



# The production of figurative language in typically developing children and Williams Syndrome<sup>☆</sup>

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## ABSTRACT

The current study investigated the development of figurative language production, including different types of figurative expressions, during a fictional narrative in 20 typically developing (TD) children and 20 children with Williams syndrome (WS) aged 7–18 years old. In contrast to previous studies, developmental trajectories showed that (1) the production of figurative expressions in TD children did not change with age, (2) the WS group produced a similar amount of figurative expressions in comparison to the TD group, (3) but regression analyses showed that, out of a number of verbal and non-verbal standardised background measures, synonymy knowledge was the best predictor for figurative language production scores in WS. Both the clinical and theoretical implications of these results are discussed.

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## 1. Introduction

Figurative language is not only used within poetics but it forms a large part of daily conversations as well as conceptual thinking (Lakoff & Johnson, 1980). There are many types of figurative language, including: metaphors, similes, metonyms, irony, personifications, idioms, oxymorons, and hyperboles. Although definitions may slightly vary, metaphors link two unrelated concepts based on the fact that the concepts share some common ground (e.g. “Your car is a bullet”). A simile is similar to a metaphor with the exception that the comparison between the two concepts is made explicit (e.g. “Your car is like a bullet”). A metonymy also compares two concepts that share some common ground, but the concepts belong to the same conceptual or semantic category (e.g. “The palace gave a speech”). Irony refers to expressions where the speaker means the opposite of what is said (e.g. “I really like thunderstorms”). A hyperbole is an exaggeration and is generally used in a humorous or sarcastic manner (e.g. “I have a million things to do”). A personification extends human like attributes to anything nonhuman (e.g. “The leaves danced in the wind”). The meaning of an idiom is fixed and cannot be obtained from a literal interpretation (e.g. “to beat around the bush”). Finally, an oxymoron is when two opposite words or statements are used at the same time (e.g. “a small giant”). Although there are more types of figurative expressions that can be found in the psychological literature (e.g. Roberts & Kreuz, 1994), most research on figurative language has focussed on comprehension of these figurative expressions, especially metaphors. Recently studies have started to look at the use of figurative expressions, mainly in educational settings (Jakobson & Wickman, 2007; Pramling, 2010) where it has been found that figurative language is important for the understanding of new and complex phenomena (Winner, Engel, & Gardner, 1980).

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These studies have shown that children use metaphors spontaneously and frequently within educational settings. In addition, [Corts and Pollio \(1999\)](#) found that figurative language and gestures occurred in random bursts in the teachers' language use. However, as figurative language is part of daily conversations, it is important to investigate the use of figurative language in a variety of settings, including those outside education. For example, [Billow \(1981\)](#) investigated the use of metaphors in young children's free play and found that children as young as 2 years old used metaphors. In addition, the use of metaphors declined as children got older ([Billow, 1981](#)). However, other studies have found that the use of figurative expressions only occurs in older children. A study by [Pollio and Pollio \(1974\)](#) investigated metaphor production in 174 children from the third-, fourth-, and fifth-grade employing three different production tasks (a composition task in which children were asked to write a story about an imaginary topic, a multiple sentences task in which children were asked to use words in as many sentences as possible and a comparison task in which children were asked to compare two unrelated words). Only children aged 8 years old were able to produce a substantial number of figurative expressions ([Pollio & Pollio, 1974](#)). Finally, [Katis and Selimis \(2009\)](#) investigated metaphor production in children's personal narratives. They found that metaphor production increases over development as the use of metaphors was low in 3-year-olds but increased as children were older. However, most of these studies have only focussed on metaphor production and have not investigated the use of a wide variety of figurative expressions in non-educational settings.

Williams Syndrome (WS) is a rare neurodevelopmental disorder which affects about 1 in 20,000 live births ([Morris & Mervis, 2000](#)). Cognitively, individuals with WS show a general developmental delay with IQ scores ranging from 50 to 70 ([Donnai & Karmiloff-Smith, 2000](#)). However, face-processing, phonological processing, and language abilities are generally better in contrast to the weakness in visuo-spatial construction and number abilities ([Mervis et al., 2000](#)). Several studies have shown that figurative language comprehension is impaired in individuals with WS, including: sarcasm ([Karmiloff-Smith, Klima, Bellugi, Grant, & Baron-Cohen, 1995](#)), idioms ([Mervis, Robinson, Rowe, Becerra, & Klein-Tasman, 2003](#)), irony ([Sullivan, Winner, & Tager-Flusberg, 2003](#)), similarity statements ([Thomas et al., 2010](#)), metaphors and metonyms ([Annaz et al., 2009](#)). Yet, the fact that individuals with WS are very sociable but show an uneven cognitive profile allows the investigation of which cognitive abilities are not only related, but also necessary for successful figurative language abilities (see [Karmiloff-Smith & Thomas, 2003](#) for a discussion). For example, a recent study by [Rundblad, Annaz, and Van Herwegen \(in preparation\)](#) has shown that the development of lexicalised metaphor and metonymy comprehension was delayed in children with WS when performance was plotted against chronological age. However, when performance scores were plotted against mental age equivalent scores on a vocabulary comprehension task there were no differences for rate or onset of development between the two groups for either metaphor or metonymy comprehension. This finding suggests that semantic abilities are a good predictor for metaphor and metonymy comprehension ([Rundblad et al., in preparation](#)). The idea that word knowledge is a good predictor for figurative language comprehension is supported by studies investigating metaphor comprehension in children with autism ([Norbury, 2005](#)), as well as metaphor and metonymy comprehension in typically developing individuals ([Rundblad & Annaz, 2010](#)). However, thus far no studies have investigated the relationship between word knowledge and figurative language production.

The current study investigated the development of figurative language production in both typically developing children and children with Williams syndrome. The current study is innovative in that it explored the production of different figurative expressions in a narrative task and that it examined the relationship between word knowledge and the production of figurative expressions. Due to the fact that previous studies have shown that individuals with WS are impaired in figurative language comprehension and that generally language comprehension precedes production, it was predicted that children with WS would produce fewer figurative expressions in relation to typically developing children. In addition, as previous studies have suggested that word knowledge is a significant predictor for figurative language comprehension ([Norbury, 2005](#); [Rundblad & Annaz, 2010](#)), the current study investigated the relationships between the production of figurative language and word knowledge. It was predicted that the use of figurative expressions would increase with increasing word knowledge. Since Williams Syndrome is quite rare and thus inclusion of a large number of participants required inclusion of participants from a large age range, a developmental trajectory approach was used in the current study (see [Thomas et al., 2009](#) for a discussion).

## 2. Methods

### 2.1. Participants

Twenty participants (10 male and 10 female) with Williams Syndrome (WS) between the ages of 7 and 18 years old were recruited via the Williams Syndrome Foundation, UK (mean chronological age (CA) in months: 131.05; SD = 33.239). All participants had been formally diagnosed with WS on the basis of a clinical examination and had a positive genetic fluorescent in situ hybridization (FISH) test confirming the genetic deletion implicated in WS. One child with WS had to be excluded from the data analyses as she was uncooperative and did not want to tell a story.

Twenty typically developing (TD) control participants (9 male and 11 female), who matched the WS group for chronological age (mean CA in months: 127.35, SD = 32.451;  $t(37) = -0.352, p = 0.727$ ), were recruited from schools in Greater London. Using a parental questionnaire, none of the TD participants were reported to have been diagnosed with language difficulties, overall learning difficulties or a developmental disorder. All participants had English as their first language.

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