

The Acquisition of Figurative Meanings

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1. Introduction

The last two decades have seen an increasing interest in *pragmatic development* – that is, the acquisition of the cognitive abilities enabling the expression and recognition of communicative intentions – partly due to the recognition of its foundational role in children’s language acquisition (Falkum, 2019b; Matthews, 2014b; Tomasello, 2008; Zufferey, 2015). One key issue in this growing research field is how children acquire the ability to use and understand figurative language, such as metaphor (1), metonymy (2) and irony (3):

(1) John will guide us to the top. He’s a *lion*.

(2) [One waitress to another]: The *chicken sandwich* in the corner wants another beer.

(3) [As the rain is pouring down]: *Oh, how I wish it would never stop!*

In uses of figurative language, the speaker-intended meaning typically goes far beyond that which is semantically encoded by the words and sentences used (e.g., *lion* metaphorically extended to mean ‘brave’ (1); *chicken sandwich* referring metonymically to ‘customers of chicken sandwiches’ (2), and ironical utterances which echo, and thereby express a dissociative attitude to, the thought that they literally express (3)). In order to arrive at the speaker-intended meaning of figurative uses, the hearer must rely on a combination of contextual cues, world knowledge and expectations of relevance raised by the utterance situation (Wilson & Sperber, 2012b), which makes their processing and comprehension seem like rather complex processes.

It is not surprising, then, that for a long time the ability to cope with figurative uses was taken to be a rather late acquisition (Asch & Nerlove, 1960; Demorest, Meyer, Phelps, Gardner, & Winner, 1984; Demorest, Silberstein, Gardner, & Winner, 1983; Winner, 1988/1997; Winner, Rosenstiel, & Gardner, 1976). For instance, Levorato and Cacciari (2002: 129) claimed that language processing before the age of 7 years is primitive and involves a “piece-by-piece elaboration of the linguistic input; children process language literally even when it does not make sense in the context”. In early work on the development of metaphor comprehension, this is referred to as the ‘literal stage’ (see Vosniadou, 1987 for a review). An implicit assumption underlying this early research is that children’s tendency for literal interpretations is a sign of immature, possibly even lack of, pragmatic abilities. In recent years, however, as a result of a growing body of evidence from a number of pragmatic tasks, including pre-linguistic communication, word learning and referential communication, the view of children’s early communication has changed from an assumption of poor pragmatic abilities to one of surprisingly well functioning pragmatics (see Matthews, 2014a). With regard to figurative language abilities, recent studies suggest that children’s poor performance in early studies is better explained by various confounding factors, such as missing contexts for metaphorical interpretations, lack of sufficient or relevant world knowledge to interpret figurative uses, and the use of cognitively demanding tasks (Pouscoulous, 2014; Vosniadou, 1987). Moreover, most developmental studies of figurative language comprehension rely on

explicit, offline measures rather than on implicit, less cognitively demanding measures such as eye-tracking, which has been shown to be useful in studying infants' pragmatic abilities (e.g., Southgate, Senju, & Csibra, 2007). Using more ecologically valid, age-appropriate and implicit tasks, the recent literature attests to an early ability with figurative uses, emerging during the preschool years for metaphor (Deamer, 2013; Di Paola, Domaneschi, & Pouscoulous, 2020; Pouscoulous & Tomasello, 2020; Özçalışkan, 2005) and metonymy (Falkum, Recasens, & Clark, 2017; Köder & Falkum, 2020), and in the early primary school years for irony (Dews et al., 1996; Glenwright & Pexman, 2010; Loukusa & Leinonen, 2008).

However, it is still true that children's success in tasks that involve figurative uses of language is to some extent fragile. While part of this difficulty could be attributed to task demands, there is clearly something about such uses which poses a specific challenge to children's acquisition. In particular, it seems that when children explicitly reflect on such uses, either spontaneously or when prompted to do so in an experimental setting, they tend to find them quite puzzling or focus on their literal interpretations. Consider the following attested examples:

- (4) Child (4;5): 'Mommy, why do you say you love me so much you could *eat me up*?' (Falkum, unpublished diary data)
- (5) Matthew (4;4) came home from school. I said: 'Wow, you've eaten your whole lunch box!' Matthew burst out laughing and said: 'Oh, mommy, you got that wrong – it's: you have eaten everything out of your lunch box!' (Nerlich, Clarke, & Todd, 1999: 375)
- (6) Child (3;4): 'But the helmet can't ride a bike!'. Uttered in response to *The helmet gets on her bike and rides home*. (Falkum et al., 2017: 98)

In (4) the child is puzzled by his mother's metaphorical use of *eat you up* to intensify her expression of affection towards him. The example from Nerlich et al. (1999) in (5) illustrates a literal interpretation of a metonymic use, and (6) is an example from Falkum et al. (2017) where the child has chosen the literal interpretation of a metonymic use of *the helmet* in *The helmet gets on her bike and rides home*, and objects to its reality.

