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As metaphors are difficult to elicit through experimental tools, especially at a young age, it has been proposed that corpora of naturalistic interactions between children and their primary caregivers present an alternative avenue for accessing the language of very young speakers (Gaskins et al., 2023). However, this approach has been developed with English data in mind, adding to the predominantly Anglocentric nature of child language research. The current article demonstrates how the approach can be adapted for use with children acquiring Polish and, by extension, other inflected Slavic languages, where metaphors are often encoded word-internally. The article justifies the motivations which have shaped the development of this adaptation and demonstrates what metaphors it has unearthed in the speech of a Polish-speaking two- to five-year-old child, and her primary caregivers. It is argued that the approach could carry a significant potential in future research if applied to densely sampled data from monolingual acquisition in Polish settings.

Keywords: usage-based; metaphor; acquisition; Polish

1. Introduction

Linguistic abilities are fundamental to human development; language is not only a means of communicating knowledge, but also the means by which young children come to conceptualise the world around them. Metaphors are key for learning as they allow children to make sense of complex and abstract experiences, share new concepts and engage socially and educationally.

The current state of knowledge about metaphor acquisition has left metaphor production studies practically absent and focused instead on metaphor processing and comprehension (Almohammadi et al., 2024; Pearson, 1990; Özçalişkan, 2002, 2005, 2007; Rundblad & Annaz, 2010; Pouscoulous, 2011, 2014; Stites & Özçalişkan, 2012; Van Herwegen et al., 2013; DiPaola et al., 2019; Lecce et al., 2019; Pouscoulous &

Tomasello, 2019; Del Sette et al., 2020; Pastor et al., 2020). The handful of published work in metaphor production has remained largely experimental in nature and focused on children aged three and above (Gambell, 1977; Gaskins & Rundblad, 2023; Gottfried, 1997; Naylor & Van Herwegen, 2012). A novel addition to this body of work is a usage-based approach to metaphor identification in child speech (UBAMICS), which has been developed to facilitate metaphor investigation in the speech of children as young as two (Gaskins et al., 2023). When applied to densely sampled conversational data, it carries the promise of showing how children come to use metaphors in their everyday interactions; it can also capture the processes that contribute to children's successful metaphor use. At the moment, the published version of UBAMICS, however, is only suited to studying metaphor production in children who acquire English as their first language.

The current article offers an important methodological contribution to the current state of the art by taking the first step beyond the Anglocentric research work afforded by the current version of UBAMICS and by proposing how it can be applied to more synthetic languages such as Polish, where metaphors often occupy word-internal positions. To demonstrate how the method works and what type of results it can yield, it is applied to a sample corpus of interactions between a Polish-speaking family and their two-year old child, followed longitudinally over the period of three years.

1.1 What is metaphor?

Metaphor is a device that relies on the duality of word meanings; it draws on the salient features of one concept to describe, illustrate, and clarify features of another. For example, in a surge of affection, one might refer to children by calling upon the image of the brightest star of the universe in order to show how they too brighten up their day (e.g., *You're my* ***sunshine***). Beyond linking single concepts, metaphors also provide a lens for viewing one abstract domain (e.g., time) in terms of another (e.g., space). For example, when teaching children days of the week, one might ask if *Saturday is* ***before*** *or* ***after*** *Sunday*, just like they would ask if they are meant to stand *before or after someone* in a queue. Most metaphors are common phrases recycled in one's speech community, which oscillate on the continuum between more or less conventional; novel creations are exceptionally rare (Kaal & Dorst, 2011).

Metaphors, which link single concepts, tend to be rooted in a similarity between them perceived through the sense of sight, hearing, smell, taste, and touch. To highlight their unique nature, Grady (2005) refers to such metaphors as resemblance, or analogical metaphors, while Littlemore (2019) calls them *perceptual resemblance* metaphors, a term I will adopt in this paper. By contrast, metaphors, which link not just two concepts, but two domains (e.g., the domains of space and time), are often referred to as *conceptual*, as they provide an extended network of regular mappings that structure the way we conceptualise the world around us; they also help us to negotiate this knowledge with others.

Perceptual resemblance metaphors have been studied mainly in the context of Structure Mapping Theory (SMT), which argues that when they are encountered for the first time, they are processed and understood by structurally aligning two represented notions and then projecting inferences, using the skills of analogy (Gentner & Markman, 1997). It has been confirmed, for example, that children's comprehension of novel perceptual resemblance metaphors increases alongside their skills of analogical reasoning (Di Paola et al., 2019).

On the other hand, conceptual metaphors have been studied in the context of Conceptual Metaphor Theory (CMT), which posits that to acquire them, one first needs to develop the underlying primary mappings[1] by observing correlations of experience (Lakoff & Johnson, 2008). For example, playing with wooden blocks helps children to see how they are positioned in relation to each other, and once they have had an opportunity to connect at least one space-related expression (e.g., *The blue one is between the red and the yellow one*) with a time-related equivalent (e.g., *Sunday is* ***between*** *Saturday and Monday*), they construct a conceptual mapping TIME IS SPACE, which supports their understanding of any other time-related expressions (e.g., *Monday is* ***after*** *Sunday*), whether conventional or novel. In their studies of metaphors of time, Özçalişkan (2005) and Stites and Özçalişkan (2012) report that different linguistic instantiations of the same mapping follow the same developmental schedule, and thus they conclude that primary metaphor comprehension is a domain-general capacity: once

[1] Only primary mappings and their linguistic instantiations will be discussed in this paper, as more complex conceptual metaphors are not likely available to children.

the child has understood a given mapping, they can extend it to different linguistic instantiations of the same metaphorical mapping.

There is, however, a compelling argument against mappings as a prerequisite to primary metaphor comprehension, which sees conceptual metaphors merely as extended metaphor networks driven by lexical semantics which can be historically explained (Murphy 1996; Glucksberg 2001; Jackendoff 2002). Empirical evidence against the need for mappings comes from a range of studies in reading: when presented with passages which contain several conventionalised metaphors consistent with different mappings, subjects are not significantly slowed in their reading by a sudden switch to a different mapping (Gentner et al., 2001). It is argued that maintaining the reading pace is possible because the metaphors are accessed instantly in the mental lexicon as alternative word meanings rather than via their underlying mappings (McGlone, 1996, 2007). Due to this, it is also argued that the use of mappings is only required in the case of novel conceptual metaphors, which are computed online via analogy with existing exemplars rather than prestored. Overall, this stance seems to suggest that conceptual mappings, at least in ontological development, are not universally available, or developed prior to language use.

1.1 What is UBAMICS?

UBAMICS assumes that "*the speaker's linguistic system is fundamentally grounded in 'usage events', i.e., a speaker producing or perceiving language"* (Barlow & Kemmer, 2000, p. VIII, also Bybee, 2010, Croft, 2001). As children who are only beginning to learn lexical terms and their meanings have not come across any types of metaphorical expressions, on first encounter conventional and novel metaphors are seen on a par with each other: they both require deconstructing to become functional.

