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Children's Metaphor Comprehension and Production

Abstract

This article demonstrates the results of the educational project "Word Art Awareness," which was established in some primary schools in a metropolitan environment (Lodz, Poland). The aim of the study was to identify 8–9- and 9–10-year-old children's knowledge of the following topic: target domain of the metaphorical mapping (JOY, SADNESS, LOVE, HATRED, FEAR) as well as childlike metaphorical accomplishments related to identification of similarities and differences between destination domain and source metaphor domain through the process of educational environment construction. In designed didactical intervention operations, research data resulted from participant observation, focus interview, and children's production analysis (graphical visualization, paired-associate learning tasks and tests of unfinished tasks). Research findings show children's preferences related to the translation of one metaphor discipline through another one as well as construction strategies related to children's knowledge about the emotional aspect and feelings. Moreover, findings suggest the need for a broader understanding of educational environments in Polish educational culture.

Keywords: *children's metaphorical predispositions, target domain, target domain of metaphorical mapping, knowledge construction, educational environment, educational culture.*

Introduction –
theoretical background for selecting the subject, terminological findings

The research came about through conceptual metaphor theory (Lakoff & Johnson, 1980, 1999).The metaphor was defined as a conceptual-linguistic mapping between a source and a target domain. The research shows that metaphor understanding varies not only by the age of the participants, but also by the type of target domain of the metaphorical mapping and the conventionality of the linguistic form with which the metaphor was conveyed, according to Özçalişkan (2005, 2007, 2013a).

The age of the participants

The research indicates that children's capability of developing understanding and explaining metaphors that involve cross-domain comparisons increases with age. 3- to 4-year-old children can spontaneously produce novel expressions which highlight similarities between objects. Moreover, the research shows that children of this age can choose the appropriate match for a similarity mapping from a set of alternatives in an experimental setting (Winner, 1988; Pearson 1990; Özçalişkan, 2007, 2013a). Children's performance in this area improves by the age of 5, at which time they can produce similarity-based explanations when asked about expressions that involve comparisons between objects (Vosniadou 1987; Özçalişkan 200; Siltanen, 2009). Thus, preschool children can both understand and spontaneously produce a variety of expressions based on similarity, an achievement that is considered to be the earliest form of metaphorical ability in young children (Pérez-Hernández, Duvignau, 2016). Children of any age have no difficulty understanding feature-based commonalities between objects, but it is only with increasing age that they can begin to understand mappings based on relational structure, and accordingly, produce explanations that reflect this understanding (Özçalişkan, 2007). For instance, in interpreting the metaphorical statement *a cloud is like a sponge*, 5-year-old children rely on feature-based similarities in their explanations (*both clouds and sponges are round and fluffy*), while older children and adults opt for more relational explanations (*both clouds and sponges contain water*) (Özçalişkan, 2007). Thus, although children can understand and spontaneously produce similarity mappings by preschool age, the ability to understand more complex metaphorical mappings, namely those that involve

cross-domain comparisons, emerges in late childhood, somewhere between the ages of 9 to 12 (Özçalişkan, 2007, Reyna, Kiernan 2009).

Target domain of metaphorical mapping

Other researchers plot the development mapping from the initial conceptualizing of metaphor as involving only one domain (typically the source) to a more integrated understanding of metaphor as involving both source and target domains (Gentner, 1983). Research shows that children tend to understand motion metaphors at an earlier age, metaphors involving extensions of object properties, possibly due to the source domain of motion being more closely linked to children's bodily experience (Özçalişkan, 2005).

The conventionality of the linguistic form conveying metaphor. Cognitive and verbal factors.

The study indicates that language ability is a good predictor of children's emerging metaphorical abilities and children who had higher language skills expressed themselves more effectively in the explanation task. This could be related to the fact that spoken articulation of underlying metaphorical knowledge typically necessitates greater verbal ability. The child needs to learn not only what the words mean but also how this meaning can be extended in novel ways to convey metaphorical meanings (Özçalişkan, 2013). Thus, language itself starts to influence cognitive development and can even play a crucial role in the stimulation of children's early cognitive abilities, including the ability to recognize similarities between fields.