Despite increasing research attention, the underlying causes of children's fragile performance on tasks involving figurative language comprehension are not yet well understood. The current Special Issue on The Acquisition of Figurative Meanings, based on a conference that was organized at the University of Oslo 5-6 October 2017, makes some headway in answering this question. The conference aimed to bring together leading figurative language researchers from within different disciplines – linguistics, theoretical and experimental pragmatics and developmental psychology – focusing on different tropes – metaphor, metonymy, and irony – to engage in discussions. This up-to-date volume of papers presents new results on figurative language understanding in typical development (**di Paola, Domaneschi & Pouscoulous**) and in a clinical population (**Panzeri, Giustolisi & Zampini**), using novel methodologies (**Pouscoulous & Tomasello; Whalen, Heard & Pexman; Köder & Falkum**), and focusing on the cognitive processes underlying figurative language abilities (**Colston**) and their precursors in development (**Clark**). We hope that it may serve as a reference, and set the agenda, for future research in this domain of children's cognitive and linguistic development.

2. The development of figurative language: metaphor, metonymy and irony

Precursors to figurative language

How do children learn to use expressions and sentences figuratively, and to understand such uses in communication? What are the underlying cognitive prerequisites?

Early developmental studies focused on the occurrence of spontaneous metaphors in the speech of preschool children (Billow, 1981; Gardner, Kircher, Winner, & Perkins, 1975; Winner, McCarthy, & Gardner, 1980; Winner, McCarthy, Kleinman, & Gardner, 1979). Examples are the 18-month-old who called a toy car a *snake* while twisting it up his mother's arm (Winner et al., 1979), or the 23-month-old who covered his ears while uttering 'Loud!' when he tasted a spicy curry for the first time (Falkum, 2019a). A matter of debate in this literature is whether such uses are instances of 'real metaphors', comparable to the ones produced by adults, or whether they are more appropriately analysed either as instances of *pretence*, that is, cases where the child chooses to call a familiar object something else in the context of pretend play (e.g., toy car renamed to *snake*), or as instances of *overextension*, where a child has overgeneralized the conventional meaning of the word to a broader category of referents on the basis of perceptual similarity (e.g., *loud* for spicy, *ball* for moon, *dog* for any moving animal) (Anglin, 1977; Bloom, 1975; Bowerman, 1980; E. V. Clark, 1973; Rescorla, 1980; Wałaszewska, 2011). However, in many cases it is hard to tell the difference between pretence or overextension and true metaphors. Consider the example of a 2-year-old who called her father a *kiwi* after he had shaved his head and the hair had just started growing back (Pouscoulous, 2011). Is this a case of overextension of the noun *kiwi* or a genuine metaphorical use of the word? It seems that the cognitive processes at work in overextension and pretence share common features with those enabling the production of fully-fledged metaphors, and analysing all of children's early spontaneous uses as cases of overextension or pretence may underestimate their metaphorical abilities (Pouscoulous, 2011; Vosniadou, 1987).

While metonymy as such has not received much focus in the developmental literature on spontaneous productions, there are several reports of early uses where children seem to exploit salient associative relations to get a referential or relational meaning across, similar to metonymic uses (Falkum, 2019a; Nerlich et al., 1999). Examples are *nose* for handkerchief (Werner & Kaplan, 1963), *cookie* for a bag that had previously contained a cookie (Huttenlocher & Smiley, 1987), and *nap* for crib blanket (Rescorla, 1980). These have an affinity with early uses of symbolic gestures, onomatopoeias, and other types of word coinage, which allow children to fill chronic vocabulary gaps (E. V. Clark, 2009; Falkum, 2019a). What is common to these early processes of 'metaphor' and 'metonymy' is that they are both inherently communicative: children choose expressions which they think 'fit' their target referents, or are saliently associated with them, and rely on this to guide the hearer to their intended meaning (Falkum, 2019a). In this way, they both seem to rely on some form of perspective-taking, although we need more research to pin down the extent to which it is involved in these early uses.