The coding process inherent to UBAMICS has been inspired by other well-established metaphor identification procedures, such as MIP (Pragglejaz Group, 2007) and MIP-VU (Steen et al., 2010). However, as UBAMICS is designed to work with child language, it differs from these tools for metaphor identification in adult language in at least three important ways: it eliminates cases of pretence which are common in child-parent dyads and those of literal rather than metaphorical over-extensions; it also distinguishes between conceptual and perceptual metaphors to demonstrate if they follow different paths in acquisition.

Part I of UBAMICS advocates the use of Master Metaphor List (Lakoff et al., 1991) in order a) to determine whether the given metaphor is conceptual, b) to establish what specific category it represents (e.g., orientational, structural, personification), and c) to propose what specific mapping it encodes (e.g., TIME IS SPACE). Otherwise, if the metaphor seems to rely on some form of similarity, either physical (e.g., *Sarah is a* ***giraffe***, i.e., tall) or relational (Sarah is such a ***monkey***, i.e., playful, and mischievous), and cannot be linked to any conceptual mappings, it is deemed as a perceptual resemblance metaphor (Winner, 1997). If metaphors seem to straddle both categories, they are deemed as conceptual to highlight their roots in sensimotor experience, which is expected to offer potential benefits in the way they are acquired.

Part II of UBAMICS advocates the application of usage-based methods to data analysis to examine whether both perceptual resemblance and primary conceptual metaphors may be sensitive to the quantitative properties of child-directed speech. For example, it makes it possible to examine whether children develop metaphor skills along a similar schedule, or whether they display individual variation. If there is variation in children's production skills, UBAMICS makes it possible to evaluate it in light of metaphor frequencies in child-directed speech, by following a premise that metaphors which are frequent is use, stand out in conversation, and are prioritised for acquisition (Gaskins et al., 2023).

The *first aim* of this paper is to adapt part I of the UBAMICS protocol to make it fitting for the distinct nature of the Polish language. In English, which is relatively analytic, UBAMICS has focused predominantly on metaphors expressed by means of individual words, or multiword units. With a few exceptions (e.g., "*after*noon"), it is rare for English metaphors to be encoded on the level of bound morphemes (Gaskins et al., 2023). Polish, however, has more complex word-internal composition (Bańko, 2009). If the Polish version of UBAMICS is to be comparable to its English equivalent and unearth even the most basic metaphors, it will likely generate many metaphors inscribed in bound morphemes. This calls for a suitable coding method to facilitate the identification of word-internal metaphors. Such a procedure will be very different from the existing approaches to metaphor identification, such as the Polish adaptation of MIP (Marhula & Rosiński, 2019), for example, which focuses solely on metaphors encoded on the level of standalone words and multiword units.

The *second aim* of the paper is to demonstrate how the adapted UBAMICS protocol can be applied to longitudinal data from a Polish-speaking child and her primary caregivers. Similar data examined via the English version of UBAMICS revealed several input-output effects in metaphor acquisition. First, between the ages of 2;00 and 3;01, the English-speaking child produced 93% conceptual and 2% perceptual resemblance metaphors as well as 5% non-metaphorical analogies (Gaskins et al., 2023). These proportions closely reflected the frequencies of the relevant metaphor classes in child-directed speech. Second, when specific metaphor categories (e.g., primary, verbs of perception, personification) and mappings (e.g., ACTION IS MOTION, TIME IS SPACE) were examined, their order of emergence in child's speech was also consistent with their input frequencies. To what extent can these results be replicated via the Polish adaptation of the UBAMICS procedure?

2. UBAMICS in Polish

2.1 The case of Polish

Modern Polish has remained largely synthetic, with a tendency to combine morphemes denoting multiple syntactic and semantic features within individual words (Bańko, 2009). For example, Polish verbs are marked for person, number, tense, gender, and aspect. The aspectual elements of the verbs, pertinent to the issues discussed in this article, are particularly problematic to identify: aspectual contrasts between finite and non-finite verbs may be encoded through a prefix (***na****pisać* 'to write' versus *pisać* 'to be writing'), a paradigmatic modification of the end part of the verb (e.g., *wskaz****ywać*** 'to be pointing' and *wskaz****ać*** 'to point'), no change in the form of the given verb (***potrafić*** 'to be able to') or a complete change of form (***brać*** 'to be taking' and ***wziąć*** 'to take') (Łaziński, 2020). As prefixes denote a wide range of meanings, Polish sometimes licences multiple prefix use (e.g., ***po-u-****kładać* 'to arrange').

2.2 Applying UBAMICS to Polish interactional data

In practice, to identify a metaphor in Polish, one first needs to search for morphemes, words, and word combinations whose contextual meaning is distinct from their basic meaning but related by some form of similarity. To make this procedure comparable to the English version of UBAMICS (Gaskins et al., 2023), parallels should be drawn between morphemes, words, and word combinations of the same category (e.g., in

phrases *A **heavy** box* and *A **heavy** day*, the word *heavy* is used as an adjective). In some cases, however, a morpheme, word, or word combination can be considered metaphorical even if they do not capture the same grammatical category but have been used to fill a certain slot (e.g., in a phrase ***Baby** carrot*, the word *baby* is used as an adjective, not a noun).

In the process of identifying the duality of meaning, it is crucial to distinguish between those morphemes, words, and word combinations that are rooted in metaphor from those aligned with the concepts of overextensions or pretence. For one, young children may refer to a carpet as *grass*, for example, as they lack the required lexical term for the target object (e.g., Winner, 1979; Billow, 1981). In line with the procedure adopted in the English version of UBAMICS (Gaskins et al., 2023), it is proposed that units with dual meanings should be included in further analyses only if they present a case of metaphorical overextensions (e.g., calling someone a *monkey* may suggest that they are mischievous and lively) but excluded if they are based on the concrete features of two distinct entities which are fairly similar (e.g., calling a donkey *horse* indicates the child may not have made a distinction between the two). Second, it is important to distinguish the cases of metaphor from pretence, which is common in child language (Kavanaugh & Harris, 2001). When faced with a potential case of pretence, the coder has to decide if the given word has been used in its basic or abstract sense. In situations of make-believe, when the child treats the other as if they were a real monkey, the word *monkey* would thus be seen as used in its basic sense (see Gaskins et al., 2023).

Once the duality of meaning has been identified, it is important to determine the category of the encountered metaphor, i.e., whether it is rooted in a perceptual resemblance between two concepts, or if it reflects a broader network of correspondences between a source and target domain. For the sake of consistency with the previous literature, this article will refer to any extended metaphors as conceptual even if their mappings have not been captured by the current Anglocentric version of Master Metaphor List (Lakoff et al., 1991). When identifying Polish extended metaphors and defining their mappings in a manner that makes them comparable with their English equivalents, it will rely on Polish studies of metaphors conducted in the context of CMT. The mappings used in this work will be based on the notions developed in Polish literature (e.g., according to Tabakowska, 1999, *po-* 'over/on top of' is a surface metaphor) but at the same time, their names will be adapted to reflect the

idea that metaphors borrow some qualities from one source concept, or domain, and attribute them to another (e.g., when added to some verbs, *po-* carries the notion that ACTION IS A REPETITIVE MOTION ALONG THE SURFACE).

