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The role of conceptual metaphors in comprehension of Greek idioms: a self-paced reading study

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This study explores the role of conceptual metaphors in idiom comprehension through a self-paced reading experiment with Greek native speakers. The critical items were the idiomatic expressions presented at the end of each story-context that were created in such a way so as to activate either a consistent or inconsistent metaphor. The statistical analysis of the results, i.e. reading times of the uniqueness point of the idiomatic expression, reveals that consistency with the metaphor activated by the context influences processing. Consistent conditions induce significantly shorter reading times, therefore corroborating the judgment task findings of Nayak & Gibbs (1990), although not for both types of metaphors. This pattern of results is discussed with respect to the way in which conventional meaning, at the interface between the conceptual and the linguistic levels, is entrenched in more general schemata (Johnson, 1987) to form meaningful structures.

Keywords: idiom processing; conceptual metaphors; lexical priming; conventional meaning; mappings

1. Introduction

1.1 Some questions on terminology

The general term multiword expressions covers a large range of linguistic structures which, in the international bibliography, are called idioms, frozen/fixed & semi-fixed/semi-frozen expressions, (set) phrases, formulae, collocations, cranberry collocations, phraseologisms, phraseological units, etc. In the Greek bibliography we see several terms, such as frozen & semi-frozen expressions (παγιωμένες/ ημιπαγιωμένες εκφράσεις), stereotyped expressions (στερεότυπες εκφράσεις), idiotisms (ιδιωτισμοί), idiomatisms (ιδιωματισμοί), phrases (φράσεις), expressions (εκφράσεις), phraseologisms (φρασεολογισμοί), co-occurrences (συνεμφανίσεις), collocations (συνάψεις), etc.

The fact that there does not exist a well-admitted and widely used terminology is an indicator of the confusion concerning what exactly is the phrase/expression: the term used to designate the linguistic structure differs depending on the various criteria selected in order to define and classify the very large variety of phrases. As an example, two of the major Modern Greek (MG) dictionaries, the G. Babiniotis (1998) *MG Dictionary* and the *Standard MG Dictionary* of the Institute of MG Studies (M. Triantafyllidis Foundation), use the terms 'phrase' and 'expression'. In the Babiniotis dictionary, a wide range of multiword expressions, from collocations to proverbs, is denoted through the abbreviation ΦΠ (phrase - phraseologism). The *Standard MG Dictionary* on the other hand, makes the distinction between phrase and expression, based on the degree of similarity to the literal meaning.

Nevertheless, the main conclusion drawn from the survey of the 1400 expressions in these two major MG dictionaries (Fotopoulou & Mini, 2009), is that a clear typology of what constitutes a frozen/fixed phrase and what constitutes verb use does not seem to exist. This means that

although there are some specification criteria defining, even in a general way, the use (simple, metaphorical, informal/colloquial) of a fixed expression, distinguishing it from the free phrase, these criteria are not consistently and fully followed. The problem here is not only the theoretical gap concerning multiword expressions; it is the lack of clear limits characterising even the simple use, which constitutes a basic lexicographic principle. The research in the domain of MG multiword expressions according to the contemporary theoretical and methodological standards has started from multiword nominal compounds in the 1986 Anastassiadis-Symeonidis Ph.D., as well as the multiword verb expressions in the 1993 Fotopoulou Ph.D. Among the questions that the research following these first works examines, we decided to focus on two essential aspects:

- 1) How multiword expressions are organised in the mental lexicon and how are they processed?
- 2) Is the fixedness of multiword expressions graded or absolute, based on binary distinction (yes/no)?
- 3) If fixedness is not binary, what are the criteria or variables influencing its perception, especially for processing?