Role of context in understanding metaphor

By the age of 4, children showed metaphor comprehension and could understand motion metaphors, but only when the metaphors were presented within the context of a story. However, when they were asked to interpret isolated instances of metaphor, they almost exclusively based their explanations on the source domain and provided physical descriptions for metaphorical events. Thus, given that the scaffolding role of context in performance is commonly observed in metaphor understanding (Özçalişkan 2013; Cameron, 1996, 2003). Another researcher

indicates that even the youngest children demonstrated an ability to adjust their metaphoric interpretations to reflect contextual influence. These findings suggest that children as young as 6 years of age exhibit skill with metaphor (Waggoner, Palermo, Kirsh, 2017). There is also other research which suggests that metaphorical competence is related to sensitivity to pressure to be "literal" in Grade 1 (Glicksohn, Yafe, 2009). In relation to this research, I will talk about the way the metaphor coding and decoding process changes in 8–9- and 9–10-year-old children. In addition, I will diagnose children's knowledge about the domain; target domain of metaphorical mapping (JOY, SADNESS, LOVE, HATERED, FEAR).

Research Methodology

The main aim of this research was the analysis of children's metaphorical capacity, in other words, understanding abilities, metaphor identification and creation. I was interested in the way children conceptualize feelings as well as which common features of destination and source domain they treat as important in metaphor, whether they can distinguish special features of both domains. I also made an attempt to establish children's knowledge about emotions and feelings. Analysis focused on metaphors which are formed by the target domain of feelings (joy, sadness, love, hatred, fear). I assumed that the names of feelings would provoke children to search for theoretical conceptualization means. I also assumed that they would use metaphorical verbalization and symbolic visualization. In addition, I assumed that children's metaphorical capacity research would also have a pragmatic objective. I searched for an answer to the question whether metaphorical predispositions development was possible. As a result, I organized and conducted the educational project "Word Art Inoculation", which took place in selected primary schools in Poland. During five school weeks, the propaedeutic modules related to literacy education regarding the concept of word art inoculation were introduced to the program (*Żuchowska*, 1992; Wiśniewska-Kin, 2009):

(1) Towards fiction (something is and is not at the same time);
(2) Towards the tone colour (naming marks of difference);
(3) Similar, identical, different (meanings expressed by shape);
(4) Painted by sound, moved by a word;
(5) Strange meeting of words (metaphorical expressions);
(6) Language surprises – incentive for imagination (metaphorical picture);
(7) The world seen not literally.

The process of stimulating children's metaphorical capacity was characterized as organized and it was spread in time. The overall planned topic was discussed in sequence: from the easiest to structurally formed. Children worked with literary texts. The actions inspired by texts contained children's natural needs (art, music, movement) and provoked children to create singular metaphors as well as identify similarities and differences between domains. The sessions were finalized with a group discussion around selected names of feelings. The research was both qualitative and quantitative. In designed didactic intervention operations, the research material came from participant observation, focus interview, and children's production analysis (graphical visualization, paired-associate learning tasks and tests of unfinished tasks). Metaphor understanding and production was graded on a 3-point scale, with a score of 0 (*irrelevant or no justification*), 1 (*incomplete response in the right direction*), or 2 (*valid justification*). The research involved pupils of grades 2 and 3 of primary schools in Lodz. The number of selected grades was comparable (about 30 pupils in each group), as well as the involvement of boys and girls in this research. Overall, there were 110 children who took part in the research. The selection of this group was determined by noticeable growth of correct identification of similarities between domains (Özçalişkan, 2007). The children came from a Polish city with the population of 700 thousand habitants. They came from middle-class families.

Results

The literacy education project used in this study allowed for a diagnosis of the knowledge of 8–9- and 9–10-year-old children on the topic related to five target domains of the metaphorical mapping (JOY, SADNESS, LOVE, HATRED, FEAR) as well as childlike metaphorical skills related to identification of similarities and differenced between target domain and source domain. The children often explained a domain through a domain; they understood the function of the movement of two separate independent concepts (feeling– physical phenomenon). In the children's metaphorical transformations, the non-sensual zone gained an additional, figurative and thinking dimension (a feeling is and at the same time is not a feeling).