By drawing upon the English version of UBAMICS (Gaskins et al., 2023), and the existing metaphor literature in Polish, the classes of conceptual and perceptual metaphors will be investigated in the corpora under the categories delineated below. The suggested procedure is conservative as it cannot do justice to the broad continuum between highly conventional and completely novel metaphors, with many shades in between. Instead, it depends on a binary distinction between those metaphors that have been heard before, and are therefore deemed as conventional, and those that have never been heard before, and are therefore considered as novel.

Conceptual metaphors

1) **word-internal primary metaphors**, i.e., orientational metaphors encoded in morphemes that are part of longer words (e.g., ***Za**raz* [after+once] *to zrobię* 'Soon I'll do it')

2) **primary metaphors**, i.e., both orientational and ontological metaphors encoded on the level of standalone words and multiword units (e.g., *Niedziela jest **po** sobocie* 'Sunday is after Saturday'*;* where ***po*** 'after' is used to show that time is perceived the same way as space). For reasons of time efficiency, the current version of English UBAMICS does not code for the most basic container and substance metaphors; however, they may be included as part of the procedure.

2) **verbs of perception**, i.e., individual verbs or verb phrases which carry a sense that is other than prototypical (see Ibarretxe-Antuñano, 2019) (e.g., *Kaleczysz się bo się nigdy nikogo nie **słuchasz*** 'You get hurt because you never listen'; the word *słuchasz* 'listen' in this context conveys a sense of obeyance).

3) **personification**, i.e., words and multiword units in which qualities from the human domain are attributed to non-human entities (e.g., *Kwiatuszki **piją** wodę, dlatego rosną* '[Little] flowers drink water, that's why they grow'; the word *piją* 'drink' conjures up an image of an action performed by a human, or an animate being).

4) **single-word structural metaphors**, i.e., single-word metaphors which reflect complex systems of universal beliefs (e.g., *Dlaczego zawsze musimy ze sobą **walczyć***?

‘Why do we always have to fight’; the word *walczyć* ‘fight’ suggests that arguing is like being in a physical combat).

5) **multiword structural metaphors**, i.e., multi-word metaphors which reflect complex systems of universal beliefs (e.g., *Pradziadek **odszedł na drugi świat*** ‘Great granddad departed for another world’; the phrase *odszedł na drugi świat* ‘departed for another world’ suggest death is seen as the final stage of LIFE IS A JOURNEY metaphor).

6) **metonymy-metaphor combinations**, i.e., single- or multi-word formations where, in addition, a given concept is referred to by the name of something closely associated with that concept (e.g., *Masz do tego dobre **oko*** ‘You have a good eye for this’, where the word *oko* ‘eye’ stands for the person’s eyesight, and their ability to be discerning).

7) **novel conceptual metaphoric formations**, i.e., single- or multi-word metaphors that are unfamiliar to the coder, but which evoke a form of perceptual similarity (e.g., an expression such as *Kocham cię **dwa tysiące pięćset*** ‘I love you two thousand and five hundred’ may not have been previously registered in Polish - an online search can confirm this - but it seems to convey a mapping that LOVE IS A VALUABLE COMMODITY).

Perceptual resemblance metaphors

1) **nominal A-to-B metaphors**, i.e., metaphors encoded in single nouns or noun phrases which convey a perceptual similarity between one person or object and another (e.g., *Jesteś babci **aniołkiem*** ‘You are grandma’s [little] angel’, where the word *aniołek* ‘[little] angel’ is seen as a virtuous human of an almost ethereal quality).

2) **single-word perceptual resemblance metaphors**, i.e., metaphors encoded in words other than nouns or noun phrases which convey a similarity between two actions, and qualities (e.g., *Oj chyba mnie **bujasz*** ‘Looks like you’re swinging me’; the word *bujasz* ‘swinging’ carries a sense of making one see the ‘imagined’ side of things).

3) **multiword perceptual resemblance metaphors**, i.e., metaphors encoded in multi-word units other than noun phrases which convey a similarity between two actions, and qualities (e.g., *Basia **złapała zająca*** ‘Basia caught a hare’; in this expression, an incidental falling over is likened to catching a [running] hare).

4) **novel perceptual resemblance metaphors**, single- and multi-word expressions which are not familiar to the coder, but which evoke some form of perceptual resemblance (e.g., *Jesteś **warta wszystkie pieniądze*** ‘You’re worth all the money’; here, the child is likened to a valued possession, but this is expressed in a novel way).

In addition to coding for conceptual and perceptual resemblance metaphors, UBAMICS includes two codes:

1) **MRW Direct**, i.e., when an abstract metaphoric expression is used directly and its use may potentially be explained by some form of cross-domain mapping to a more basic referent or topic (e.g., Życie jest jak *scena* 'Life is like a stage').

2) **MFlag**, i.e., an explicit marker of analogy between two concrete entities which indicates the use of a mapping that is not metaphorical. Potential markers of analogy in Polish include, e.g., *jak* 'like', *od(e)* '[different] from', *podobny do* 'similar to', *taki sam jak* 'the same as' and *inny* 'different'. UBAMICS also uses this code for words such as *oczko w rajstopie* 'a ladder [literally 'an eye'] in tights' and *skrzydła wiatraka* 'the wings of a windmill', which contain some element of comparison, but that comparison is made salient by the use of auxiliary words (i.e., *w rajstopie* 'in tights' and *wiatraka* 'of a windmill'), which make analogies explicit in the context.

2.4 How to overcome the challenges of coding metaphors in Polish

Identification of metaphors encoded in content words (e.g., *Jest* ***ciepłą*** *osobą* 'She is a warm person') is expected to be relatively straightforward as such words stand out in transcripts of naturalistic speech. The greatest challenge will lie in identifying metaphors used word-internally. Such a focus, however, is essential considering longitudinal data from children's acquisition of word-internal morphology. We know from studies of inflectional morphology that Polish children aged two to three are sensitive to surface form frequencies which allow them to segment the words and extract the meanings attached to individual bound morphemes (e.g., see Dąbrowska & Szczerbiński, 2006; Granlund et al., 2019 but Krajewski et al., 2011).

Similarly, surface form frequencies are expected to drive the acquisition of derivational morphemes, which are often metaphorical (Przybylska, 2006). Usage-based models of morphology acquisition (e.g., Bybee, 2010) would predict, for example, that hearing the prefix *za-* 'behind' with a high number of similar verb types (e.g., ***za****grać* 'to start playing', and ***za****śpiewać* 'to start singing') should lead to its early conceptualisation as a detachable component part of a verb. Based on the growing awareness of how the prefix is used, children should then also be able to extract its meaning (i.e., starting an action is crossing a boundary). This, in turn, may also lead to children using the prefix

creatively in a novel non-target manner. Tracing the origins of such novel creations is made possible by the longitudinal nature of UBAMICS analyses and it is only feasible in more synthetic languages such as Polish.

The challenge of identifying word-internal metaphors is likely to concern in particular orientational metaphors, which are extremely common in speech. English orientational metaphors are the single most frequently used metaphor category responsible for 81% of all metaphor types produced by the child, and 73% of all metaphors produced in her child directed speech (Gaskins et al., 2023). In English, orientational metaphors are often encoded in words such as *up*, *down*, *to*, *from*, *over*, *under*, *forward*, *back*, *before*, and *after*, associated with a wide range of conceptual mappings, including TIME IS SPACE (e.g., *From* Monday *to* Friday), and MORE IS UP (e.g., Hurry *up*), to mention but two. Examining Polish data will additionally reveal whether orientational metaphors encoded in Polish reflect similar conceptual mappings.