In what follows, we first present a review of the literature focusing on semantic aspects of idiom processing, such as semantic transparency and conventionality, as well as the role of metaphors. Metaphoric thought has been found to operate in subjects' online understanding of linguistic meaning (ex. Nayak and Gibbs, 1990). Nevertheless, the data on this question diverge, especially when the dependent variable of the experiment concerns reading times (chronometric measures): the Glucksberg, Brown & McGlone (1993) study, in an attempt to replicate Nayak & Gibbs findings, puts forward evidence contradicting the automatic activation of conceptual metaphors during processing. The experiment we present here aims to test this hypothesis for MG, i.e., the extent to which metaphors are present in readers' minds when processing idioms. Section 4 presents the experiment in detail, a consistency judgment protocol in which idioms were presented at the end of a story-context, through the self-paced reading technique. The results of the experiment are interpreted in the light of previous findings as well as the conceptual theory framework (Kövecses, 2010). Finally, section 5 discusses the implications of these findings for the aforementioned questions, i.e., the graded vs binary character of multiword expressions and the further characterization of the variable 'conventionality', which, according to our results, seems to influence online processing through the activation of conceptual metaphors.

2. Semantic issues in multiword expression processing

2.1 Semantic analysability

According to the semantic analysability principle, the fixed/frozen phrase is decomposed into constituents whose meaning contributes to the interpretation of the whole phrase (Cacciari & Levorato 1999). Psycholinguists and cognitive scientists have reacted against the standard view of idioms as non-compositional strings that cannot be analysed semantically (e.g., *kick the bucket*), pointing that the meaning of an idiom's elements often plays a role in the way it is used and understood in conversation (e.g. Cacciari, 1993; Cacciari & Glucksberg, 1991; Gibbs, 1990; Gibbs & Nayak, 1989; Gibbs, Nayak & Cutting, 1989; Keysar & Bly, 1995, 1999): for most idioms, a relation between meaning and form can be established. Fixed phrases can also be syntactically transformed in various ways, e.g., quantified, omitted or modified as in the case of counter proverbs:

(1) Proverb:

το 'να χέρι νίβει τ' άλλο και τα δυο το πρόσωπο

'to 'na 'cheri 'nivi t' 'allo ke ta dy'o to 'prosōpo

one hand washes another and both of them the face

‘Two heads are better than one’

(1a) Counter proverb :

το 'να χέρι νίβει τ' άλλο και τα δυο μένουν άπλυτα

to'na 'cheri 'nivi t' 'allo ke ta dy'o 'menoy'n 'aplyta

one hand washes another and both of them stay dirty

‘One hand washes another and both of them stay dirty’

Nevertheless, idioms and fixed phrases do not constitute a homogeneous group as to their semantic analysability, even if it seems that the meaning of their constituents is always activated, including for opaque phrases (Denhière & Verstiggel 1997: 137). Cacciari & Levorato (1998: 162-165, 173) propose an analysability continuum in three points:

a) At one end of the spectrum, the quasi-metaphorical fixed phrases, e.g., Eng. *being like two drops of water*/ Fr. *se ressembler comme deux gouttes d'eau*/ Gr. μοιάζουν σα δυο σταγόνες νερό [*miazoyn sa 'dyo sta'gones ne'ro*], activating some prototypical or stereotypical instance of events, situations, actions or people, being thus easily recognisable by virtue of a direct cognitive connection.

b) The transparent fixed phrases, e.g., Eng. *making a hole in the water*/Fr. *ç'a été un coup d'épée dans l'eau*/ Gr. έκανα μια τρύπα στο νερό [*ekana mia 'trypa sto ne'ro*], ‘I made a hole in the water’, characterised by a perceptible relation between the meaning of their constituents and the meaning of the whole unit.

c) The opaque, non-compositional idiom strings, e.g., Eng. *breaking the ice*/ Fr. *briser/rompre la glace*/ σπάζω τον πάγο [*spazō ton 'pago*], where no apparent relation is perceived between the literal and the idiomatic meaning and where individual constituents are in an arbitrary relation to the overall idiom meaning. These phrases are the most difficult to process (Cacciari & Levorato, 1998: 171). The authors acknowledge that from a developmental point of view, the difference between the transparent and opaque phrases is not very clear.