The research result suggests that the children very often explained the term *joy* through metonymy JOY means SMILE ($r = 1$). The metonymy annotation mechanism took a lead also in nonverbal answers. More than a half of all the children who took part in this research expressed the feeling of *joy* through a smiling face.

While creating metonymy models, the children benefited from the contact of two separate concepts. High rank position (r = 2) due to a high frequency of occurrence was also assigned to the metaphor of JOY is SUN (SUN RAYS, WARMTH, SUN ENERGY). In the following sequence, the following metaphors occurred: JOY is BLOOMING PLANT (r = 3), JOY is BONDS (r = 4) as well as JOY is FIRE (r = 5). The grade 3 pupils showed a symptomatic model and metaphor causes; however, the grade 2 pupils showed only casual metaphor (causes of *joy* are games, good grades, ability of having a computer, praise, holidays, having a good time).

The quantitative research indicates the target domain of SADNESS. The pupils often gave metonymy SADNESS is TEARS (r = 1) and SADNESS is SAD FACE (r = 2) as well as metaphors: SADNESS is RAIN, CLOUDY, AUTUM WEATHER (r = 3), SADNESS is THUNDER WITH BLACK CLOUDS (r = 4), SADNESS is COLD (r = 5), SADNESS is PAIN, (r = 6), SADNESS is AN ITEM WHICH HURTS (r = 7). The latter was produced by the oldest children participating in the research.

In all the groups of children participating in the research, the following metonymy occurred: LOVE is HEART (r = 1) as well as metaphor: LOVE is BOND (r = 2). The oldest children from this group came up with other metaphors apart from the two mentioned ones: LOVE is CARE (r = 3), LOVE is PLANT (r = 4), LOVE is FLIGHT (r = 5), LOVE is WIND (r = 6), LOVE is WATER (r = 7), LOVE is FIRE (r = 8), LOVE is STARTS (r = 9). A considerable number of interesting and revealing metaphors shows that LOVE (target domain of metaphor) liberates childlike thinking about different source domains.

The target domain of HATRED had a weaker representation. The 9–10-year-old children (the oldest from the research group) often created the metaphor HATRED is FIGHT (r = 1) as well as more difficult metaphors: HATRED is ILLNESS (r = 3) and HATRED is COLD (r = 4). The 8–9-year-old children often created the metaphor HATERED is THUNDER STORM WITH LIGHTNING (r = 2).

Rank collection shows that the children created the fewest metaphors for the target domain of FEAR. The 8–9-year-olds frequently mentioned the following metaphors: FEAR is EXPERIENCE OF DEATH (r = 1), FEAR is COLD (r = 2), FEAR is ESCAPE (r = 3); moreover, the 9–10-year-olds also created three more metaphors: FEAR is FIGHT (r = 4), FEAR is PLANT (R = 5), FEAR is FIRE (e = 6).

Figure 1 shows the collection regarding the explanation of the target domain: JOY, SADNESS, LOVE, HATRED, FEAR, through a source domain created by 2nd- and 3rd-grade pupils.

Metaphorical ability through identification and metaphor creation shows that the children cope very well with target domain explanation: LOVE and JOY

