



Short communication

## Language skills of children during the first 12 months after stuttering onset



Amy Watts<sup>a,c,\*</sup>, Patricia Eadie<sup>d</sup>, Susan Block<sup>e</sup>, Fiona Mensah<sup>c,f</sup>, Sheena Reilly<sup>a,b</sup>

<sup>a</sup> Murdoch Childrens Research Institute, Royal Children's Hospital, Flemington Rd., Parkville, Victoria 3052, Australia

<sup>b</sup> Griffith University, Parklands Drive, Southport, Queensland 4222, Australia

<sup>c</sup> Department of Paediatrics, University of Melbourne, Victoria 3010, Australia

<sup>d</sup> Melbourne Graduate School of Education, University of Melbourne, Level 4, 100 Leicester St, Victoria 3010, Australia

<sup>e</sup> Department of Human Communication Sciences, School of Allied Health, Faculty of Health Sciences, La Trobe University, Bundoora, Victoria 3086, Australia

<sup>f</sup> Clinical Epidemiology and Biostatistics Unit, Murdoch Childrens Research Institute, Royal Children's Hospital, Flemington Rd., Parkville, Victoria, 3052 Australia

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### ABSTRACT

**Purpose:** To describe the language development in a sample of young children who stutter during the first 12 months after stuttering onset was reported.

**Methods:** Language production was analysed in a sample of 66 children who stuttered (aged 2–4 years). The sample were identified from a pre-existing prospective, community based longitudinal cohort. Data were collected at three time points within the first year after stuttering onset. Stuttering severity was measured, and global indicators of expressive language proficiency (length of utterances and grammatical complexity) were derived from the samples and summarised. Language production abilities of the children who stutter were contrasted with normative data.

**Results:** The majority of children's stuttering was rated as mild in severity, with more than 83% of participants demonstrating very mild or mild stuttering at each of the time points studied. The participants demonstrated developmentally appropriate spoken language skills comparable with available normative data.

**Conclusion:** In the first year following the report of stuttering onset, the language skills of the children who were stuttering progressed in a manner that is consistent with developmental expectations.

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## 1. Introduction

### 1.1. The emergence of language and stuttering

Stuttering typically emerges in the pre-school years as children are experiencing substantial growth in their language and are beginning to combine words to form short sentences (Packman & Attanasio, 2004). Stuttering occurs during the process of planning utterances and selecting and using sounds to form words and sentences (Watkins, 2005). An investigation of the

\* Correspondence to: Policy, Equity & Translation Group, Population Health Theme, Murdoch Childrens Research Institute, Royal Children's Hospital, Flemington Road, Parkville, Melbourne 3052, Australia.

E-mail address: amy.watts@mcri.edu.au (A. Watts).

extent to which the emergence of stuttering in some children is related to their developing language is therefore warranted (Watkins, 2005).

The onset of stuttering is difficult to describe accurately because very little early, prospective data exists (Yairi & Ambrose, 2013). Information is most commonly gleaned from parents several months after they first notice the beginning of stuttering in their child (Yairi & Lewis, 1984). Thus objective data about stuttering onset is limited in the published literature. Traditionally, stuttering has been described as a disorder that becomes more severe as time progresses, but research involving longitudinal tracking of children challenges this notion (Yairi & Ambrose, 2005). Consequently, closely tracking stuttering development and monitoring the changes that occur in this early period is important and requires further attention.

### 1.2. The language skills of children who stutter

There has been considerable interest in the language ability of children who stutter and whether this is different from that of children who do not stutter. However, there is little empirical evidence and the existing information is inconsistent.

That children who stutter have less proficient language skills than their normally fluent peers is a common contention in the literature (Ntourou, Conture, & Lipsey, 2011). Many studies have demonstrated that children who stutter have lower scores on standardised language assessments and measures obtained from language samples (e.g. Mean Length of Utterance (MLU)) when compared to children who do not stutter (e.g. Bernstein Ratner & Silverman, 2000; Byrd & Cooper, 1989; Ryan, 1992). Furthermore, in a meta-analytic review of empirical studies of language abilities, Ntourou et al. (2011) found that children who stutter are typically outperformed by children who do not stutter.