2.2 Semantic transparency and conventionality

Semantic transparency is closely related to analysability and compositionality, in the sense that an idiom string that can be easily divided into semantic constituents is not idiomatic, it is semantically transparent. A transparent fixed phrase is one that has a meaning for the speaker, resulting from the links between the phrase's constituents and its overall conventional meaning (Keysar & Bly 1995: 89). Transparency is thus about the motivation or arbitrariness of the phrase, i.e., the relation between a certain string of words and a particular semantic representation. There is always an arbitrary element as to why a certain word is commonly used to express a certain feeling, situation, quality, character or else: there is a certain amount of arbitrariness for ex. when being worthy or honourable in MG consists of having his/her forehead clean, as in (2):

(2) έχει το κούτελό/μέτωπό του καθαρό

'echi to 'koyte'lo/'metō'po toy katha'ro

he has forehead his clean

‘He is an honourable person’

whereas in French the conceptual representation of a person’s worth is related to height, as in the expressions below, which also exist in MG:

(3) *avoir/marcher la tête haute*

έχω/περπατώ με το κεφάλι ψηλά

‘echō/perpa’tō me to ke’fali psī’la

I have/walk with the head high

‘To walk with your head high’

The clean/dirty opposition is conventionally used in both languages (e.g., Fr. *son nom, sa réputation a été souillée*/Gr. λερώθηκε το όνομά του, η υπόληψή του [le’rōthike to ‘ono’ma toy, ī y’polī’psī toy] ‘His reputation has been spoiled’, but the point here concerns the linguistic label to express the conventional meaning, which varies across languages, although similarities do exist. In the Head-driven Phrase Structure Grammar (HPSG, Nunberg, Sag & Wasow, 1994), conventionality is defined as “a relation among a linguistic regularity, a situation of use and a population that has implicitly agreed to conform to that regularity to that situation” (Nunberg, et al., 1994: 492). This definition of conventionality follows Lakoff & Johnson’s (1980a, 1980b) position according to which conventionalisation applies to the connection between the conceptual and the linguistic levels. From this point of view, schemes such as DEATH IS A DEPARTURE are largely conventionalized and, consequently, automatically and effortlessly retrieved from memory.

As far as data are concerned, several factors have been shown to contribute to the speakers’ intuition as to idiom transparency: the conceptual metaphor underlying the expression (Lakoff & Johnson 1980a, b), the meaning of the constituents and the conventionality of the overall meaning (Keysar & Bly 1995: 90). The experiments conducted by Keysar & Bly (1995: 103-106) show that native speakers’ intuitions as to idiom transparency depend on their knowledge of the conventional meaning of the phrase. For the highly transparent phrases, speakers, even those who are not familiar with the phrase, have the feeling that they are able to construct its meaning. This means that there would be an interaction between the contribution of the knowledge of the meaning of the phrase and the semantic constraints imposed by its constituents. It is nevertheless problematic to rely on speakers’ intuitions, since they are, at least partly, the product of the links created through conventional use. However, this effect of conventional use emphasizes the role of pragmatic as well as deeply grounded cognitive processes in idiom comprehension, a role that linguistic theory has taken in account.

3. From multiword expression semantics to pragmatics and processing

Since Lakoff & Johnson’s (1980) demonstration of the role of metaphors in language and thought, the pragmatic substrate of our cognitive systems and particularly the relation between meaning relationships and metaphorical folk understanding has been substantiated through three main theoretical contributions: the first one by Sweetser (1990) and Gibbs (1994), who claim that meaning relationships cannot be understood independently of human cognitive structure, including the metaphorical and cultural aspects of that structure. The second one by the Conceptual Metaphor Theory (Kövecses, 2010), following and extending Lakoff & Johnson’s approach (e.g., 1980a). What is of a great interest for our study is that, as we shall further see, the role of images and image-schemas in metaphorical understanding and their linguistic implementation has been emphasized by Sweetser (1990) and Gibbs (1994). The crucial question here is the one that Kövecses (2010) addresses, i.e. the way in which the conceptual structure of emotions can be described in terms of cognitive components, or, in our

study, in terms of variables of cognitive nature. The third theoretical contribution is Sperber & Wilson's Relevance Theory (1986/1995, Wilson & Sperber, 2002a, b).