Figure 1. Association retrieval between the domains of 8–9-
and 9–10-year-old pupils
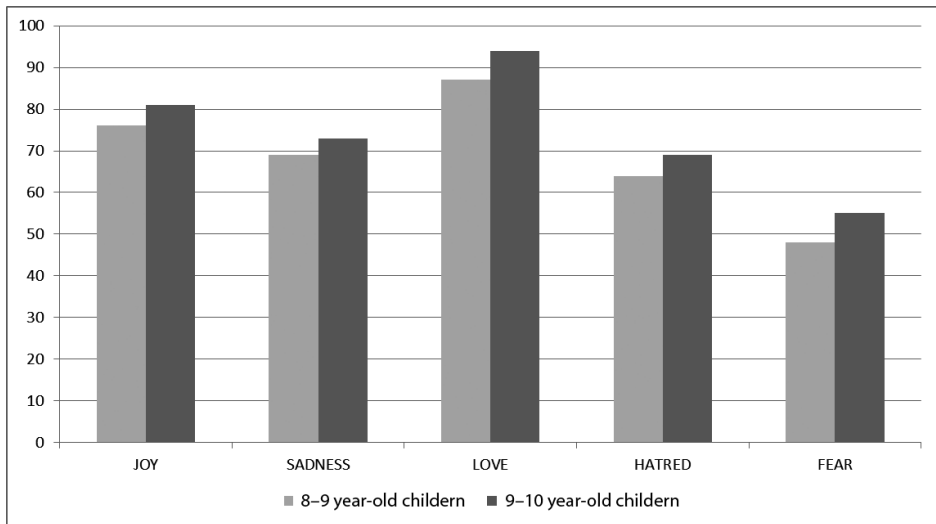
through a metaphorical source domain. In addition, it is shown that the children do not experience any difficulties with relations between target domain FEAR and its source domains.

The children also quite easily showed the ability to distinguish similarities between a target domain and a sematic potential of source domain. The children showed a good ability to distinguish similarities between target domains LOVE and JOY and source domains created by them:

- **perception features** (color, size, shape), e.g., "heart, which loves, is always red, heart, which hates is always black", "if you love someone, you have got a big heart and one opened to others", "joy is associated with a bright color"
- **endurance, strength, power, deep bond,** e.g., "love gives you strength, we are then ready to overcome all obstacles", "people in love are inseparable"
- **development phase,** e.g. "they should meet first, and later they get married"
- **flimsiness, softness, beauty, a need for nursing,** e.g., "love is similar to a butterfly", "similar to flowers, because when we love each other, love blooms, but if something goes wrong, love like a flower dies", "joy is as beautiful as flowers, it is like the most beautiful smell in the world"
- **lightness, being lifted by wings, freedom,** e.g., "love is characterized by lightness", "love is like butterflies", "love is similar to flying birds", "if a person is happy, they feel as they are lifted"

- **lack of ability related to a time category,** e.g., "it is not known where love and wind come from"
- **stability and constancy,** e.g., "love has existed since the beginning of the world and it will always exist"
- **changeability and instability,** e.g., "wind first blows and people love each other, and then wind gets quiet and people stop loving each other"
- **taste,** e.g., "love is like a box of chocolates, because love is sweet", "love is like a cake because you put your heart in it when you bake"

What is also interesting are the similarities between target domains such as SADNESS, HATRED and FEAR and source domains the children distinguished:

- **perception qualities**: (1) look (face), e.g., "pale due to fear", "a person who is scared is as pale as a dead person", "has gimlet/huge eyes", "has an open mouth as if he was screaming", "a person who hates becomes grumpy and dark", "he looks like he had a thunderstorm in his eyes"; (2) they feel cold, e.g., "shaking from fear", "the whole body is shaking", "they have goosebumps", "fear is cold, it is freezing cold"; (3) the feeling of being stiff, e.g., "when a person is scared, they become stiff, they almost do not breathe, they are like dead";
- **unpredictability/loss of control**, e.g., "sadness is like rain with a thunderstorm during a beautiful, summer, warm day", "hatred destroys bonds", "when someone hates they are angry", "hatred is like thunder which hits during a storm because it is fast, sudden, strong and abrupt";
- **numbness/powerless,** e.g., "when someone is very sad, they sit quietly, still as if they were dead", "sadness cannot be stopped";
- **body harm**, e.g., "I associate sadness with a cactus, because it reminds me of a plant which pushes people away, because it is sharp and it can sting"
- **hurting through fight,** e.g., "hatred is when somebody can hurt you", "we fight with each other in different ways", "some people hit their enemy's Achilles' heel";
- **a need for doing wrong,** e.g., "hatred is like an evil", "hatred is like a battle between good and bad";
- **feeling pain,** e.g., "hatred is like pain and suffering, because it always hurts when someone hates you;
- **hard outcomes,** e.g., "a gardener cannot cope with weeds in the same way as a human cannot cope with fear";
- **mental reactions – coping strategies,** e.g., "when someone is scared of something, they fight with it", "when we are afraid of something, we become aggressive and we try to protect ourselves';

