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Changes in Metaphor Comprehension in Children[1]

The aim of the study was to follow the implicit patterns in children's responses to metaphor describing human by means of a name of animal. The main problem in present study was: which traits of topic (human) would be spontaneously used by children from three age groups? The study followed a quasi-experimental design. The subjects were 77 children from three age groups: 5;6-6;0, 8;0-8;6, 9;6-10;0. The dependent variable: the level of comprehension of 18 metaphors with vehicles from the animal domain and one topic – human. The variable was measured through individual Piagetian interviews. The study confirmed the hypothesis that the ability to activate metaphorical thinking in order to describe human attributes increases with age, with a turning point around 8 year of life. The traits mentioned by subjects could be classified into five categories: unambiguous evaluations, physical features, behavior, behavioral traits, dispositions (intellectual, emotional, communion) and agency. Older children assigned more human dispositional traits, thoughts and preferences to the objects of metaphors. Younger ones often focused on the physical features of animals. With age, the tendency to give positive evaluations to the objects of metaphors increases.

Key words: *metaphor comprehension, description of human, linguistic development)*

What is a metaphor? Is it merely a figure of speech, used to entertain listeners? Or a shorter form of simile, intended for less keen readers by lazy poets? Maybe it could be both, but there is definitely more to it than meets the eye. Vast impact of metaphor seems to be subtle enough to be overlooked at first glance. The term 'metaphor' signifies speaking of one thing (topic) in terms of another thing (vehicle), when both are considered similar in certain aspects (Kubicka, 2005). Thanks to over three decades of empirical research, we begin to see a metaphor as one of the main tools of the human mind. A competent language user needs it in two ways: he understands non-literal meanings served by other language users, and he spontaneously creates new ones. It is not yet established if the ability to use metaphor develops steadily, or whether there are crucial stages. Each and every definition is partial. Probably one the of few aspects on which the Authors agree, is that spoken or written metaphor represents ways in which we convert data and communicate it. As Blasko puts it: "according to current views, therefore, metaphor is more than a linguistic device; rather it is seen as a reasoning and inferential process" (Blasko, 1999, p. 1678). Young uses even stronger words: "metaphors appear in almost every realm of our existence (…) [they] are not an optional literary device but rather enable us to understand and experience one thing in terms of another. They focus our attention upon particular aspects of a thing that we might otherwise overlook and, in doing so, they also deflect our attention form other aspects." (Young, 2001, p. 607). No point denying, using metaphor must be an immensely complex skill, it's development may be factored by numerous other competences. For example, describing personality traits of a human in terms of inanimate objects (books, rocks, tools, etc.) requires a high level of abstract thought, both social experience and basic knowledge about principles that rule our physical environment. How much do we need to know about the world in general, to grasp the meaning of a sentence "to the well prepared mind, sorrow is but cold wings of winter"? Exploring the

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ways in which we learn to use metaphors to describe humans (states of mind, inclinations, attitudes, beliefs, appearances, etc.) may reveal precious information about the way we learn to think in general. A metaphor seems to be a good marker for that. But how does it work and how does it develop?