In this volume, Eve Clark (2020) explores the contributions of perspective-taking and pretend-play, both of which emerge in the second year, as precursors to the development of figurative language. Children's ability to take different conceptual perspectives on an object or event allow them to re-categorise it (e.g., waste basket vs. hat). Pretend-play also involves re-categorisation of the roles and objects involved (e.g., child vs. superhero, pen vs. sword., etc.). According to Clark, these abilities, which enable children to extend their uses of

conventional terms in communication, play an essential role in the emergence of figurative uses of language such as metaphor and metonymy.

As concerns irony, it also has an affinity with early pretence, although the role of pretence in irony is a matter of theoretical debate (H. Clark & Gerrig, 1990; Sperber, 1984; Wilson & Sperber, 2012a). Further, irony is often seen as closely related to humour and jokes (Gibbs, Bryant, & Colston, 2014), which develop early in children (Hoicka, 2014). While the mechanisms underlying irony and jokes may be distinct (Wilson, 2017), there are some common aspects that children seem to relate to from an early age. Consider, for instance, the common parental practise of ‘reverse psychology’. In a situation where a young child is unwilling to do something, the parent may tell the child, using a tone of voice that signals a joking attitude, *not* to perform the desired action (e.g. “Do not put on your jacket now...”). And in response, the child will typically delightfully disobey the parent’s instruction. In such cases the child has recognised the parent’s pretence, signalling that the parent dissociates herself from her utterance’s literal content. While these are not true cases of irony according to the standard echoic account (Wilson & Sperber, 2012a), they share some of irony’s features (characteristic tone of voice, dissociative attitude). We need more research to pin down this relation between pretence, jokes and irony in development.

What do we know about comprehension and production of full-fledged uses of figurative language as children grow older?

Metaphor

Most research on the development of figurative uses of language has focused on children’s abilities with metaphorical uses like ‘lion’ (see (1) above). Based on this research, we can broadly distinguish two hypotheses about the course of figurative language acquisition. *The literal stage hypothesis* arises from early work on metaphor development suggesting that the production of spontaneous ‘metaphors’ by young children decreases with age (Billow, 1981; Gardner et al., 1975), and that primary school children tend to have difficulties understanding metaphors (Asch & Nerlove, 1960; Billow, 1975; Winner et al., 1976). According to this hypothesis, metaphorical abilities develop in stages. The first stage takes place during the pre-school years and is a phase of creative linguistic behaviour. The second, ‘literal stage’, which takes place during the primary school years, involves a decrease in the production of figurative language and a tendency for literal interpretations, before a more sophisticated figurative language ability is attained during the third, and final stage in early adolescence. This hypothesis is largely discredited by recent research, which supports instead *the early onset hypothesis*, which attests to the presence of an early metaphorical competence, emerging during the pre-school years (Deamer, 2013; Gibbs, 1994; Gottfried, 1997; Keil, 1986; Pouscoulous, 2011; Vosniadou, 1987; Özçalışkan, 2005). Proponents interpret the lack of understanding found by the early studies as stemming in part from the complexity of the tasks used, which often required the children to paraphrase or explain the metaphorical meaning. Pre-school children perform better when asked to choose the correct metaphorical meaning from a set of alternatives (Di Paola et al., 2020; Waggoner & Palermo, 1989; Winner, Engel, & Gardner, 1980; Özçalışkan, 2005), to retell a story containing a metaphor (Pearson, 1990), or to act out metaphorical meanings (Vosniadou & Orthony, 1986). In this volume, Pouscoulous and Tomasello (2020) used a behavioural choice paradigm with young 3-year-olds to investigate their understanding of age-appropriate novel metaphors. Children were asked to give the experimenter one of two objects after hearing a metaphor (e.g. for *the dog with the brown shoes*, children had to choose between a toy dog with brown paws and one with a

brown bow). If children did not understand the metaphor, they would respond at chance levels. Results showed that children handed the experimenter the object targeted by the metaphor significantly above chance, suggesting that children have the necessary pragmatic inferencing skills to comprehend novel metaphors already at age 3.

In addition, Pouscolous and Tomasello (2020) identify two further abilities which they take to be necessary for metaphor comprehension: analogical perception (i.e., detecting similarities across objects) and coping with alternative naming (i.e., accepting two labels for the same referent) (cf. also Rubio-Fernández & Grassmann, 2016). In this volume, Di Paola et al. (2020) aim to determine the relative contribution of analogy perception and alternative naming abilities to the development of metaphor comprehension in 3- and 4-year-old children. Their results from a picture-matching paradigm showed that 3- and 4-year-olds could understand novel metaphors, and that better analogical perception and alternative naming abilities enhanced children's performance, suggesting that these play a role in the development of metaphor comprehension. Finally, their study shows that 3- and 4-year-olds have more difficulty interpreting metaphor than literal language. This finding carries over to children's interpretations of metonymy.