- **tone colour**, e.g., "sadness is like colour grey", "sadness can be like a crow, because it is black and sad as a night", "sadness is like darkness";
- **temperature**, e.g., "sadness is cold", "sadness is like a cold, broken heart", "when someone hates someone else, then there is coldness between them, the heat is unable to come through";
- **acoustic qualities**, e.g., "hatred is like a terrible storm and windstorm because when you fight with each other, you scream, which creates a terrible noise";
- **taste**, e.g., "fear is similar to pepper because fear is something like bitterness inside us".

It is worth mentioning that the children who explain the metaphor mechanism find astonishing similarities of features: shape, colour, temperature between both metaphor domains. They do not experience any problems in spotting similarities around the target domain of metaphors LOVE and JOY and their source domains. However, they have a lesser understanding of similarities and differences between the target domain: FEAR, SADNESS, HATRED and the metaphor source domain. The percentage is shown is Figure 2.

Figure 2. Retrieval of similarities between metaphor domains by 2nd and 3rd -grade pupils
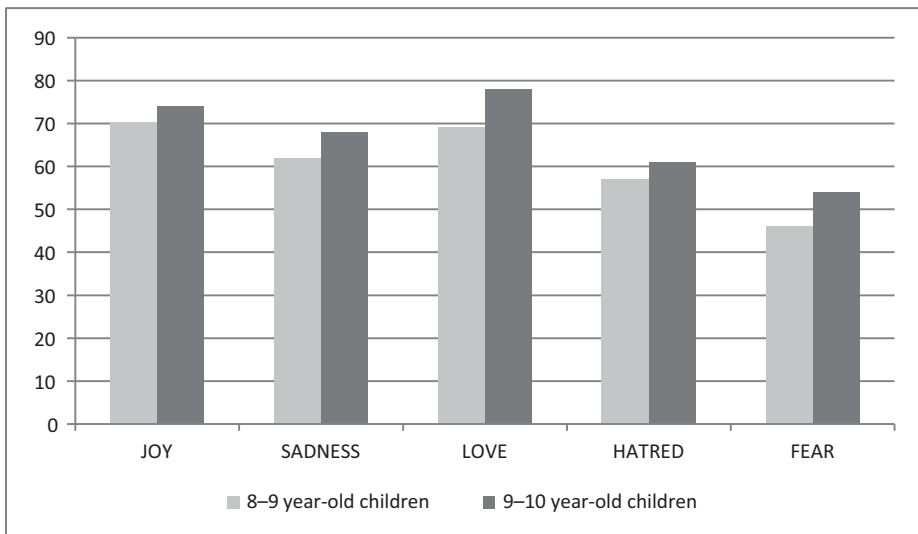
The participants experienced the biggest difficulties when identifying differences between domains. This was reflected in the qualitative analysis which measured the children's metaphorical observations of all kinds of feelings.