For one thing, it is said that metaphor can serve as a shortcut to categorisation or specific comparison of objects. Sam Glucksberg argues that really good (apt) metaphors work best as categorizations. In his text 'How metaphors create categories – quickly' (Glucksberg, 2008), he says that whenever simile and metaphor form could provoke similar interpretations, phrases which appear in metaphor form are understood as class-inclusion assertions, while metaphors hidden in form of simile could be understood as implicit categorization or as comparisons. If a metaphor and it's corresponding simile yield different meanings, then only the metaphor form serves as categorization, simile is reduced to simple comparison. As he puts it "Comparison and categorization may thus be viewed as complementary strategies for understanding metaphors with the choice of strategy dependant on the quality and aptness of the metaphor. Comparisons are resorted to when a categorization doesn't make much sense; categorizations are used when a metaphor is apt" (Glucksberg, 2008, p. 80; see also Ritchie, 2003). Surprisingly, it's not a level of novelty that plays the main role in that process. In the experiment planned for a class-inclusion model, metaphor-induced categorization occurred equally for conventional and novel metaphors, but occurred to a greater extent for the high apt, than for the low apt, metaphors (Jones & Estes, 2005). As the authors say, aptness rather then conventionality mediated categorization in metaphor comprehension. Chiappe, Kennedy, and Smykowski (2003) also emphasize the importance of aptness over conventionality, though they focus on distinction between metaphor as a form of a claim about a category versus simile as a comparison statement. Would it be too much to wonder if the ability to think of humans in terms of non-humans starts to develop as soon as we can distinguish between properties of animate and inanimate objects? To get to know what's so special about metaphorical descriptions of humans, we should compare different categories – meaning, we should resort to chosen domains. Which domains to choose? In his paper, entitled 'Conceptual domains and the acquisition of metaphor' Keil (1986) refers to the linguists Kittay and Lehrer (1981), who were probably the first to suggest that metaphors are juxtaposition of two entire semantic fields, which are clusters of lexical items corresponding to underling conceptual domains (instead of being a simple combination of two isolated terms). He also argues that semantic fields or conceptual domains in general guide the creation and comprehension of metaphors. It enables him to rise the developmental aspect: once the knowledge of two given conceptual domains is matured, a child should be able to apprehend metaphors that link them. And, what follows, we should be able to make some predictions about the sort of metaphors accessible at a certain age (based on other work on conceptual development). As he puts it: 'if young children have great difficulty thinking about abstract objects and events as entities independent of the physical objects with which they are associated (…), then metaphors that involve such things as ideas and personality traits should be relatively inaccessible. By contrast, if young children have a much clearer knowledge of the properties of animates and inanimates (…) they should be able to apprehend metaphors between these two domains early on.' (Keil, 1986, p. 4). Keil gives a necessary stipulation: as long as a young child doesn't have sufficient knowledge about chosen conceptual domain, he or she may misinterpret a term (take it literally), as a result of a mistake, not a way of thinking. "True metaphorical comprehension involves an awareness of the principled distinctions between two conceptual domains as well as their manner of juxtaposition" (Keil, 1986, p. 20). We should, therefore, make sure that a child grasps a domain, before we jump to conclusions. The main goal of Keil's work was to explore how increasing knowledge in various conceptual domains is involved in the growth of metaphorical competence. He tested 48 children, from three age groups, approximately: 5:7; 8:2; 9:5. Procedure: Piagetian interview. Stimuli: 66 metaphors with terms taken from the fields of weather, textures, tastes were extended onto human personalities, whereas plant states were combined with ideas, animate properties with cars, human vocalizations with the wind, professional occupations with animals, eating terms with books (examples: 'he was a scratchy person', 'the idea flowered', 'the girl swallowed the book', 'the peacock is a movie star of the forest'). The results show that the order of acquisition of correct metaphorical performance in each of the eight semantic domains is as follows (quoted from the first to emerge, to the last): animate terms with car, human vocalization terms with wind, occupation terms with animal, plant terms with idea, eating terms with book, taste/texture/weather terms with person. None of the youngest children (aged approximately 5:7) understood correctly the metaphors with book/eating, person/texture, person/weather, nor person/taste, while all of them understood car/animate. On the other hand, only two from the group of 16 oldest children (aged 9:5) didn't grasp the meaning of both person/taste and book/eating, and one didn't get person/texture. All the other domains were acquired. Results suggest, that some sets of metaphors develop later then others. The reason might be, that those sets of metaphors require more complex domain, have larger processing demands. Unfortunately, it is not clear, what the general acquisition pattern would be, since not all of the children gain the ability to use sets of metaphors in the same order. However, lack of knowledge concerning non-physical, non-perceivable items (like ideas, personality traits etc.) seems to be one of the most important factors (see also: Haman, 2002).

Problem

In the present study it was decided to use as a source of vehicles only one domain. We can expect to find developmental differences in the level of metaphorical competence concerning traits of vehicle and traits of topic. By traits of topic we mean types of traits of described human – which dimensions, or which categories of dimensions are perceived and taken under consideration? Traits of vehicle stand for it's domain of origin (here: animals). Since animals and humans share basic attributes of animated objects (like intentional movement, breathing, etc.), we could benefit from concentrating on one domain. There is a chance that metaphors that evoke human characteristics through the names of animals would be less difficult for younger children than Keil's stimuli with books or textures. On the other hand, shared attributes can be confusing – the list of animals would be much more complicated than a single car. The most important: will we find differences within domain, that is – differences in development of ability to use metaphors with vehicles from one, well chosen domain.