The starting point for Sweetser (1990) is the observation that the conceptual system that emerges from everyday human experience constitutes the basis for natural-language semantics in a wide range of areas, particularly in certain domains such as polysemy or multi-word expressions, where the same form is used to express more than one meaning (function). In the approach presented by Lakoff & Johnson (1980a, 1980b; Lakoff, 1987; see also Turner, 1987) an important part of what we call polysemy is due to the use of metaphors: our cognition and by extension our languages operate in a metaphorical manner. If we use the word meaning *white* to express 'honest' or 'candid', rather than the word meaning *violet*, this is not simply a fact about language, it's also a fact about the community that sees this colour as being associated to moral characteristics, here 'morally good', which, at a first glance, doesn't have anything to do with colours (Sweetser, 1990: 8). The metaphorical use of the adjective *white* to mean honesty and candidness, in several languages, although it does not correspond to a systematic and objective relation between colours and moral values, is nevertheless present in structuring the linguistic system of the speaker: linguistic categorisations do not therefore depend on what really exists in the world, but on metaphorical and metonymic structuring of our perceptions of the world (Sweetser, 1990: 9; Veloudis, 2005: 182, 186). This relation is apparent in a broader system as we can see in the examples below, where we can say that the linguistic form has acquired a metaphorically motivated secondary use:

(4) λευκή μαγεία vs μαύρη μαγεία

le'fkī ma'gia vs 'mavrī ma'gia

'white magic' vs 'black magic'

(5) άσπρη μέρα vs μαύρη μέρα

'asprī 'mera vs 'mavrī 'mera

white day vs black day

'happy day' vs 'black day'

(6) μαύρα Χριστούγεννα

'mavra Chri'stoygenna

black Christmas

'bad Christmas'

(7) καθαρός ουρανός vs μαύρος ουρανός

katha'ros oyra'nos vs 'mavros oyra'nos

clear sky vs black sky

'clear sky' vs 'black sky'

(8) γκριζες ζώνες

'grizes 'zōnes

grey zones

'grey zones'

The above expressions present a certain degree of polarity and iconicity, which constitutes one of the central ideas of Kilani-Schoch & Dressler's Natural Morphology (2005, for French): iconicity is one of the structuring factors for French inflectional morphology and can be motivated by linguistic clues independent of frequency. As Nobile (2014) remarks in the introduction of the special issue on 'Forms of Iconicity', in the morpho-syntactic domain, most authors adopt a binary distinction between diagrammatic iconicity, conceived as essentially morpho-syntactic and in which a relation at the level of form represents a relation at the level of meaning (concept), and imagic iconicity, conceived mainly in phonological terms.

Considering the above contributions situated at the interface of morphology and pragmatics, the core question addressed in the present study is whether the metaphorical structuring of language (ex. 1-8) presents a psychological reality. As Gibbs (1994: 8) remarks, idioms relate to different domains of knowledge, many of which are conceptualised in metaphoric terms: these metaphorical conceptualisations, based on our experience, determine the way in which we think and express ourselves in everyday as well as literary speech: people do not code the emotional state anger in terms of *mowing the lawn* or *cleaning the dishes* but in terms of *fuming*, *being furious* or *losing control*. Therefore, metaphors do not only help us to visualise things in a more or less conventional way, but are highly likely to form the base upon which a large part of everyday experience is coded in the language system.

A third contribution establishing a relation between idiom processing and pragmatics comes from the theoretical background of Relevance Theory (Sperber & Wilson, 1986/1995; Wilson & Sperber, 2002a ; b), based on the idea that our cognitive systems have evolved in the direction of increasing efficiency and tend thus to maximise relevance. Cognitive effects involve the expenditure of processing effort: the greater the cognitive effects of the input to be processed, the greater the relevance. An ostensive stimulus, such as an utterance, triggers automatically in the mind of the hearer/speaker a comprehension procedure based on relevance, in order to bridge the gap between what is linguistically encoded and what is communicated, explicitly and implicitly. From that point of view, we can express the hypothesis that the linguistic realisation of, e.g., an emotional state such as anger or sadness, may vary in relevance depending on the metaphor used to code it in a given idiomatic expression.

