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CHILDREN'S UNDERSTANDING OF UNFAMILIAR IDIOMS: A CASE FOR THE SPATIAL FOUNDATIONS OF THE CONCEPTUAL SYSTEM*

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Abstract. *In the present study we look into Serbian seven-year-olds' understanding of literally translated English idioms in order to determine whether inherent visuo-spatial information facilitates the interpretation process. Drawing on our previous research involving adult respondents (Antović and Stamenković 2012), the present report tests the degree to which the existence of lexicalized visual and spatial configurations in unknown idiomatic expressions aids their understanding with seven-year-olds. We have presented 125 Serbian children with 6 literally translated English idioms containing lexicalized visual and spatial configurations (e.g. 'put the cat among the pigeons') and 6 literally translated English idioms with no visual or spatial component (e.g. 'have a sweet tooth'). For each idiom, the children respondents had the task of circling a letter beside one of the four given drawings which they thought best described the meaning of the idiom in question. The idioms were randomly selected among high-frequency expressions with no direct equivalents in Serbian, available in* ***Collins Cobuild Dictionary of Idioms*** *(1995),* ***Cambridge International Dictionary of Idioms*** *(1998)* ***and Oxford Dictionary of Idioms*** *(1999). The preliminary result suggests a considerably better understanding of idioms with visual and spatial configurations (59%), as compared with those having no visual or spatial component (38%). Along with our previous results with adults, this might provide some more support to theoretical claims presented by authors such as Jean Mandler - that there is a spatial foundation of the conceptual system.*

Key words: *vision, space, abstract meaning, idioms, conceptualization*

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1. INTRODUCTION

The present study tests how seven-year-old Serbian respondents understand twelve literally translated English idioms. The short report is part of a broader research program investigating the relationship between visuo-spatial cognition and conceptualization (cf. Antović 2009; Vidanović and Antović 2010; Antović 2010; Antović and Stamenković 2012; Antović Bennett and Turner, *in review*). It aims to provide preliminary information on whether a visual/spatial motivation behind concept construction may be discernible from early school children's responses to linguistic stimuli.

The central question of the entire research program is as follows: is visuo-spatial experience "primary" during the process of concept acquisition and, if yes, in what sense? Or, put differently, do visual perception and bodily movement provide infants and children with the majority of clues they need to later schematize their experience and, still later, map it onto the construction of abstract concepts? This is a much debated topic in cognitive linguistics, and getting a potential answer could have consequences for a number of theoretical positions and empirical projects in the field. However, while in the literature one can find data obtained from experiments with either the youngest children (infants up to the age of 2) or adults (commonly high school or university students), the most sensitive population of pre-school and early school children seems to have remained largely neglected in studies so far.

In an attempt to provide some data from this particular population, in the present paper we address the problem of idiomatic language comprehension in seven-year-olds. The presentation is organized as follows. In the second section (2) we provide the theoretical background for the paper, quoting a variety of theoretical positions on concept construction in cognitive linguistics, opting for the spatial theory of Jean Mandler, and presenting the results of some of our own research so far. The third and fourth section present our methodology and preliminary results obtained in the test run on 125 Serbian seven year olds. In the fifth section, we reach the preliminary conclusion corroborating our previous findings: that visuo-spatial information facilitates the understanding of complex concepts.

2. THEORETICAL BACKGROUND

"Where concepts come from" is a major question of cognitive science and, consequently, linguistics. It is one of many areas of mind research in which the "nature vs. nurture" issue remains unresolved. The still dominant view embraced by linguists affiliated with the generative program remains that abstractions underlying the building of concepts are mostly inborn. On the other hand cognitive linguists reject the idea that universal grammar and innate propensities of the mind enable language acquisition. Rather, in a more constructivist fashion, they hypothesize that early interaction between the infant and the world remains deeply entrenched in the mind of the child: that the experience of seeing, touching, and hearing, of bodily movement and balance, of the interaction of forces exerted on or by the body, becomes somehow "schematized", stored in the brain in a simplified, yet productive form, and then used as a tool for creating abstract concepts and relations that this person will command in their adult life.