We should expect that older children, asked about a metaphor with a vehicle from the animal domain, respond by describing people rather than animals more often than younger ones. The older the children, the more utterances referring to human traits and behaviours they provide. But it's not certain if the increase should be linear.

Hence **Hypothesis 1.**: in the group of 5;6-6-year-olds there will be the fewest utterances that raters will evaluate as relating to humans, with more such utterances in the 8;0-8;6-year-olds' group and the most in the 9;6-10-year-olds. The correctness of this hypothesis would be confirmed by a higher value of the human/animal index in older and lower in younger children. The human/animal index shows whether a given subject imagines the object he/she describes as an animal (i.e. interprets the question literally; the metaphor does not "work") or as a human being (which demonstrates the ability to use metaphorical thinking). A person asked "What does it mean that Helen is a fox" may respond by listing attributes so general that they could apply both to animals and people ("sleeps", "eats", "jumps", "breathes"). He/she could, however, refer to attributes that are clearly human ("reads") or animal ("moults").

To establish whether a child is actually using metaphor, or whether it is leaning towards the literal meaning of the words, we assumed that we need an indicator to check whether a subject is willing to use the context of human traits and behaviours in response to a name of an animal. For example, in Polish, a fox is associated with such human traits as cunning, guile, and, in general, resorting to deceit to achieve less than noble goals. A child who understands the metaphor responding to the phrase "Helen is a fox", could describe behaviours that would demonstrate Helen's cunning. As long as it is not a direct reiteration of the animal's behaviour ("fox steals chickens in the village" and "Helen steals chickens in the village"), but a behaviour demonstrating dishonesty, and one typically human (e.g. "she does not pay the bus fare", "she cheats on her tax utterances", "she uses her sister's cosmetics and then denies it"), we can conclude that the child knows the connotation related to a given animal and is able to translate it into human terms. He/she describes behaviours, traits, dreams, preferences, and appearance of a person through metaphors with vehicles from the animal domain.

Hypothesis 2. Younger children will more often describe an object's appearance and behaviour, while older ones will tend to speak of psychological dispositions and inclinations. We will try to trace the possible patterns in categories of description.

In order to establish categories of traits of a topic we need to analyse properties of each described object. In every answer of each subject we will find markers of concentration on different levels of object's functioning. Starting from agency (his/hers reveries, goals etc.), than disposition (communion as well as emotional and intellectual functioning), behavior, to physical features, ending with unambiguous evaluations of an object.

It is said that in metaphorical mode of thinking, vehicle highlights certain, most important in given context, features of a topic. Some attributes of the topic are actively inhibited, so that receiver won't be flooded with useless information (Gluckberg, Newsome, & Goldvarg, 2001). But can we be sure that the vehicle will always highlight the same features of topic? Probably not. And if we find differences, can we assume that they are pure consequence of dialog context? Or, rather, do they depend mainly on the level of development of speakers? That uncertainty encourages to use subjects of different age groups and to search for hidden patterns in qualitative data. At some point it would be most interesting to analyse, which traits of certain animals (vehicles) do children of a given age use for metaphorical description of humans (topic).

Hypothesis 3. With age, children's evaluation of an object should become richer and more diverse, with a shift in favour of positive evaluation. The value of the "evaluation" index increases. As children grow older, they tend to reflect more on the causes of the phenomena they observe. While younger children are content to simply divide basic behaviours and traits into "good" and "bad" (crossing the street on the red light is bad, playing with food is bad, peacefully agreeing to put on rubber boots is good, having a clean face is good), older ones tend to look for reasons – why is it good to wear rubber boots? Because you can get away with jumping into puddles. Later, children learn to take into consideration the circumstances of events and the intentions of others. Did Stan, who unintentionally spattered mud over himself do something wrong,

or was it an accident? He did not think it would rain because he is unwise, or because he was in a hurry? What are the consequences of the choices you make? What are the reasons for those choices? Children, who are able and willing to form complex opinions on the objects they describe (e.g. "Stan is usually sensible, but that day was an exception, because he ran to meet his friend and forgot that he might need rubber boots; he got his shoes soaked through and now he has a sore throat") know much more about the world than children who only state that "Stan is bad, because he got ill". They remember more, they take more factors into account, they stop seeing their environment through basic binary oppositions such as good-bad, pleasant-unpleasant, black-white. Naturally, such abilities are only to be expected in older children, younger ones are still learning the world in terms of "I'm allowed to do this, I'm not allowed to do that". In addition, expressing a complex evaluation requires linguistic proficiency. Since metaphors make it easier to express what is difficult to put into words, they may facilitate talking about this aspect of life (Gineste, Indurkhya, & Scrat, 2000; Gluckberg, Newsome, & Goldvarg, 2001).