In contrast, Nippold (2012) published a review of the literature and concluded that the evidence does not adequately demonstrate that children who stutter are more likely to have language deficits than their fluent peers. Nippold (2012) argued that many studies revealed that children who stutter have language skills within normal limits, and showed a range of language abilities comparable to children who do not stutter (e.g. Anderson & Conture, 2000; Kadi-Hanifi & Howell, 1992; Kloth, Janssen, Kraaimaat, & Brutton, 1998; Watkins & Yairi, 1997; Watkins, Yairi, & Ambrose, 1999; Yairi, Ambrose, Paden, & Throneburg, 1996).

Several studies, including Kadi-Hanifi and Howell (1992) and Kloth et al. (1998), have analysed the spontaneous speech-language samples of both children who stutter and non-stuttering children. In the Kadi-Hanifi and Howell (1992) study, the developmental changes in MLU and syntax were similar for both groups, and importantly, consistent with that which would be expected in normal language development. Similarly, in Kloth et al. (1998) prospective study exploring the development of linguistic skills of children who were at high risk of stuttering, the researchers concluded that the children who began to stutter “followed the same pattern than that of the non-stuttering control group” (p.224). MLU was derived from transcripts of mother-child interactions and was used as one of the measures of expressive language skill. Kloth et al. (1998) reported no significant group differences in MLU both before the onset of stuttering and one year later.

Language production abilities of preschool children who stutter were also examined by Watkins and Yairi (1997). Samples collected from 32 children near to stuttering onset, and then again one year later, were analysed and MLU was calculated. In addition, standardised language assessments were administered at each time point (Yairi et al., 1996). Each child's performance was compared to normative data and results indicated that the majority of children had age-appropriate language skills. Similarly, Watkins et al. (1999) examined the language transcripts of 84 preschool children who had started to stutter and found that the average MLU and grammatical complexity scores were close to developmental expectations. A measure of grammatical complexity was also derived from conversational samples in Ryan's (2000) study of 20 stuttering preschool children and a nonstuttering control group. No significant difference in grammatical complexity was found and both groups had scores that were well within normal limits (Ryan, 2000). In summary, these studies support the view that children who stutter have developmentally appropriate language abilities.

It has also been suggested that advanced language development may influence stuttering onset (Starkweather, 1987, 1991). For example, strong language skills in children who stutter were noted by Watkins (2005) in their discussion of the longitudinal research from the University of Illinois Stuttering Research Program. A large cohort of young children who stutter were prospectively tracked and Watkins (2005) noted that that children often performed at or above normative expectations on measures of expressive language ability such as MLU and grammar. More recently, in the longitudinal community study conducted by Reilly et al. (2009) stuttering onset was associated with advanced language development. Reporting on a cohort of 137 children who began to stutter up to the age of 3 years, Reilly et al. (2009) found that children who stutter had larger vocabularies than nonstuttering children at onset. Importantly, this finding was based on information collected about the children's early communication and language before they started to stutter, ensuring that measures of language were not confounded by the influence of the onset of stuttering itself. Interestingly, this same cohort of children who stutter, as a group, also achieved higher scores than their nonstuttering peers on standardised measures of early communicative behaviours, expressive vocabulary, and receptive and expressive language at 2–5 years of age (Watts, Eadie, Block, Mensah, & Reilly, 2015). These findings contradict some of the previous research since they suggest that in some children it may be stronger, not weaker, language skills that are a risk factor for stuttering onset (Watkins, 2005).

Although there has been longstanding research interest in the language ability of children who stutter, there is a range of findings in the literature. Studies have utilised different, and not necessarily robust, methodologies, there is variability in the size of the sample used, the inclusion or not of a control group, the age and gender of participants, the time between stuttering onset and commencement of data collection, the severity of participants' stuttering, the data collection method

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