2.4.1 Orientational metaphors in Polish

Identfying orientational metaphors in corpora of naturalistic Polish speech requires a systematic multifactorial approach, which means making at least three decisions:

a) recognizing that the given word is decomposable into at least two elements (a stem, and an affix), each contributing to the meaning of the word in modern Polish in a unique way, or whose compositional nature can be explained with reference to their etymology (i.e., by using a dictionary).
b) establishing that the prefix has been used with a contextual meaning which is different from its basic meaning, and yet, while the two are distinct, they are related by some form of similarity.
c) ascribing a metaphor mapping to the affix in question.

The first step in the identification of orientational metaphors involves determining the compositional nature of the verb in question. For example, ***za****wieźć* ‘to carry something somewhere’ can be divided into ***za*** ‘after/behind’ and *wieźć* ‘carry’; likewise, ***do****rosnąć* ‘grow up’ into ***do*** ‘to’ and *rosnąć* ‘grow’. Some verbs, however, may have lost their compositional transparency over time as their non-prefixed counterparts are either non-existent or obsolete to the speakers of present-day Polish. For example, ***za****jąć* się ‘to begin to do something’ comes from the old reflexive verb *imać się* ‘to begin to do something’. A good initial indication of the word’s decomposability is the fact that apart

from the form in which it is being examined (e.g., ***za****jąć* się 'to begin doing something'), it is also used with other prefixes (e.g., ***na****jąć* 'rent'). Such initial intuitions about the word's decomposability need to be verified by referring to a dictionary. Meanwhile, it is important to acknowledge a possibility that some words, which may appear decomposable, are in fact made up of only a stem (e.g., *potrafić* 'to be able to).

The second step of the procedure involves confirming the contextual meaning of the given prefix, and the link with its more basic equivalent. My approach to distinguishing between the basic and abstract meanings of verbal prefixes is inspired by the work of Przybylska (2006), who shows that in some cases, prefixes are used in their prototypical concrete sense, in a similar manner to prepositions such as *do*, which are used to talk about space (e.g., ***Do****daj cukru do mąki* 'Add sugar *to* flour'); at other times, they are used in their metaphorical sense, with their meaning determined by the context of the word to which they have been attached (e.g., ***Do****myśliłam się* 'I have arrived *at* this explanation'). Determining the contextual sense of a given prefix requires an informed decision about both the holistic meaning of the verb, and the idiosyncratic meaning of the prefix itself: this involves deciding whether the verb has "*a certain shade suggesting either the flow of action or the stage of its completion"*, and if the prefix "*marks a certain character, certain nature [Aktionsart] of the state or action*" (Agrell, 1918: 5; see also Wróbel, 1998; Kątny, 1994; Stawnicka, 2010).

Distinguishing between the basic and abstract meanings of verbal prefixes means deciding which meaning is a prototypical and which a metaphorical extension (Przybylska, 2006). For example, where the prefix *do-* 'to' focuses on the beginning or end part of the motion which proceeds along a physical space (e.g., ***do****jechać* 'arrive at'), its meaning is treated as prototypical, and thus non-metaphorical. However, *do-* 'to' can also suggest completion of an action to the optimal result (e.g., ***do****radzić* 'to advise', i.e., END OF ACTION IS END OF A PATH), or completion of an action to the satisfaction of the speaker (***do****pracować się* 'to work so hard that it starts to pay off', i.e., ACTION IS MOTION TOWARDS SATISFACTION). It might also refer to the course of action measured by relating it to various changes which become slowly apparent in the agent or object subjected to the action (***do****gasnąć* 'to die down', i.e., ACTION IS MOTION ON A COURSE SHOWING ITS RANGE), or an action whose course makes it increase in intensity (***do****myć* 'to clean up', i.e., LINEAR SCALES ARE PATHS). The list of metaphorical mappings

presented by Przybylska (2006) has been consulted, and adapted, in the third and last step of my metaphor identification procedure.

As the list only focuses on a selected range of prefixes, it has been extended by additional sources. Tabakowska (1999), for example, examines the case of the prefix *po-* 'over/on top of', which is most commonly discussed in the context of its aspect-changing function (see e.g., Łaziński, 2020), but in her work its meanings are reduced to spatiality. For example, Polish delimitatives (e.g., ***po****spać* 'sleep a while') are categorised under the notion of a contoured area, which instantiates a two-dimensional mapping of abstract/physical space, and Polish distributives ***po****wariować* 'go mad' under the notion of a collection of points, suggesting that Polish *po-* distributives express action conceptualized as occurring along a surface (Tabakowska, 1999: 276). This interpretation is also adopted in my work, where mappings are developed depending on the type of surface motion encoded in the verb, including distributives such as ***po****gubić* 'lose things one after another' (ACTION IS MOTION ALL OVER THE SURFACE), delimitatives, e.g., ***po****czytać* 'read for a while' (ACTION IS MOTION FOCUSED ON ONE END OF THE SUFACE), surface-contact verbs, e.g., ***po****smarować* 'apply ointment to a surface' (ACTION IS MOTION IN CONTACT WITH THE SURFACE), intermittent-attenuatives, e.g., ***po****płakiwać* 'cry now and then' (ACTION IS A REPETITIVE MOTION ALONG THE SURFACE), inchoatives, e.g., ***po****zielenieć* 'turn green' (CHANGE IS MOTION ALONG THE SURFACE) and perfectives, e.g., ***po****dyktować* 'dictate' (ACTION IS MOTION FOCUSED ON ONE END OF THE SURFACE).

In addition, Tabakowska (2003) argues that the preposition *za-* 'behind' conveys a spatial orientation relative to the observer, with one entity being proximal while the other distal. Likewise, in Polish verbs, the prefix *za-* 'after' conveys progress made in the development of an action, and at the same time a sense of boundary being crossed in undertaking the action towards a point distal to the observer. Under this theory, ***za****śpiewać* 'to sing' is interpreted as action initiation (STARTING AN ACTION IS GOING BEYOND A BOUNDARY), while ***za****jechać* 'to arrive' as its completion (ENDING AN ACTION IS GOING BEYOND A BOUNDARY). Tabakowska (2003) points out that a similar sense of a boundary is also present in verbs such as ***za****bronić* 'to ban' which covey a certain blockage in the access to an entity (OBSCURING SOMETHING IS PUTTING IT BEYOND A BOUNDARY). Its underlying concept is remarkably similar: ***za****bronić* 'to ban' conveys a sense of an activity beyond the agreed boundary that cannot be authorised.