It should also be mentioned, that metaphor is not an equivalent to simile, and processing it doesn't take longer, then processing literal phrase (Glucksberg, 2003). Sometimes it's treated like no more than a simple comparison, but it's easy to see, that a phrase "she's beautiful like a lily" does not mean the same as "she's a beautiful lily" (see also Kennedy, Chiappe, 1999). Therefore, we should be careful when we address subjects with stimuli, not to use the comparison form. That may be tricky while testing younger children, who wish to hear questions again and again in different forms.

Method

The study to test the above hypotheses was designed as a quasi-experiment (group selection was done on the basis of an independent variable, i.e. the subjects' age). The dependent variable (i.e. the level of understanding of 18 animal metaphors selected in a pilot study) was measured in an individual Piagetian clinical interview. Interviews with subjects were recorded and then analysed by raters. The subjects' sex and the sequence of presenting stimuli (five versions of lists of animal names) were also controlled. The indices of the dependent variable referred to individual dimensions, identified as particularly important in the development of animal metaphors comprehension abilities – human/animal, category of description, evaluation. The number of digressions made by children and the length of their utterances were also checked. The between-groups comparisons revealed the overall picture of developmental changes with respect to the understanding of animal metaphors.

There were 77 children (boys and girls) in the study, divided into the following three age groups: 5;6–6;0 (14 girls; 10 boys); 8;0–8;6 (15 girls; 14 boys); 9;6–10;0 (10 girls; 14 boys). The children were attending a kindergarten and primary school in Wiązowna (a town near Warsaw, diversified socially). The children who took part in the study had been selected by their teachers. Half of them were described by their teachers as very gifted, and half as average. Each group had the same number of "gifted" and "average" subjects. All interviews (77 in total) were analysed.

In the first stage of the study, children were familiarized with the procedure. They were given one animal metaphor ("fox"), and the experimenter explained the task and provided the answer: "People often liken other people to animals. They say, for example: »This man is a fox!«. They can say that because they see someone who has red hair and a ponytail, which reminds them of the fox's tail. But they can also say that, because the fox steals chickens in the village, and is so cunning, sly, wily, smart, clever, and intelligent, that it never gets caught by farmers. The fox will always find a way out, and when it does something wrong, it gets away with it. And people see that some people act the same way the fox does. They do something wrong, but they never admit it, and they are never punished. For example, they trip somebody up or pull their hair, or they break something, but they are so cunning that nobody punishes them, they always get away with it. Are you able to imagine a person like that?"

The instructions for boys contained a boy's name (Stan), and a girl's name (Helen) for girls:

"Now imagine that there will be a new girl/boy joining your class/kindergarten group next year. You do not know anything about her/him. But you are very curious. You do not know if she/he likes to play, if he/she is a good student, if she/he is a good friend... Maybe she/he is a telltale? Maybe she/he likes to beat other children up? Or maybe she/he is nice and friendly and you would like to make friends with her/him? All you know is that the new girl's/boy's name is Helen/Stan. Imagine that someone you know went on vacation and met Helen/Stan – the one who will be in your group after the holidays. And that someone already knows something about Helen/Stan. They come back from their vacation, and you want to find out as much as possible about Helen/Stan, so you ask: "What is Helen/Stan like?". And your friend responds: "Helen is *an owl*". (here the experimenter read the name of the first animal from the selected version of the questionnaire). So what was he trying to tell you about Helen/Stan? What would you think about her/him?" All metaphors were preceded by instructions to help children remember that the questions referred to human traits. "And if he told you: "it's not true that Helen/Stan is an owl. It's rubbish! Helen/Stan is a lion!" What would you think about Helen/Stan, who is a lion? (more animals) And if he/she was neither an owl, nor a lion, but an adder, what then?"

Analysis

The data ware analysed with the help of raters – two psychologists and a linguist. There was a high degree of agreement between raters (correlation coefficient of the raters' evaluations between 0.955 and 0.814). The mean correlation coefficient for all concordance coefficients was 0.892.