Metonymy

Metonymic uses involve the exploitation of salient associative relations for referential or other communicative purposes (cf. (2) above), and there is evidence that children exploit such relations from the earliest stages of communication. Only a handful of studies have investigated children's production and comprehension of metonymy experimentally, but they all attest to an early-emerging ability (Falkum et al., 2017; Köder & Falkum, 2020; Nerlich et al., 1999; Rundblad & Annaz, 2010; Van Herwegen, Dimitriou, & Rundblad, 2013). In an early metonymy comprehension study, Nerlich et al. (1999) gave children aged 2 to 5 years a forced-choice task with short stories containing a set of metonyms. For each metonym, children were shown two pictures, one depicting the literal interpretation, the other the metonymic interpretation, and were asked to point to the one that showed what was happening in the story. The results showed that 4- and 5-year-olds performed significantly better than 2- and 3-year-olds, and that performance improved for both groups when the preceding text contained 'clues' to the metonymic interpretation (e.g., when a woman selling cardigans was described in the text, and later referred to as *the cardigan*).

In two semi-structured elicitation tasks with 3- to 5-year-old children, Falkum et al. (2017) found that children produced both (a) referential metonymic expressions in contexts where the objects referred to had no conventional label (e.g., *The stickers* for a game that involved stickers), and (b) metonymic names for animate beings based on salient properties (e.g., *The big nose* for man with a big nose). This shows that children in this age range already master the communicative functions of metonymic uses: to efficiently identify intended referents (Langacker, 1993) and to highlight certain characteristics of a given referent (Falkum, 2011).

In a comprehension task, Falkum et al. (2017) asked the same children to select the story-matching picture from among a set of three pictures after hearing a metonymic utterance (e.g., *The helmet gets on her bike and rides home*). Pictures depicted the metonymic referent (the helmet-wearer), the literal referent (the helmet) and a distractor. Surprisingly, results revealed that 3-year-olds outperformed the 4- and 5-year-olds, who tended to prefer literal interpretations of metonymic utterances. In our contribution to this Special Issue, we present a follow-up study (Köder & Falkum, 2020), where we tested 126

children aged 3 to 8 years on a comprehension task which combines picture selection and eye-tracking. The results from the picture selection task replicate the findings of a U-shape reported in Falkum et al. (2017), with a better performance of 3-year-olds compared to 4- to 5-year-olds. The gaze data, however, show that all participants look significantly more at the metonymic target than at the literal competitor during the processing of the utterance, suggesting a sensitivity to metonymy also among those children who chose literal interpretations in the picture selection task. This indicates that offline measures such as picture selection, which are standard in the developmental field, could potentially underestimate children's competence with figurative uses, and that we should be cautious about concluding from a preference for literal interpretations to a lack of understanding.

Irony

Children typically understand irony later than metaphor and metonymy. The age of acquisition differs between studies, depending on the materials and measures used to assess children's comprehension. While some studies found only poor irony comprehension in 8-year-olds (Massaro, Valle, & Marchetti, 2013; Nicholson, Whalen, & Pexman, 2013) or even 13-year-olds (Demorest, Meyer, Phelps, Gardner, & Winner, 1984), the lower age limit for irony understanding in experimental situations seems to be around six years (Dews et al., 1996; Glenwright & Pexman, 2010; Loukusa & Leinonen, 2008). However, initial signs of irony comprehension may already be present in 3- and 4-year-olds (Angeleri & Airenti, 2014; Loukusa & Leinonen, 2008; Recchia, Howe, Ross, & Alexander, 2010). Interestingly, at the age of six when children typically start to understand irony, they also make significant advances in mind-reading abilities, more specifically in second-order belief understanding (Perner & Wimmer, 1985). Several studies found developmental evidence of a positive relationship between second-order theory of mind and irony understanding (Caillies, Bertot, Motte, Raynaud, & Abely, 2014; Happé, 1993; Massaro et al., 2013, but see Massaro et al., 2014). This finding is relevant to theoretical discussions on irony as it lends support to the relevance-theoretic account that irony comprehension requires a higher order of meta-representational ability than metaphor (Wilson, 2009).