It appears, however, that verbs are not the only carriers of orientational metaphors. There are many verb-based nouns in Polish which also contain orientational prefixes. For example, ***po****ciąg* 'train' has been derived from ***po****ciągnąć* 'to pull', ***za****pałki* 'matches' from ***za****palić* 'to light up', and ***na****zwisko* 'surname' from ***na****zywać* 'to call/name someone'. Orientational affixes also figure in adverbials of time, such as ***przed****tem* 'before that', ***po****tem* 'after that', and ***za****raz* 'in/after a while', and time-related nouns, such as ***po****niedziałek* 'Monday', which carries a sense of being ***po*** *niedzieli* 'after Sunday', and ***przed****szkole* 'preschool', which carries a sense of being ***przed*** *szkołą* 'before [primary] school'. As their compositional meaning is transparent, they will also need to be coded in the process of metaphor identification.

3. Application of UBAMICS to a sample corpus

At the next step, the Polish version of UBAMICS has been applied to the corpus of longitudinally recorded interactions between a Polish-speaking child and her family.

3.1. The participant

The Polish data analysed in this article come from the Polish Szuman corpus stored on the CHILDES Talkbank (Smoczyńska, 1985). The child whose data have been analysed here was born in 1952 and is called Basia. The recordings available in Basia's corpus span the age range of 1;5-7;09. However, only data between the ages of 2;0-5;0 are discussed in this paper to match the timeframe examined within the larger project of which this article is only a small part.

3.2. The dataset

Densely recorded longitudinal corpora of naturalistic interactions between Polish-speaking children and their primary caregivers are sorely missing from the publicly available databases; using a dated corpus remains a limitation of this study. On CHILDES, there is no information available about how Basia's data were sampled. All the interactions are of different lengths, while the transcripts give the impression that the conversational data were collected by Basia's mother in the form of notes: the transcripts include larger proportions of Basia's speech and smaller of her primary caregivers. The transcribed dialogues are presented in full, but they tend to be short, suggesting that only small portions of interactions were noted down each time. Despite

this, due to the relatively static nature of Polish, the language captured in the corpus appears to be contemporary, with any dated expressions extremely rare, which suggests that the corpus is fit for the purpose of metaphor analysis.

2.5 Reliability of the procedure

The coding scheme was based on the English version of UBAMICS (Gaskins et al., 2023), and then adapted in light of Polish metaphor literature (Przybylska, 2006; Tabakowska, 1999, 2003). To establish the reliability of the coding scheme, transcripts based on the whole corpus were coded independently by two coders, following closely the procedure employed in the study of English metaphors (Gaskins et al., 2023). Upon recruiting the second coder, an ex-student in Linguistics who responded to the advert placed on the college website, training was provided on a sample corpus unrelated to this publication, which served as a means of preliminary discussions of how borderline cases should be classified. At the next step, the second coder was given a set of codes developed the author of this article and asked to analyse the data by referring to the given set of codes. The two coders were in regular contact about the coding procedure, which allowed them to discuss unclear definitions in the code book without reference to examples from the corpus. Eventually, manual checks were performed to determine inter-coder reliability, showing overall agreement for 2,832 out of 3,010 metaphors in the complete set of data (close to 0.94, Cohen's kappa). The 178 metaphors disagreed on were eliminated from final analyses.

2.6 Usage-based analyses

Basia's metaphors were first examined to eliminate names of books, stories, and fictional characters, as well as metaphors merely repeated after the caregiver who used them verbatim with the same meaning in one of the previous ten turns, or any metaphors self-primed by those which the child repeated after the caregiver. When compiling an inventory of metaphors that Basia produced independently, each example of metaphor was examined in light of the previous ten caregiver turns to ensure it had not been primed, and in light of the previous recording to ensure it had been used independently at least once before.

The remaining metaphors were calculated in types and tokens to show how varied the child's metaphor pool was with respect to each metaphor class, or mapping.

Metaphor *type* was understood as any morpheme or word, and all its grammatical variations associated with one specific meaning; metaphor *token* as every single instantiation of the given mapping or class. For example, in the class of primary metaphors, and the mapping of CHANGE IS A MOTION ALONG A SURFACE, all grammatical versions of the verb *brać* (e.g., *Skąd się* ***biorą/wzięły*** *mole*? 'Where do moths come from') were treated as instantiations of one metaphor type but they all contributed to the growing number of metaphor tokens for this particular mapping.

The metaphors that the child produced independently were subsequently examined in light on child-directed speech, looking for any potential links between the proportions of different metaphor classes (conceptual, perceptual), categories (e.g., primary, personification), and mappings (e.g., TIME IS SPACE, ACTION IS MOTION) in the two datasets (the child's and the caregivers').

3. Results

In total, 2,832 metaphors were included in the final dataset, of which 1,608 were produced by Basia, and the remaining 1,223 by her primary caregivers, such as her mother and father, her grandparents, aunts, uncles, and her cousins who occasionally came to visit. Basia's pool of metaphors was originally larger, but the procedure eliminated 345 metaphors which had been primed in discourse (18%). No metaphors were identified in the categories of single-word structural metaphors, multi-word structural metaphors, metonymy-metaphor combinations, or novel perceptual resemblance metaphors. Instead, two new categories were included, of multiword primary, and novel multiword primary metaphors.

3.1 Metaphors identified in Basia's speech

Overall, among the metaphors produced by Basia, the vast majority were conceptual (N = 1,493, 93%); perceptual resemblance metaphors were produced in negligible numbers (N = 35, 2%). Tables 1, 2 and 3 present the overall type and token frequencies of linguistic metaphors from different metaphor classes captured in Basia's language during the data sampling. For example, Table 1 lists metaphors in Basia's language that were encoded on the level of whole words, or word combinations (except for TIME IS SPACE, which also included both single-word and word-initial metaphors, such as ***po****tem*

'afterwards'). Most of these were represented by single types; all except one (EXCESS IS BEYOND A BOUNDARY) could be linked to mappings discussed in international literature.

Table 1: *Word- and phrase-level primary metaphors identified in Basia's speech*

Metaphor class (in **bold**) and metaphor mapping	Occurrence in child speech		
Frequencies	Tokens	Types	Examples
Primary metaphors	**264**	**27**	
DIFFICULTIES ARE BUDENS	2	1	*Jakie są **ciężkie** choroby?* 'What heavy illnesses are there?'
LINEAR SCALES ARE PATHS	1	1	***Do** sześciu* '[Count] to [number] six'
MEANS ARE PATHS	1	1	*Po **kolei*** 'One after another' [literally: along a track]
AGE IS SIZE	31	2	*Jak będę **duża**.* 'When I'm big'
AMOUNT IS SIZE	2	1	***Mała** woda* 'Small water'
CHANGE IS MOTION	24	2	*Skąd się **biorą** mole?* 'Where do moths [literally: take themselves from]?'
SYNESTHETIC	2	1	***Krzyczący** materiał* 'A screaming fabric'
TIME IS MOTION	1	1	***Przeszło** tysiąc lat* 'Gone [more than] 1,000 years'
TIME IS SPACE	178	14	*Noc jest taka **długa*** 'Night-time is so long'
EXCESS IS BEYOND A BOUNDARY (language-specific)	20	1	*Nie będzie **za** ciasno?* 'Won't it be too [literally: behind] tight?'
MIND IS A CONTAINER FOR OBJECTS (multiword)	1	1	***Przewróciło mi się w głowie*** 'Things [literally: took a tumble] in my head'
MIND IS A CONTAINER FOR OBJECTS (novel multiword)	1	1	***Odkręca mi się w głowie*** 'Things [literally: turned the right way back] in my head'

In addition, Table 2 lists metaphors in Basia's language that were encoded word-internally. The vast majority of them reflect the notion that action (whether or not it is related to movement) is like a motion along a path. However, at the same time, the vast majority reflect a unique way in which such a motion is realised (e.g., moving in different manners in relation to the surface, or moving beyond a boundary). In all these

metaphors, each mapping is represented by only one word type (e.g., *po-* 'over/on top of'), and by high (and sometimes very high) numbers of tokens.