It was assumed that a single utterance is the child's answer to a question about each individual animal metaphor. Utterances were divided into units by the author of the project, with minor changes introduced by the raters. Coefficients for the number of units were calculated, and the correlation proved to be very high, which suggests that the criteria used for the division of utterances into units were relatively clear, with very few objections being raised.

The main criterion for the division was whether the participant provided new information about the object. Usually a unit was a simple sentence, but if a child listed a number of attributes or actions of an object, they were divided. Pitch modulation was also taken into account. The "number of units" dimension was meant to reflect the length of an utterance. Some bits were categorised as digressions (e.g. a description of some event at the kindergarden, summary of a story, etc.). The content of such bits was not analysed. Such digressions were treated as single units. Some utterances comprised several digressions, if the child abandoned the task and returned to it multiple times.

In line with the study hypothesis, there was particular focus on the analysis of texts on whether the children's responses suggested a subject's inclination towards one category of description. The length of utterances and the number of digressions were also assessed. The category of description was the most important one (apart from human/animal index), as it was directly related to the developmental changes in understanding of the metaphor, and patterns of perception of social environment (cf. Hypothesis 2.).

The values of the human/animal index for the whole utterance formed a scale and were expressed in numerical terms. Since raters evaluated each unit separately, for each utterance (on each animal separately) at least 1 point was awarded (if the utterance consisted of only one unit rated as an animal attribute). The value of the index was at the maximum when all units were rated to be human (three points multiplied by the number of units).

For example:

Helen-eagle: /She would have a lot of feathers./ (Ola 6;0)

Ola's utterance consists of only one unit, evaluated as referring to an animal attribute (1 pt.)

Helen-eagle: /She would gossip, /take things away from others/and she would be very perceptive./ (Daria 10;0)

There are three units in Daria's utterance, each referring to human attributes (9 pts.)

The values of the category of description index for the whole utterance also formed a scale and were expressed in numerical terms (same solution as seen above), rated from 1 pt to 5 pts., due to:

a) unambiguous evaluations: often given with a note of exclamation (eg. wonderful, awful)
b) physical features: his/hers looks, description of movement, age, health (eg. darkhaired, wrinkled, slender)
c) behaviour: daily behaviour or common habits (eg. eats mainly broth, reads) and behavioural traits – descriptions of the way he/she operates (eg. carelessly, sluggishness)
d) dispositions: intellectual functioning – estimations of object's intellectual potential (eg. clever, dull), emotional functioning – relates to whole repertory of object's emotions (eg. rebelious, agreeable) and communion – social skills and typical reactions, main traits of social behaviour (eg. malicious, kind)
e) agency: points to his/hers life goals and attitudes, beliefs or fixed fancies (eg. wants to be a pilot, is self-dependent)

The evaluation indicator was used to assess the subject's attitude towards the object of the metaphor. What is the connotation of the attributes used by the subject: is it positive, negative, or neutral? Can we assume that the feature of the object selected by the narrator is, from his/her point of view: positive/favourable (e.g. "he helps", "he is wise", "he lends things", "he is reliable", "he is obedient", "he gets good grades", "he is good-looking"); neutral/difficult to say (e.g. "he likes cheese", "he has dark eyes"); negative/unfavourable (e.g. "he destroys other children's notebooks", "he pulls other children's hair", "he eats people", "he pinches", "he is bad", "he is naughty in class", "he sits on potatoes, ugh!"). A scale was used here as well. Each attribute with a negative connotation was given 1 pt., a neutral one 2 pts., a positive one 3 pts. Thus, for every utterance (on each animal separately) at least 1 point was awarded (if the utterance consisted of only one unit rated as negative). The value of the index was at the maximum when all units were evaluated as positive (three points multiplied by the number of units).

For each index, the quantitative data for references to individual animals in metaphors were calculated first, and then summed up. The weighted factor was the most important in terms of testing the hypothesis. It was obtained by adding the scores for each utterance and dividing the total by the number of units.

Results

The results (one factor ANOVA) of analysis of all metaphors for human/animal, category of description and evalu-

Table 1. Index totals (human/animal, category of description, evaluations and digressions) for all animals (one factor ANOVA)

Index	Age groups			F	P
	5;6-6;0	8;0-8;6	9;6-10;0		
Number of units	62.7179	80.2879	71.8627	2.058	0.139
Category of description	160.1538	254.3636	251.3725	5.833	0.005
Human/animal	94.0769	181.2424	198.9804	8.454	0.001
Evaluation	100.1538	155.9848	154.4314	4.884	0.012
Digressions	8.0833	1.5000	0.3137	8.052	0.001

ation indices, and the number of units and digressions, are presented in Table 1.