There is a lot of debate in cognitive linguistics on which particular modality (if any)

should be taken as "primary" in this kind of concept acquisition process. And since cognitive linguists believe that conceptualization is not merely a semantic but also a grammatical phenomenon, their choice of the particular modality in many ways shapes their entire theoretical linguistic programs. Talmy has built a career on the idea that numerous semantic and virtually all relevant grammatical relations can be reduced to the interaction of forces. Lakoff and Johnson (1999: 16–44) and their supporters from the field of experimental psychology have developed a broader notion of "embodiment", in which all physical bodily experience (force, balance, motion, height, mass, temperature…) is used as a token for creating abstract conceptions. The well known constructs such as "image schema" or "metaphorical extension" have originated from this line of reasoning and remain ubiquitous in cognitive linguistics today. The idea that vision is all important has been put forward on a number of occasions (cf. Arnheim 1969: 13–37; Sweetser 1991: 23–48; more recently Chilton 2010: 499–504). It derives from the common claim by developmental psychologists that up to 90% of our information about the world comes through the eyes. The consequence must be, the argument goes, that memorized information originally experienced through the visual medium is the first option children get back to when they start building abstractions. Others have been more careful to call this modality "spatial", where the information in question need not come merely from the visual system, but may have a more general origin in one's orientation in space. How much this last position can be disentangled from both the "embodied" and "visual" claims is of course open to further debate. For instance, Jackendoff (2002: 11–14) only talks of spatial information and remains silent about the idea of embodiment, remaining a defender of the universal grammar proposal and somewhat distancing himself from the school of cognitive linguistics; to the contrary, Mandler defends the spatial hypothesis as the most tangible form of embodiment, but makes only passing comments on the importance of vision (Mandler 2004: 79); Landau, Dessalengh and Goldberg (2010: 53–54) more recently use the term "visual/spatial system", implicitly recognizing that a sharp distinction between the two cannot be made. Perhaps due to obvious problems in making clear delineations between these and many other positions, there have been proposals in cognitive linguistics lately that all concept acquisition is actually "multimodal", i.e. that image schemas are abstracted from the mixture of information provided by all of our senses (Forceville and Urios-Aparisi 2009: 3–14). While this last suggestion of course sounds reasonable in principle, we still think that the task of cognitive science is precisely to disentangle the share and quality of information provided by the different senses during the schematization process.

Our research program has focused on the importance of "visuo-spatial" information for the acquisition of concepts. We have been mostly inspired the approach of Jean Mandler (cf. 1992, 2004, 2008), who has performed a number of experiments on infants in order to prove that the apprehension of "space" (broadly defined) has a crucial role in the formation of early concepts. In our studies so far, we have tried to address the problem both theoretically and empirically. In theoretical contributions we have claimed that a "cognitive minimalism" may be all that is required to build basic abstract conceptions, but that this mental system is most likely based on visual and spatial perception (Vidanović and Antović 2010), and also that the analysis of source and target domains in metaphors presented in different presentational modalities (symbolical forms such as language, music, and the visual arts) reveals the prevalence of schemas based on size and motion (Antović 2010). In the empirical part of the program, we have shown a

strong prevalence of spatial information motivating the construction of basic musical concepts, in Serbian and Romani children (Antović 2009), but also in sighted and blind American ten-year-olds (Antović, Bennett and Turner, *in review*). Most closely connected with the present report, in a study with Serbian undergraduate students interpreting literally translated English idioms, we tried to evaluate the thesis that visual and spatial clues are particularly informative in the understanding of unfamiliar expressions (Antović and Stamenković 2012; Stamenković 2012). In that particular research segment, we presented 90 undergraduate Serbian students with no formal training in English with literally translated English idiomatic expressions and asked them to guess their meanings, in an attempt to investigate whether the expressions would be properly interpreted and whether there would be differences in the degree of correct interpretation between the groups of idioms offered. The idioms, which had no direct equivalents in Serbian, were classified in three groups: (1) visuo-spatial bodily idioms; (2) bodily only idioms; (3) random non-bodily idioms. Our results pointed to a clear difference between the understanding of the three groups of idioms: those with the visuo-spatial component were understood best, followed by idioms referring to the body only and random idioms respectively, with strong statistical significances for the differences. The result, we thought, could provide some support to the idea that embodiment, especially when coupled with visual cognition, is a primary source of conceptualization.