Table 2: Primary metaphors in Basia's speech (those identified in prefixes in grey)

Metaphor class (in **bold**) and metaphor mapping	Occurrence in child speech		
Frequencies	Tokens	Types	Examples
Primary metaphors	**1,192**	**25**	
ACTION IS APPLYING THE PROCESS TO THE WHOLE OBJECT	2	1	***Prze**straszyły się* 'They got scared [right through]'
ACTION IS A DIFFICULT MOTION ALONG THE INITIAL PARTS OF THE PATH	3	1	*Nie **u**niosą* 'They won't [manage to] carry it away'
ACTION IS MOTION ALL OVER THE SURFACE	44	1	*Mama **po**szuka* 'Mummy will look for it [all over]'
ACTION IS MOTION ALONG THE SURFACE	114	1	*Pani **po**szła* 'The lady is gone [away from the person speaking]'
ACTION IS MOTION AWAY FROM THE CENTRE OF THE SURFACE	5	1	*On nie **po**dzieli ich* 'He won't divide them up [into several pieces]'
ACTION IS MOTION BY INTRODUCING ORDER	3	1	*Teraz cię **u**czeszę* 'Now I will brush [your hair by making it conform to one path]'
ACTION IS MOTION FOCUSED ON ONE POINT OF THE SURFACE	250	1	***Po**patrz mamo* 'Look [at one point], mummy'
ACTION IS MOTION IN CONTACT WITH THE SURFACE	60	1	*Troszeczkę **po**lałam* 'I poured it [over something] a bit'
ACTION IS MOTION OVER AN OBSTACLE IN TIME	2	1	*Adam **prze**czeka* 'Adam will wait [through 'a certain difficult point in time]
ACTION IS MOTION WITHOUT A GOAL	2	1	***Prze**śpię się*. 'I will sleep [through a bit of time, without determining how long]'
ACTION IS A REPETITIVE MOTION ALONG THE SURFACE	10	1	*Ja go **po**karmię*. 'I will feed him [over and over again, spoonful after spoonful]'
APPROACHING A SURFACE IS APPROACHING A PATH	21	1	***U**kładam wszystko ładnie* 'I arrange everything nicely [over a surface]'
COMMUNICATION IS TRANSFER	4	1	*Echo **od**powiada* 'Echo replies [or: speaks back']'
COVERING A SURFACE IN MANY PLACES IS COVERING THE WHOLE PATH	1	1	*Ja się **u**brudziłam* 'I got soiled [all over the surface]'

END OF ACTION IS END OF PATH	161	1	*Kiedy święty Mikołaj* ***u****mrze*? 'When will Santa Claus die [completely]?'
ENDING AN ACTION IS GOING BEYOND A BOUNDARY	21	1	***Za****bity będzie* 'He will be dead [literally: beaten/moved behind a boundary'
MOVEMENT AGAINST THE ACTION IS MOVEMENT ACROSS A PATH	4	1	*Nie* ***prze****szkadzaj* 'Don't interrupt [literally: cause damage/go across my action]
IMPROVING PERFORMANCE IS PROPELLING IT FROM DOWN UNDER	6	1	*To mi* ***pod****powiadaj* 'Give me clues [literally: from down under]
STARTING AN ACTION IS GOING BEYOND A BOUNDARY	179	1	***Za****płać księdzu* '[Start an action and] pay the priest'
PLACING SOMETHING ON THE SURFACE IS ADDING TO THE END OF THE PATH	25	1	***U****brałaś pończoszki*? 'Have you put on your tights [on the surface of your body]?'
REDUCTION IN SIZE IS TAKING AWAY THE END OF THE PATH	32	1	***U****gryzie mnie* 'S/he will bite me [and reduce my body by a fraction]'
SEPARATING FROM THE WHOLE IS MOVEMENT AWAY FROM THE PATH	20	1	***U****ciekajcie muchy* 'Go away [from the path], flies'
OBSCURING SOMETHING IS PUTTING IT BEYOND THE BOUNDARY	54	1	*Bo* ***za****kurzone* 'Because it's dusty [literally: covered behind the dust]'
PAST IS BACK	3	1	*Jadą* ***od****poczywać* 'they are going to relax [literally: go back to their previous, relaxed state'
MORE IS UP	158	1	***Na****uczyłam się* 'I have learnt [literally: learnt up]'

Moreover, Table 3 lists all other 'non-primary' metaphors found in Basia's language. All of these are encoded on the level of whole words or word combinations and are of the type that correspond with other metaphor classes reported in literature.

Table 3: *All other metaphors in Basia's speech*

Metaphor class (in **bold**) and metaphor mapping	Occurrence in child speech		
Frequencies	Tokens	Types	Examples
All 'other' metaphors	**157**	**36**	
Verbs of perception	**5**	**2**	
MEETING IS SEEING	4	1	*Do* ***widzenia***! 'See you!'

PERCEPTION IS COGNITION	1	1	*Dobrze **wygląda*** 'It looked well'
Personification	27	15	***Tańczy** piłeczka* 'The ball is dancing'
Single-word nominal	25	3	*Kochasz swoje **słoneczko**?* 'Do you love your sunshine?'
Multiword nominal	1	1	***Drapacz chmur*** 'A skyscraper'
Single-word perceptual resemblance	8	4	*Nie **pleć** głupstw* 'Don't tell fibs [literally: plait fibs]'
Multiword perceptual resemblance	1	1	***Złapał zająca*** 'He had a tumble [literally: caught a hare']
MFlag	84	7	*Piszczała **jak** kot.* 'She was squeaking like a cat'
MRW Direct	1	1	*Pociąg gna jakby była **blaszana zabaweczka***. 'A train rushes as if it was a metal toy'

Overall, Tables 1, 2 and 3 show that while Basia's repertoire of metaphors does include mappings reported elsewhere in literature (e.g., AGE IS SIZE, LINEAR SCALES ARE PATHS), at the same time, it is dominated (N = 878, 55%) by expressions which are missing from any Anglocentric sources discussing CMT (e.g., Lakoff & Johnson, 2008). In addition, Table 4 lists four tokens of novel creations, which Basia produced by attaching a prefix to a verb in an unconventional way to create new meanings.