The analysis clearly shows that there are significant differences between age groups in terms of the number of digressions in the children's utterances, while there is little variation in the number of units (weak trend). This means that utterances were similar in length, however, due to the greater number of digressions in younger children (as expected), in the older age groups there were relatively more units analysable in terms of the main indices (human/animal, evaluation). Therefore, the values of weighted indices were calculated. They were the following: human/animal index divided by the number of units, category of description index divided by the number of units, evaluation index divided by the number of units and digressions divided by the number of units. The value of weighted indices was calculated for each metaphor.

Similarly to the indices, which were the sums of the raters' assessments with respect to all metaphors, the differences between weighted indices were also calculated for the three age groups. The results are presented in Table 2.

Human/Animal Dimension

The human/animal dimension tells us whether metaphorical thinking is activated or not: does the child responding to a stimulus in the form of ametaphor refer to its knowledge about the animal, or about a human being? In other words, does the child remember what it knows about a roe, or does it imagine another child with some roe-like attributes?

Results demonstrate that children from the youngest age group (5;6-6;0) described an animal more often than older children. The oldest children (9;6-10;0) usually spoke about people, although not in the same way adults would. There were some instances of typically animal attributes, which sometimes amused the narrators themselves.

Eight-year-olds mixed the two orders (human vs. animal). It was the result of irresoluteness and undefined borders between the two orders. Marta, aged 8, talks about Helen-dolphin: *If she would be a dolphin, she would swim in the lake. And she would be a fish.* Asked whether Helen would be a good friend, Marta adds without hesitation: *She would be just as good as a friend. And she would play with boys or girls. And she would behave in class. Very well-behaved.* (Marta, would you like to have a classmate like that?) *I wish there was a girl like that, a girl who would behave so well.* (Would she be pretty?) *Yes. She would. She would be trustful when playing with friends.* Clearly, Helen can be an animal and a friend at the same time. A "good fish" who would behave well in class. Stan-dolphin, described by a ten-year-old Michael, is unmistakably human: *I'm sure he would have a large nose. Big eyes, glasses, medium, not long, hair. He'd be of medium height. And he would be like a very good student. He would not get into fights. He would be friendly and helpful.* Children had little difficulty with the "dolphin" metaphor. The issues described here are more clearly seen by the example of more difficult metaphors, such as comparison with a foal.

1) *If she were like a foal, she would be born by a cow. And she would drink milk. She would walk on the meadow and eat grass. And she would be a cow.* (How would she like to play?) *Me?* (No, Helen) *Well, she would like to play hide and seek with her friends. And play jump rope. And she would like to play. Run.* (Would you like her?) *Yes.* (Marta, 8;6).

Table 2. Mean indices weighted for the number of units, human/animal, evaluation, calculated for all 18 metaphors with vehicle from the domain of animals, in three age groups

Index	Age group			F	P
	5;6-6;0	8;0-8;6	9;6-10;0		
Category of description	2,6317	3,1883	3,5186	11,533	0.000
Human/animal	1.5613	2.2390	2.7582	21.019	0.000
Evaluation	1.6461	1.9297	2.1298	8.416	0.001
Digressions	0.1007	0.0191	0.0046	11.661	0.000

2) *He would definitely like to make noise. He would have blond hair, but very long. I don't think he would be like... a truant or a very good student. Just like that. He would be good, but he would be neither good nor bad. I guess he would be a computer scientist.* (Michael, 10;0).

Interestingly, the responses of some 8-year-olds suggested that they talked about people as long as they remembered the instructions. When they lost their focus, they would list typically animal attributes. When they again remembered that the subject is human, they corrected their utterances. It seems that the children in this age group were the only ones to concentrate on the task in this manner and that it required considerable effort from some of them. Unfortunately, this is only the researcher's "hunch": there were no measures for that effort in the study. For example, the conversation with 8-year-old Kate was interrupted for some 30 seconds. Before the break, Kate talked about people, but then she got distracted. To the question about Helen-foal, she responded: *She would hop around, eat grass and carrots. No, wait!* (Kate II 8;4). As soon as she remembered the instructions, she returned to her former train of thought. Another Kate, also 8-years-old, asked about a girl who would be like a mouse, responded: *She runs fast. She picks crumbs. She is grey. She wears grey. She has a little tail. She has a fur instead of hair. Maybe this is not associated with people, but I will say that cats eat mice.* (Kate III 8;1). Kate is very careful to only mention those attributes that have human connotations (Kate seems to be a very conscientious person, she is an outstanding student), but there was still place in her utterance for a tail, fur instead of hair, and crumbs.