The main reasons we have decided to use idioms as the instrument in the study are the following: (1) although their meaning can be motivated by some of their constituent parts, it is most frequently separated from the literal meaning or definition of the constituents (Katz 1973: 358; Linden 1992: 223) – therefore, we may assume that idioms can serve as good representatives of abstract concepts, as they frequently have a meaning which is not transparent, but is extended and polysemic, making them a good instrument in the study of metaphorical meaning; (2) their opacity often overshadows the meanings of their constituent parts, so 'wild guesses' in the process of interpretation are frequently wrong, unless influenced by strong intuition and (3) in most instances, they do not match cross-linguistically. Except for the rare instances of direct equivalence, once an idiom gets translated into a foreign language literally, chances are high that the feature of compositionality will be completely lost. What is left is unusual, but frequently metaphorical content, which might be suitable for comprehension tests.

The problem of some of our recent studies quoted above, however, has been that of "prior language experience". Indeed, if one wishes to prove that there is a non-linguistic motivation behind a linguistic behavior, one would need to somehow "exclude" any knowledge of language that one's subjects have. Unless he or she is working with infants (and this too has serious limitations), the researcher is then left with three options: to get younger subjects, nonlinguistic stimuli and/or responses, or both. In the present study, we have opted for "both": we adapted the test used in the idiom study with Serbian students to seven year olds. Moreover, while retaining linguistic *stimuli*, we asked these children to give us nonlinguistic *responses* (select the picture they thought best described the meaning of what they had just heard). The research is still in progress and many methodological questions remain open, but we hope that the basic data we are presenting in this report are already suggestive of where to look in the future.

3. INSTRUMENT, RESPONDENTS AND METHODOLOGY

The instrument in the study consisted of two groups of six idioms: (a) six literally translated English idioms containing lexicalized visual and spatial configurations[1] (e.g. *put the cat among the pigeons*) and (b) six literally translated English idioms with no visual or spatial component[2] (e.g. *have a sweet tooth*). The idioms were randomly selected among high-frequency expressions with no direct equivalents in Serbian, available in *Collins Cobuild Dictionary of Idioms* (1995), *Cambridge International Dictionary of Idioms* (1998) and *Oxford Dictionary of Idioms* (1999). For each idiom, the respondents had the task of selecting (i.e. circling) one of the four provided drawings (labeled А, Б, В and Г, as in the example given in Figure 1) which, in their opinion, best described the meaning of the expression.

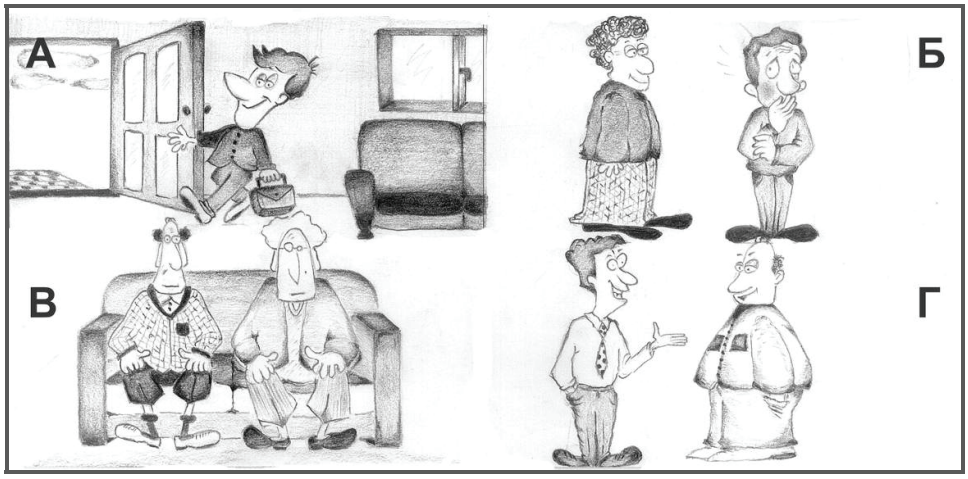


Fig. 1. A drawing showing the offered options for the idiom *He let the cat out of the bag.*