Examples from Basia's speech	Basia's age	Metaphor type	Metaphor mapping
*CHI: ..., ***u****parzysz się* 'you will get <u>scolded</u>' ('*u*-' suggests a target place)	2;2	primary	END OF ACTION IS END OF PATH
*CHI: *ja się tu* ***po****pokrzywię*. 'I'll get <u>stung</u> by nettles here' ('*po*-' suggests repeated action)	2;7	primary	ACTION IS A REPETITIVE MOTION ALONG THE SURFACE
*CHI: *on mie* ***u****drapie*? '[the cat] will <u>scratch</u> me' ('*u*-' suggests taking some flesh off)	2;8	primary	REDUCTION IN SIZE IS TAKING AWAY FROM THE END OF A PATH
*CHI: *... i* ***u****pieściła* 'and <u>caressed</u> me' ('*u*-' suggests a target place)	3;6	primary	END OF ACTION IS END OF A PATH

Table 4: *Novel metaphors in Basia's speech between 2;0-5;0*

3.2 Input-output effects in Basia's metaphor acquisition

The proportions of metaphors Basia produced seem to correspond with the metaphor proportions recorded in child-directed speech: among the metaphors produced by Basia's caregivers, the majority were conceptual (N = 1,135, 93%), with perceptual metaphors in minority (N = 37, 3%). A similar picture emerges when metaphor categories are considered (Figure 1): those that were heard frequently in child-directed speech were prioritized for acquisition (e.g., word-internal, and single-word primary), while those with lower frequencies in the input were also produced in smaller numbers by the child (e.g., personification, single-word nominal). In Basia's speech, word-internal primary metaphors were particularly frequent in use (N = 1,456, 90.5%), and this reflected their frequencies in child-directed speech (N = 1,108, 90.5%).

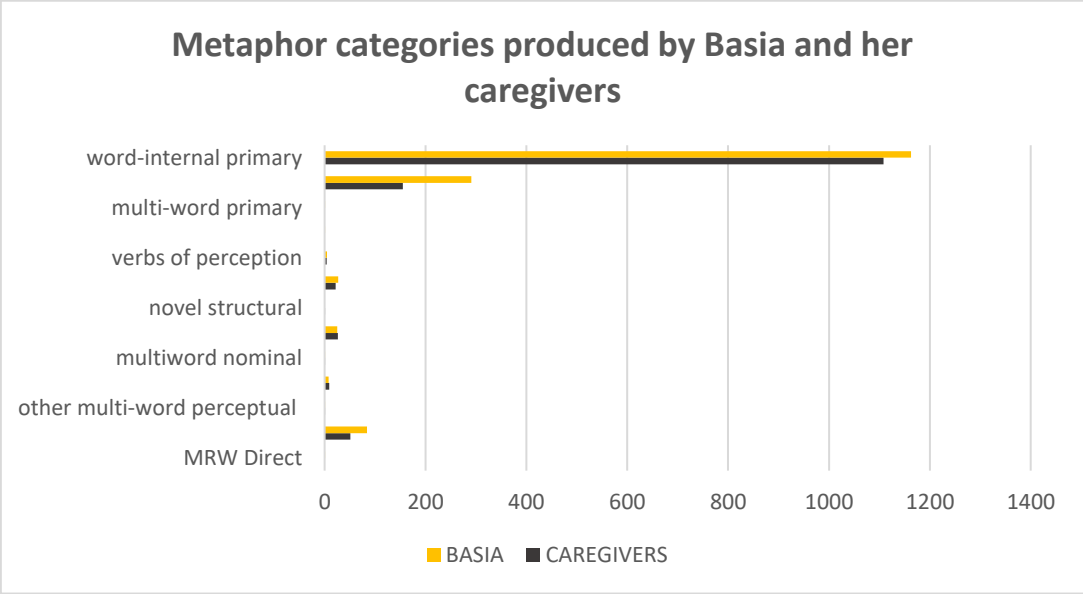

Figure 1: Metaphor categories in the speech of Basia and her caregivers.

When Basia's most frequent ten metaphor types (as coded by mappings) were considered at the next step, the relationship between Basia's and caregivers' metaphor frequencies became less obvious (Figure 2). There were eight metaphor mappings that overlapped in the two datasets as having top frequencies, which suggests that the child mainly relied on the same metaphors as her caregivers, but the correspondences between child and caregiver mapping frequencies were not straightforward.

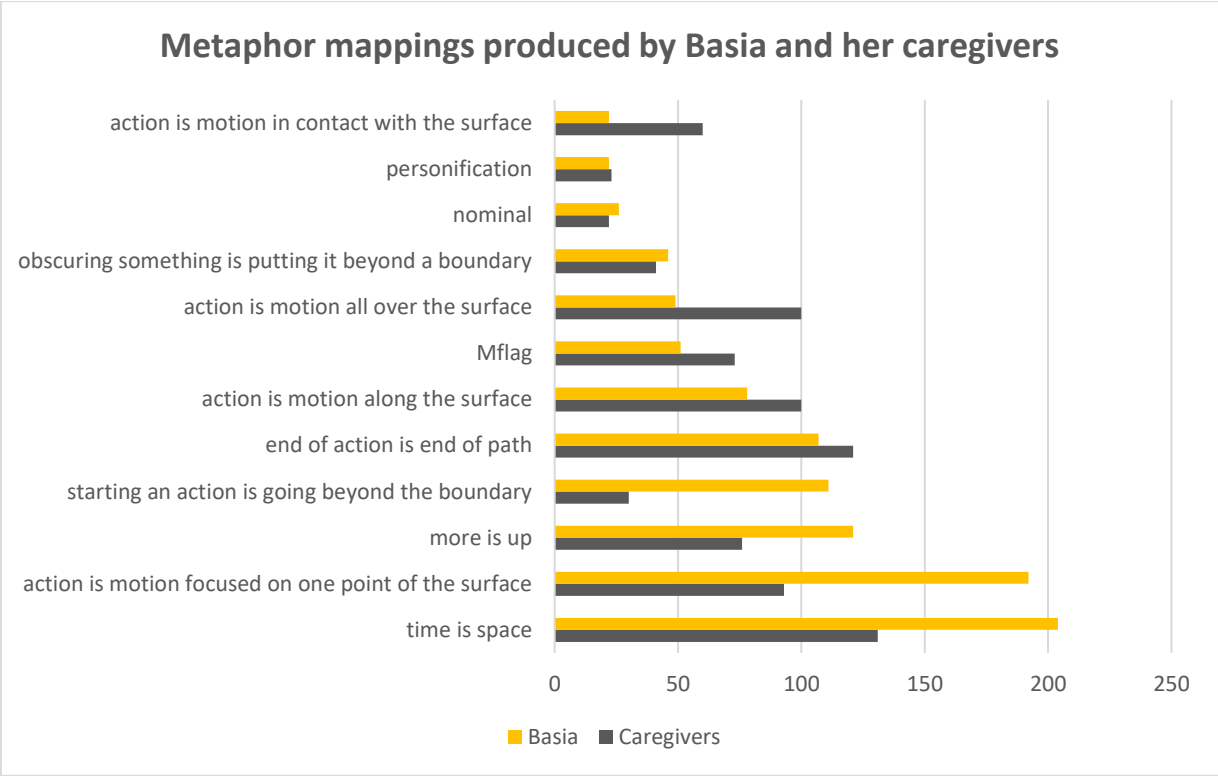

Figure 2: Metaphor mappings produced by Basia between ages 2-5, and her caregivers.

Meanwhile, as the numbers of novel uses of prefixes is extremely small, it is impossible to draw any meaningful conclusions about how input frequencies may have contributed to their extraction from verbs heard in child-directed speech.