Figure 3. Searching for differences between metaphor domains
by 2nd and 3rd – grade pupils
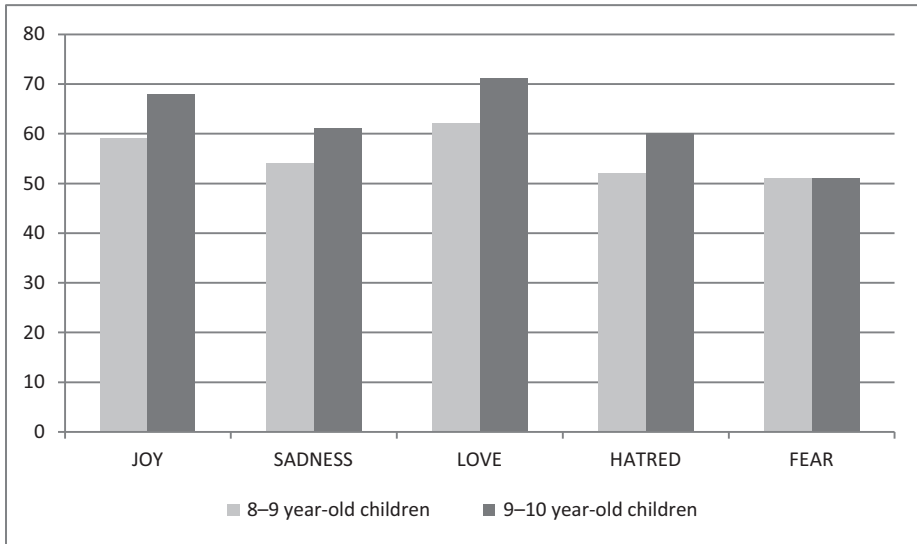
According to Figures 1, 2 and 3, metaphor understanding shows explanation of a discipline through a discipline. All the pupils experience difficulties with searching for differences between domains. For instance, only every second pupil was able to indicate differences between the target domain of LOVE and the source domains created by themselves. The research also shows that the children often searched for similarities and differences for positive concepts (love, joy) rather than for negative ones (hatred, hear, sadness). This is related to the impact of socializing, which identifies generally assumed areas of expressing emotions (not showing negative feelings and reinforcing positive ones). This depends on the participants' gender: the boys indicated metaphorical meanings for feelings less often than the girls; the girls spoke about feelings using metaphors more eagerly than the boys. This may have a cultural influence rather than psychological one because boys from early age are often encouraged to block all feelings; sad feelings are often dislodged.

What is also visible is that the obtained findings improve with the age of the participants. The 9–10-year-olds are definitely leading in this aspect. The causes of these findings were not investigated. It is possible that better metaphorical abilities of the grade 3 children are related to their better language ability: better developed language competences and communication enable them to express their thoughts

thoroughly. Younger learners experience difficulties when expressing grammatically sound sentences especially when connecting words into word phrases. The cultural competence is just forming in them, which means clear communication in a community. The 8–9-year-old children understood the concept of feelings, but they did not understand the lexical meaning of their metaphors. It can be assumed that the children's lexical awareness is ahead of lexical competition and communication. Certain explanations and repetitions, such as "hm" and "aha," indicate this. The third-graders understand and express new sentences, including those they have never heard before, they can distinguish grammatically sound sentences from those which are not grammatically correct; they can paraphrase phrases, they can recognize different meanings of sentences to a higher degree than the second-graders. In order to extract the metaphorical sense of feelings, the older learners thought about a lot of different and correct interpretations related to the zone of feelings. The third-graders' statements also often appeared as statements which showed the mental process adapted from the teacher's spoken meanings. It can be assumed that in the Polish educational culture learners are often exposed to the literal meaning of expressed phrases and their understanding of feelings becomes shallow.

Summarizing the effort of explaining the differences between knowledge and understanding ability and metaphor understanding ability, it is certain that children often understand concepts; however, they still cannot verbalize them or create language conceptualization. The difficulty lies in using appropriate language structures. They act as a barrier which constrains the learning process and understanding of metaphorical concepts. The lack of comprehension in coherent processes results in an assumption that children become incompetent in regards to metaphorical abilities. In reality, they still try to make appropriate and meaningful communication. It is worth highlighting that the grade 3 children more often recognized and created metaphor than the grade 2 learners. This, however, does not have to mean the grade 3 pupils had higher metaphorical abilities than the grade 2 pupils.

The verity of metaphorical abilities is related to knowing the metaphor target domain. Grade 3 pupils have more opportunities to name some kinds of feelings, thanks to this they realize them better in comparison to grade 2 pupils. It can be said that human relations create an emotional state which prepares children for talking about it. The above-mentioned metaphorical expressions confirm the cultural approach to learning processes. The social dimension of integration situates metaphor to function in a "human surface", it also includes the socio-cultural context of its use (Cameron, 2003: 267–268).

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