Within each idiom, one of the four drawings was categorized as 'correct', one was regarded as 'partially correct', whereas the remaining two were considered 'incorrect'. Four drawings for each of the twelve idioms (the total of 48 drawings) comprised a four-page grayscale questionnaire. The idioms and the drawings within them were ordered randomly. Their order was rendered by *Random.org's Sequence Generator*. The final list of idioms was the following (each idiom is accompanied by the descriptions of the four drawings):

[1] In each of these idioms we encounter lexicalized movement, transition, positioning or a directional change of state, all related to a certain spatial configuration of objects. It can be assumed that such spatial configurations most likely require vision in order to be perceived and, in turn, understood literally or figuratively.

[2] In these idioms we do not find any kind of movement, transition, positioning or a visible change of state or configuration.

(a) Idioms containing lexicalized visual and spatial configurations:

1. It is out of her hands, translated and presented as: ***To je van njenih ruku.***
a) A girl saying goodbye to someone. *partially correct
b) A girl leaving a room.
c) A girl losing control over something. **correct
d) A girl finding a coin.

2. He is the meat in the sandwich, translated and presented as: ***On je meso u sendviču.***
a) A boy sitting and thinking.
b) A boy and two other people holding their hands. *partially correct
c) A boy shaking hands with someone.
d) A boy stands pressure from two people. **correct

3. He let the cat out of the bag, translated and presented as: ***Pustio je mačku iz džak*a.**
a) A man leaving a room.
b) Two men, one of which seems to be ashamed because he revealed a secret. **correct
c) Two men sitting.
d) Two men talking. *partially correct

4. He lent her a hand, translated and presented as: ***Pozajmio joj je ruku.***
a) A man helping a woman carrying luggage **correct
b) A man giving a book to a woman.
c) A man hugging a woman. *partially correct
d) A man and a woman standing next to each other.

5. He put the cat among the pigeons, translated and presented as: ***Pustio je mačku među golubove.***
a) A man standing near two people who are having a quarrel **correct
b) Three people sitting and talking.
c) Two people shaking hands.
d) Two people having a quarrel. *partially correct

6. Something blew her mind, translated and presented as: ***Nešto joj je oduvalo pamet.***
a) A smiling female face. *partially correct
b) A sad female face.
c) A frowning female face.
d) A very surprised female face. **correct

(b) Idioms with no visual or spatial component:

1. She has a sweet tooth, translated and presented as: ***Ona ima sladak zub.***
a) A woman showing off.
b) A woman eating candies. **correct
c) A woman smiling.
d) A woman eating loads of food. *partially correct

2. He is wet behind the ears, translated and presented as: ***On je mokar iza ušiju*.**
a) A smiling male face.
b) A frowning male face. *partially correct
c) A confused and scared male face. **correct
d) An indifferent male face.

3. It is an old hat, translated and presented as: ***To je jedan stari šešir*.**
a) Two people fighting over a large book.
b) A person with a large book trying to explain something to another person, who seems indifferent. * partially correct
c) A large book is lying on the desk and no one notices it. **correct
d) Two people are walking, one of whom is carrying a large book.