Category of Description Dimension

Raters judged children's utterances searching for pattern in categories of description. Will a child be satisfied with simple evaluation of an object, or will it point to specific traits? One 10-year old talks about Helen-mouse: *She would hide. She would be afraid, because she would think, that everyone is sort of, like cats, who want to attack her, and eat. She would be very scared. She would be so all-afraid. She would be quiet, calm. If anybody asked her to wait, she would wait. She would be so sensible, placid. But sometimes she would squeak if somebody beat her or frighten her. She would never get mixed up in any quarrels, scandals. She would be patient*. (Daria, 10;0). The older the children, the less unambiguous evaluations they used.

Evaluation Dimension

While the ambivalence in the utterances of 8-year-olds was mostly related to deciding whether the object they described was an animal or a human, in 10-year-olds it concerned evaluation. The responses of the oldest children clearly demonstrate the object slowly taking on the attributes of a human being with a complex character. Some of the features are worthy of praise, while others are denounced.

Stan-owl: *Smart, but also not nice to everyone.*
(Peter 9;9)

A particularly interesting aspect of the oldest children's utterances about the character of the person they described were their comments on passing rush judgements and the extent of their own knowledge. Ten-year-olds can justify the behaviour of their protagonist, even if they disapprove of their actions. They find a lot of arguments for and against. While six-year-olds simply state that someone is either good or bad, eight-year-olds insist that the person they describe is sometimes good, sometimes bad, but only the utterances of ten-year-olds give the impression of being balanced. They are the only ones to consider someone to be "just right", because they do not go from one extreme to the other.

On the other hand, eight-year-olds often exemplified their criticisms with descriptions of specific behaviours. Usually "being bad" meant "being disobedient", "not listening to the teacher" or "not listening to parents", as well as being hyperactive outside the classroom: pulling girls' hair, tripping other children, spitting, biting, pinching and mocking. There were fewer references to disobedience in the utterances of ten-year-olds, who tended to list more varied negative traits. They were the first to mention excessive ambition or lack thereof.

Discussion

This study confirmed the research hypotheses, demonstrating the differences in the three age groups in terms of comprehension and usage of one, animal domain.

The 6-year-olds said the least, since many of them found the task difficult. Some did not even know the names of some animals (they asked for the meaning of "colt", "calf" or "adder"). Many would respond by mentioning only one attribute (e.g. sheep – good) or describing one activity (e.g. hedgehog – carries apples, cat – meows). They also made the most digressions, usually by referring to their own experiences. For example, when asked "What would you think if someone told you that Helen is a butterfly?", Alexandra, aged 6, responded: *She would be pink and she would fly. Did you know that I rode a pony at the circus? I rode a pony. With a main, and so fast. No hands!*

Eight-year-olds talked the most, and their utterances were, comparatively, the most descriptive. They used far significantly fewer digressions than 6-year-olds. Eight-year-old Marta, asked about Helen-tiger, responded: *Like a tiger... Tiger is like a bad lion who likes to eat some animals. It likes to hunt some wild animals. It likes to hunt. So*

this Helen would be very naughty. And she would behave very badly. And I wouldn't like her. Her musings about the tiger are definitely "to the point", unlike Alexandra's description of her visit to the circus. A characteristic feature of 8-year-olds is "thinking aloud": their utterances often contain a rationale for the choice of attributes assigned to a given metaphor. In this case, the girl-tiger is very naughty, because the tiger likes to hunt smaller animals.

Ten-year-olds said more than 6-year-olds, but slightly less than 8-year-olds. They used hardly any digressions at all. Their utterances were precise. Ann (9;6) asked about Helen-calf, gives a concise and succinct answer: *She would be vulgar and unpleasant.* Peter (9;6) elaborates on the same metaphor differently: (Stan-calf) *He would be good and he would always give others what they asked for.* A typical reply of a 10-year-old is short, but besides a general expression ("good"), it often contains important details, e.g. a description of a specific, characteristic behaviour, pointing to a permanent disposition ("he always gives others what they want"). The utterances of 10-year-olds contained complex, ambiguous evaluations. This is what metaphors are made for: conveying complex connotations.