4. Discussion

This article discussed how a novel methodology for metaphor identification in child speech developed for English (UBAMICS part I, Gaskins et al., 2023) can be applied to the acquisition Polish. The *first aim* of this article was to develop a coding manual to facilitate the identification of word-internal metaphors. It was demonstrated that reliable word-internal coding is possible if CMT literature on Polish metaphor use is consulted in a systematic manner (e.g., Przybylska, 2006; Tabakowska, 1999, 2003). The reliability of the method is supported by a score of close to 94%, which is higher than that of MIP (0.62 to 0.72; Pragglejaz Group, 2007) and similar, or higher than MIP-VU (0.70 to 0.96; Steen et al., 2010), which could be due to the fact that the second coder was restricted in her analyses by the narrow range of pre-determined metaphor classes and mappings, and this allowed a sharper focus on the transcripts. However, the score is lower than that of the English version of UBAMICS (0.97; Gaskins et al., 2023), which

could result from the fact that metaphors are more difficult to discern in Polish than English texts due to their word-internal nature.

The *second aim* of this article was to demonstrate if the Polish version of UBAMICS would reveal developmental data in line with those captured when examining contexts of English acquisition. First of all, 17% of Basia's metaphors had been eliminated due to having been primed through discourse, a number which is comparable to the 15% in the English dataset (Gaskins et al., 2023). Second, there was a large discrepancy in the frequencies of Basia's conceptual (93%) and perceptual resemblance metaphors (2%), which mirrors the findings from Eleanor, an English-speaking child aged two to three, with a similar pattern in her metaphor use (93% conceptual, 3% perceptual resemblance metaphors) (Gaskins et al., 2023). The difference in the usage frequencies of Basia's conceptual and perceptual resemblance metaphors reflects very closely that in the speech produced by her primary caregivers (an observation which also holds true for Eleanor's data, Gaskins et al., 2023). What is more, Basia frequently produced several tokens for single types of metaphors, which means that her metaphor repertoire was fairly limited.

Furthermore, when different categories of Basia's metaphors were considered, as well as the ten most frequent metaphor mappings she produced, both seemed to closely reflect the most frequent categories and mappings of metaphors recorded in child-directed speech (like those recorded in the English dataset, Gaskins et al., 2023). However, the frequencies of mappings produced by Basia were not fully in tandem with those of her caregivers, possibly because of the limitations of the dataset. Eleanor's data suggested that there should have been a more consistent link between caregiver and child data. Likewise, the sparsely recorded data captured only single instances of novel creations, making it impossible to determine how they came about. Overall, however, the current study demonstrated that the pools of different metaphor types developed in Basia's speech reflected those of her caregivers, and it suggests, albeit tentatively due to the nature of the dataset, that conceptual metaphors may have been prioritised in early acquisition due to their frequencies in caregiver input, which backgrounds the role of mappings in their development. This challenges the notion that different metaphor types arise in speech via different channels. It would seem that child-directed speech is the most likely explanation for how they are all acquired.

Overall, due to the capacity of the current method to investigate word-internal metaphors, their study in Polish revealed a broad range of units with dual meanings that reflected a language specific network of regular abstract-concrete mappings (e.g., IMPROVING PERFORMANCE IS PROPELLING IT FROM DOWN UNDER as in ***pod****powiadać* 'to improve someone's performance by giving them clues from down under'). Such metaphor use carries strong implications for CMT. While CMT has admitted that a particular culture in which a metaphor develops is just as significant in shaping the form of the metaphors in different languages as the universal bodily experiences themselves (see, e.g., Kövecses 1995, 2015, 2020; Musolff, 2004; Taylor & MacLaury, 1995; Taylor & Mbense, 1998; Yu, 1998), this explanation has been used when talking about complex structural rather than primary conceptual metaphors. In this study, Basia's primary metaphor use reveals that culture- and language-specific patterns are already present in metaphor productions recorded as early as preschool years. Such patterns have only become apparent as my corpus-based method has the capacity to focus on metaphors of all types, including those which do not seem to readily fit with the existing metaphor mappings described in the current literature.

In the future, UBAMICS part I (Polish) should ideally be applied to more densely recorded corpora of speech produced by children raised in a more contemporary time period. If interactions are recorded on a daily schedule, they will be able to capture more reliable input-output relations in metaphor acquisition. Such datasets could be used to confirm similarities and differences in the acquisition of perceptual resemblance, and primary conceptual metaphors in larger numbers of Polish children. They could also be used to examine longitudinally the order in which such children acquire different aspects of metaphor knowledge, an analysis that was impossible in this study due to the sparse nature of recordings. For example, it has been argued that to know a metaphor, one needs to link the contextual meaning with its more concrete equivalent. In the area of language acquisition, this begs the question of whether children need to be able to use a morpheme, word, or construction in its basic sense before they start to use it in a more abstract manner. In the context of Polish, we need to ask whether children start their acquisition with verbs whose prefixes are more concrete before they move to those whose prefixes are more abstract. If all children prioritise those verbs whose prefixes are more concrete in meaning, does this trend correspond with high frequencies of such prefixed verbs in child-directed speech, or does it occur

regardless of parental frequencies of use? In case there is variation in the way children acquire verbal prefixes, could it be attributed to the idiosyncratic properties of family language (the so-called family-lect)? Or, if there is insignificant variation in the acquisition of prefixes, could their developmental trajectories capture the way children's acquisition of conceptual mappings proceeds from fairly generic to more complex (Grady, 2005; Peňa, 2008)?

Apart from being used with Polish data, the methodology proposed in this article can be extended to other Slavic languages. As most Polish prefixes filtered into Polish from Proto-Slavic (Łaziński, 2020), they can also be found in other Slavic languages, no matter how distinct. They are perhaps most evident in crosslinguistic cognates: for example, in Polish ***za****snąć* 'fall asleep' (West Slavic) varies only minimally from Russian ***за****снуть* (East Slavic) and Slovenian ***za****spati* (South Slavic). These examples show that when part of verbs in any of the three languages, the prefix *za-* 'after' evokes exactly the same abstract interpretation, adding the same shade of meaning, the same Aktionsart. Similarities can also be observed in adverbials of time, such as Polish ***po****południe* 'afternoon', Russian ***после*** *полудня* and Slovenian *popoldne* 'afternoon'. When studied in bilingual children acquiring any two Slavonic languages, words which share the same prefix should be acquired more easily than those that do not as they are expected to be conceptually more accessible to learners.

All in all, the emerging data from Basia, and her English-speaking peer (Gaskins et al., 2023) suggest that metaphoric speech emerges early and is driven by metaphor frequencies in child directed speech. As metaphor knowledge is essential for developing key concepts across the curriculum, including maths (Núñez, 2008), music (Zbikowski, 2008), biology (Taylor & Dewsbury, 2018) and chemistry (Mahootian, 2015), it seems crucial that children with lower levels of vocabulary gain access to figurative language training in early childhood. Currently, Early Education Curriculum (2022) for European nurseries and primary schools does not include figurative language instruction as essential building blocks for the complexity of growing knowledge. This is an oversight that will need to be addressed by future educational reforms.

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