4. He is a couch potato, translated and presented as: ***On je krompir sa kauča*.**
a) A man standing on a couch. *partially correct
b) A man pushing a couch.
c) A man turning a couch.
d) A man sitting on a couch. **correct

5. She got her feet wet, translated and presented as: ***Nakvasila je stopala*.**
a) A woman driving a bicycle clumsily. **correct
b) A woman pushing a bicycle.
c) A woman driving a bicycle with confidence.
d) A woman standing next to a bicycle which is on the ground. *partially correct

6. She knows it by heart, translated and presented as: ***Ona to zna srcem*.**
a) A smiling girl reciting in a classroom. *partially correct
b) A confused girl reciting in a classroom.
c) A scared girl reciting in a classroom.
d) A confident girl reciting in a classroom. **correct

Before starting the experimental procedure, we had to make sure that our respondents were not at all familiar with the idioms used in the study, so we asked a group of 30 second grade (8-year-old) pupils[3] to give us potential meanings of these twelve idioms. There were no correct responses. The main respondent group included 125 randomly selected first grade (mostly 7-year-old) pupils from two elementary schools in Niš, Serbia. Most of them were Serbian (with a couple of Romani, Bulgarian and Macedonian children), all fluent in the Serbian language. There were no English bilinguals among them. The level of reading and writing skills varied in children, which is why we decided to present them with the assignments orally, while their only task was to circle the answer they found suitable enough. The questionnaire contained no text (except for the letters A, Б, В and Г) and we made sure that all respondents recognized the four needed Cyrillic letters. The pupils were told that there were no correct and incorrect answers and that they should circle the letter next to the drawing in accordance with their intuition

[3] These pupils were 1 year older than our main respondent group, as we wanted to check whether more experienced pupils would have any knowledge of the idioms before we tested the younger ones.

(naturally, the instructions were given in simpler terms). Their teachers invigilated the procedure and were asked to make sure that the results were not copied. During one school class (45 minutes), each of the twelve English idioms was read aloud in Serbian and the respondents were asked whether the idiom could mean anything presented in the drawings. This was followed by three minutes during which our respondents had to reach the final decision and circle one of the four drawings for each idiom. The procedure was repeated in six different classes, resulting in the total number of 125 pupils.

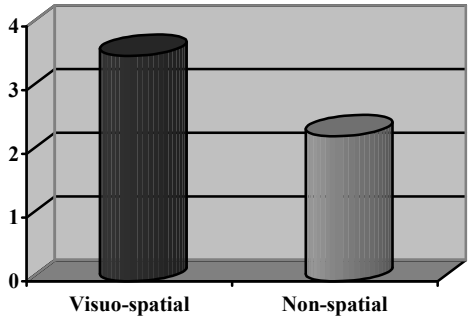
4. RESULTS AND DISCUSSION

The answers obtained from the questionnaire were classified into three groups against the criteria of correctness: 0 (incorrect), 1 (partially correct) and 2 (correct). The results were coded as such and entered into an SPSS database. The scale reliability tests (Cronbach's Alpha) have shown that the use of these items provides consistent results with both scales (one for the visuo-spatial and one for the non-visuo-spatial idioms) and this is supported by the following figures: 0.758 (the scale related to the visuo-spatial idioms) and 0.771 (the scale related to the non-visual and non-spatial idioms).

When we compare the number of completely correct responses (code 2) related to the two groups of idioms, we can see that the level of understanding of the idioms belonging to the visuo-spatial group seems to be higher than the comprehension of those which were considered non-visual and non-spatial (Table 1 and Graph 1):

Table 1 and Graph 1. The number of correct answers per idiom group.

	Visuo-spatial	Non-visual and non-spatial
No. of Respondents	125	125
Mean	**3.54**	**2.28**
Minimum	0.00	0.00
Maximum	6.00	6.00
Std. Deviation	1.74	1.77

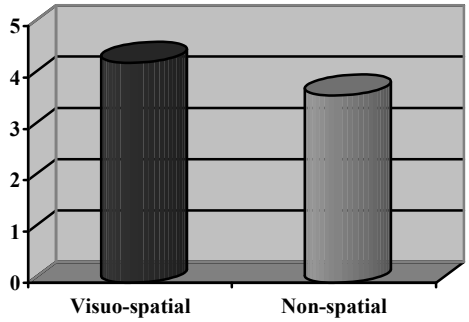


We find similar results when comparing the total number of correct and partially correct answers (code 2 plus code 1). Here, the level of understanding of the idioms belonging to the visuo-spatial group again seems to be higher than the comprehension of non-visual and non-spatial phrases, although in this case the difference between the pupils' success in the

process of interpretation of the two groups does not seem to be as large as in the first measurement (when we compared the correct answers only) (Table 2 and Graph 2).