Depending on age group, children offer different comments on the stimulus person (Helen or Stan). The youngest ones typically content themselves with stating their attitude towards the object of the metaphor and its physical features. Slightly older children offer examples of behaviours and activities, while the oldest refer to fixed "character traits", as well as plans, dreams, and preferences of the person described by the metaphor. Such developmental change also requires further research, as it would seem to also suggest an increase in the ability to use metaphors for the purposes for which they are best suited.

During our analysis of interviews, there were some motives which, instead of satisfying our curiosity, gave rise to new questions. The observed animal behaviours and physical features make up a representation which, through an as yet unknown mechanism, is expanded into permanent dispositions and "psychological traits" of a human being. The qualitative analysis revealed a number of trends. Some typical animal features (e.g. white fleece, claws) are transformed into typical human traits (pale complexion and long, painted nails, respectively) – in this case the "translation" remains within the sphere of physical features. But the animal physical features may also be converted into human preferences ("it has wool/down/fur" into "he/she likes to wear woollen sweaters", "it wears a bell on a collar" into "she/he collects jingle bells", "it's hide is striped to be less visible in the jungle" into "he/she likes wearing stripes the most"). Is there a relationship here? Comments about wings that become long arms, and the ability to fly turning into a dream of flying, or enthusiasm for planes, appeared too frequently to be written off as accidental.

The most intriguing issue was: how does the ability to understand metaphors with vehicles from one domain develop? Do children find it easier to use metaphors with more common names of animals as vehicles, or the ones, that they come by less frequently, yet apt (Brisard, Frisson, & Sandra, 2001; Jones & Estes, 2005; Kliś, 2004; Rittel, 1995; Chiappe, Kennedy & Smykowski, 2003; Gentner, Bowdle, 2001)? It remains an open question. In his study, Keil (1986) used as stimuli names of: deer, sparrow, spider, beaver, ant, parrot, crow, kangaroo, peacock. In our study, we had: dolphin, adder, tiger, snail, owl, calf, lion, mouse, deer, shark, ant, butterfly, eagle, sheep, hedgehog, colt, cat, fly. Both groups of stimuli have the same defect: we do not control to which point a given vehicle is a prototypical example of a domain. Peacock, owl, crow are quite exceptional in the category of birds. It's easy to recognise them and remember their traits. Sparrow may be an object of everyday observation, but it's less impressive than eagle, which happens to be the emblem of Poland. Probably every English child learns to recognise a robin as quickly as a Pole knows a stark. Polish children know nothing about robins till they read "The secret garden" by Frances Hodgson Burnet. Still, it's easier for both English and Polish to distinguish between parrot and pelican than between blackbird and rook, typical and common in our environment. We should, therefore, rethink the issue of sufficient knowledge of a chosen conceptual domain. With basic distinctions ready, there will still be lots of questions to be answered.

There are inherent difficulties in the study of metaphor comprehension abilities. Interpretation of conventional phrases presents few problems to adults. They are usually received automatically and rarely inspire meta-linguistic reflection. Competent users of language are by no means unanimous, but it would be relatively easy to establish an average meaning of a common phrase in a given group of adults. However, young children's interpretation of even the most conventional metaphors often differs radically from the way they are understood by adults (Ciechanowicz, 1981; Gąsiorek, 1995; Kubicka, 1987). When it comes to creative, new, poetic metaphor, we should be prepared for an even more complex set of meanings, meanings much more dependent on the context of an utterance, and the inclinations of its recipients (Ricoeur, 1978). It seems necessary to establish a certain target point, which will serve as the indicator of complete and correct understanding (Dryll, 2007). Let as assume then, that a given metaphor is understood correctly, if we have reason to believe that the way a subject understands it matches the semantic field of this given metaphor. That semantic field would be specified as the average of the meanings ascribed to a given phrase by a representative group of competent users of language (adults). The aim here is to follow the developmental changes and distinguish the successive stages on the way to full competence. We mustn't forget that, due to Ricoeur (1984), amending a metaphor depends on the context and connection between people who talk – it would be unwise

to assume that a semantic field of live metaphor captures it's meaning as static and final.

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