alone in a preschool child is not a risk factor for developing anxiety.

The stuttering preschool children in this study did not display any personality characteristics associated with anxiety. This suggests that the clinical anxiety experienced by some adolescents and adults who stutter develops after the preschool years. Given that personality can be influenced by our experiences, the anxiety seen in adolescents and adults who stutter are most likely in response to repeated exposure to negative social experiences, perhaps during the school years.

Health professionals must still consider individual cases.

This study recruited preschool children from the general population. This means that while on average we can make recommendations, health professionals need to assess each stuttering preschooler as they present, mindful that some may indeed be negatively affected by their stuttering.

Adapted from

Kefalianos, E. (2015) Stuttering and anxiety, Centre of Research Excellence in Child Language, Research Snapshot 6.

Full article details

Kefalianos E., Onslow M., Block S., Menzies R., Reilly S. (2012). Early stuttering, temperament and anxiety: Two hypotheses. *Journal of Fluency Disorders*, 37(3), 151-163.

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About the Early Language in Victoria Study

In 2003, maternal and child health nurses invited families to join the Early Language in Victoria Study (ELVS) when families brought their child for a routine well-child check at 8 months of age. Around 80 per cent of Victorian babies attend this check and nurses were able to recruit 1,910 children. Children were recruited from six local government areas in metropolitan Melbourne that represent a mix of socioeconomic status. Parents completed a survey about family demographics and their child's language and speech development, each year for eight years.

When the children turned 2, 1,619 families agreed to participate in the stuttering component of ELVS. These families were asked to contact the research team if their child started to exhibit stuttering behaviours. A speech pathologist then interviewed the parents who made contact, confirming that 181 children had started stuttering. The parents of the 1,619 children in the study completed the Short Temperament Scale (STS) survey each year around their child's birthday. As autism and low language levels are associated with particular personality characteristics, 175 children with these conditions were excluded from the study examining personality differences between children who do and do not stutter. The current study's findings about the relationship between stuttering and anxiety are therefore based on 1,444 families.

These articles have been adapted from two Centre of Research Excellence-Child Language Research Snapshots: *The impacts of stuttering*, https://www.mcri.edu.au/sites/default/files/media/documents/cres/150415_rs5_stuttering1_final.pdf, and *Stuttering and anxiety*, https://www.mcri.edu.au/sites/default/files/media/documents/cres/150415_rs6_stuttering2_final.pdf

About the Centre for Community Child Health

The Royal Children's Hospital Centre for Community Child Health (CCCH) has been at the forefront of Australian research into early childhood development and behaviour since 1994.

The CCCH conducts research into the many conditions and common problems faced by children that are either preventable or can be improved if recognised and managed early.

Community Paediatric Review

Community Paediatric Review supports health professionals in caring for children and their families through the provision of evidence-based information on current health issues.

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