Table 2 and Graph 2. The number of correct and partially correct answers per idiom group.

	Visuo-spatial	Non-visual and non-spatial
No. of Respondents	125	125
Mean	**4.29**	**3.65**
Minimum	1.00	1.00
Maximum	6.00	6.00
Std. Deviation	1.63	1.55



5. Conclusions and Implications

The preliminary result that we presented in the previous section further supports the finding from our most recent study with adults (Antović and Stamenković 2012: 396): that visuo-spatial information, even if provided as part of phrases which sound funny or unacceptable in a language, somewhat facilitates the idiom understanding process. In turn, this stands as an additional, albeit small, pillar to support the central thesis of the entire research program: that the sense of vision and space does play a significant role in the construction, and perhaps also acquisition, of abstract concepts.

Naturally, the present study provides only pilot results and suffers from certain limitations: the number of idioms was small; even though frequent, they were randomly selected from large dictionaries and the question is whether their internal grammatical complexity / conceptual difficulty could be well accounted for; it was difficult prior to running the study, and remains so now, to impartially assess whether the drawings would be fully representative of the interpretations that we had in mind when designing the test. Thus the methodology needs to be further polished and the pool of idioms and participants broadened, to include slightly older and younger children, and also children speaking other native languages. The tendency, however, remains, and it is noticeable: regardless of the methodological approach, type of stimulus, age group, cognitive skill, or native language, we seem to be getting a consistent result – that visuo/spatial information facilitates linguistic understanding.

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RAZUMEVANJE NEPOZNATIH IDIOMA KOD DECE: JEDAN PRILOG ZA PROSTORNU ZASNOVANOST POJMOVNOG SISTEMA

Mihailo Antović, Dušan Stamenković

U ovoj studiji analiziramo kako srpski sedmogodišnjaci shvataju neke idiome bukvalno prevedene sa engleskog jezika sa ciljem da ustanovimo da li inherentne vizuo-spacijalne informacije olakšavaju proces interpretacije. Na osnovu rezultata našeg prethodnog istraživanja sa odraslim ispitanicima (Antović i Stamenković 2012), ovaj izveštaj proverava do kog stepena postojanje leksikalizovanih

vizuelnih i spacijalnih konfiguracija u nepoznatim idiomatskim izrazima pomaže sedmogodišnjacima da te izraze i shvate. Od 125 srpskih učenika tražili smo da protumače šest bukvalno prevedenih engleskih izraza koji su sadržali leksikalizovane vizuelne i spacijalne konfiguracije (npr. „put the cat among the pigeons“) i šest bukvalno prevedenih engleskih idioma bez takvih konfiguracija (npr. „have a sweet tooth“). Deca su imala zadatak da zaokruže slovo ispred jednog od četiri crteža koji je, po njihovom mišljenju, najbolje opisivao značenje datog idioma. Idiome smo izabrali nasumično iz grupe visokofrekventnih izraza bez direktnih ekvivalenata u srpskom, i to iz sledećih rečnika: ***Collins Cobuild Dictionary of Idioms*** *(1995),* ***Cambridge International Dictionary of Idioms*** *(1998) i* ***Oxford Dictionary of Idioms*** *(1999). Preliminarni rezultati ukazuju da su deca značajno bolje razumela idiome sa vizuelnom i spacijalnom komponentom (59%) u odnosu na one koji nisu imali tu komponentu (38%). Zajedno sa rezultatom naše prethodne studije sa odraslima, ovakav rezultat može da ponudi još jednu malu potporu za teorijske tvrdnje koje iznose autori poput Džin Mandler – da pojmovni sistem ima prostornu osnovu.*

Ključne reči: *vid, prostor, apstraktno značenje, idiomi, konceptualizacija*