Both context and intonation play an important role in children's irony understanding. The presence of ironic intonation, often described as deadpan or monotonous, seems to facilitate comprehension (Ackerman, 1983; Capelli, Nakagawa, & Madden, 1990; Keenan & Quigley, 1999; Laval & Bert-Erboul, 2005). Furthermore, ironic utterances are easier to understand when they explicitly echo a previous utterance (Keenan & Quigley, 1999) and the disambiguating context is presented before rather than after the ironic utterance (Ackerman, 1982). In line with theoretical accounts that verbal irony is typically used to criticize or complain (Wilson & Sperber, 2012), children find ironical criticism ("Great job", when failing) easier to understand than ironical praise ("Bad job!", when successful) (Hancock, Dunham, & Purdy, 2000). Some studies have also investigated whether characteristics of the ironic speaker and the speaker-addressee relationship influence children's understanding. Initial evidence suggests that describing the ironic speaker as mean (Pexman, Glenwright, Hala, Kowbel, & Jungen, 2006), as parent compared to sibling (Massaro et al., 2013), or as adult compared to child (Banasik-Jemielniak & Bokus, 2019) facilitates children's comprehension. However, describing the ironic speaker as funny in contrast to serious yielded no such effect (Climie & Pexman, 2008). Whalen, Doyle, and Pexman (2020) build on this line of research and investigate how the relationship between ironic speaker and addressee impacts children's irony understanding. They show that describing the ironic addressee as either sibling or new

acquaintance of the ironic speaker does not directly influence children's accuracy scores, but may still have subtle effects on processing.

While the majority of studies focuses on typical development, there is considerable evidence that children with different disorders struggle with the pragmatically complex task of understanding irony. For instance, children with Autism Spectrum Disorder tend to have more difficulties processing (Wang et al., 2006) and understanding ironic utterances than typically developing children (Happé, 1993; Li, Law, Lam, & To, 2013; Wang, Lee, Sigman, & Dapretto, 2006). Irony comprehension may also be impaired in children with Attention Deficit Hyperactivity Disorder (Caillies et al., 2014; Ludlow, Chadwick, Morey, Edwards, & Gutierrez, 2017), cerebral palsy (Caillies, Hody, & Calmus, 2012), Williams Syndrome, Prader-Willi syndrome and nonspecific mental retardation (Sullivan, Winner, & Tager-Flusberg, 2003). The contribution by Panzeri, Giustolisi, and Zampini (2020) is the first to investigate irony comprehension in children with Down Syndrome, and found that they performed equally well as typically developing children matched for mental and linguistic age.

Several aspects of irony development need to be explored further. Methodologically, most studies use pre-recorded stories, sometimes illustrated with pictures. The downside is that dynamic visual features such as facial expressions and gestures have not received sufficient attention. As research with adults shows, facial expressions (e.g., rolling eyes, raised eyebrows) are important in determining whether a speaker has a literal or ironical intention (Deliens, Antoniou, Clin, Ostashchenko, & Kissine, 2018), but it is unclear at what age children pay attention to these cues and whether they facilitate comprehension. Finally, most studies have studied irony comprehension (but see Pexman, Zdrzilova, McConnachie, Deater-Deckard, & Petrill, 2009; Recchia et al., 2010). This is unsurprising given that ironical utterances are rare in children's natural speech and difficult to elicit under experimental conditions. New work on irony production could lead to a more comprehensive picture of children's irony development.

3. Directions for future work

A growing body of research has given an increasingly complex and nuanced picture of children's pragmatic abilities and their acquisition of figurative language. Colston (2020) suggests two avenues for future research which could lead to new advances in our understanding. The first builds on embodied simulation, a theory of social cognition that claims that we have a direct experiential grasp of other people's actions and emotions by simulating them through a neurophysiological mechanism involving the activation of mirror neurons (Gallese, Keysers, & Rizzolatti, 2004). Colston proposes the innovative idea that figurative language might give rise to similar embodied simulations as literal utterances. For instance, when hearing the ironical comment "Nice shove!", similar motor areas might be activated as when listening to the same sentence used as literal compliment. He suggests that future research could explore links between children's motor development and their understanding of figurative language.

The second avenue for future research that Colston points out concerns pragmatic effects. Figurative language is well known for bringing about a variety of pragmatic effects in the listener that cannot be easily achieved with non-figurative types of speech. Future research could study whether and how children's ability to use figurative language with the intention to achieve specific pragmatic effects such as expressing disapproval or humour is related to the development of these social skills in other domains.

The recent trend in experimental pragmatics to study online processing of figurative language, using for instance eye-tracking and EEG, also promises to lead to advances in our understanding of children's acquisition of metaphor, metonymy and irony. In particular, the combination of online and offline measures may tap into the underlying causes of children's fragile performance on tasks that involve figurative uses of language.

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