3.1 Metaphors dead and alive, sleeping and waking

The above title of Muller's (2009) book emphasises the fact that, contrary to the traditional and limited view of figurative language, metaphors, even very old ones, are not dead. The metaphor present in phrases such as:

(9) μεθυσμένος από έρωτα

methy'smenos a'po 'erōta

drunk on love

'madly in love'

(10) της αγάπης το κρασί

tīs a'gapīs to kra'si

love's wine

'love's wine'

(11) διψασμένος για αγάπη

dipsa'smenos gia a'gapī

thirsty for love

'thirsty for love'

can be expressed as following: LOVE IS A DRINK¹. This metaphor is not a novel one, we can find it in the thirst related to one's love and passion for the beloved person, whose loved one *drinks the words*. In Plutarchus, Aristippus faints, becomes livid, he presents all the symptoms of erotic passion when he hears Socrates' words that he *drinks*, trying to *find the source* (cf. The conversion of Aristippus, Plutarch, *De Curiositate*, 516C). We find the same metaphor in Alcibiades' euphoria, in love with Socrates in Plato's Symposium.

This is indeed an old metaphor and, in this sense, it can be the object of a diachronic study. Nevertheless, that does not imply that this kind of metaphor is not relevant for meaning relationships today. Actually, the opposite is true: according to Gibbs (1994; 1998), it's precisely because processing this type of metaphor is completely automatic and undeliberate, that it functions as a privileged means to understand the utterance, in a perfectly natural and spontaneous manner. Cognitively speaking, the most profoundly grounded processes are those that are not subject to conscious control, in such a way that they become (in the adult expert reader) completely automatic and independent of any kind of control. This hypothesis has become common ground in psycholinguistics during the last 20 years, thanks to various protocols using chronometric measures including various types of priming; lexical priming, as in Glucksberg et al. (1993), masked priming (e.g., for Greek: Voga, Giraud & Anastassiadis-Symeonidis, 2012), and others.

3.2 Experimental data in favour and against the role of metaphors in reading

This hypothesis, i.e., that metaphoric thought operates in people's immediate online use and understanding of linguistic meaning (Gibbs, 1998: 103) has been tested in several experiments: in the Nayak and Gibbs (1990) study, the subjects had to make a judgement related to the adequacy between the story-context and the expression presented at the end of it. The results validate the hypothesis that readers use analogical information contained in metaphors during reading. However, a judgement is conscious and deliberate, and cannot inform us about the processes involved in the identification of the idiom. Glucksberg et al. (1993) tried to replicate Nayak & Gibbs (1990) findings, using not only appropriateness judgements but also reading times. Stimulus stories were created by combining original-referent and other-person referent versions of each story with one member of a given idiom pair. The idiom tested in each story and presented line by line on a computer screen, could be analogically consistent or inconsistent with the story-context. Participants were instructed to read each story carefully and to choose the idiom they considered to be the more appropriate completion for each story.

¹ The corresponding metaphor in Gibbs (1994) is LOVE IS A NUTRIENT.

The sentence containing the target idiomatic phrase appeared either at the end of the story or as the penultimate sentence in the story. The reaction time results show no main effect or interaction involving analogical consistency, suggesting that even when a specific conceptual analogue for an emotion is available in a story, that conceptual analogue is not automatically accessed during idiom comprehension. Nevertheless, as we will see below, the study by Glucksberg et al. commits a methodological error by taking as dependent measure the reading times of the whole line and not only of the uniqueness point (Cacciari & Tabossi, 1988: 679).

4. The study

Given the lack of studies using chronometric measures in the domain of Greek idioms, the aim of the experiment reported below was to test the hypotheses of Nayak & Gibbs (1990), using reading times. This is what Glucksberg et al. (1993) did, but we use a more up-to-date methodology. Indeed, the dependent measure in the self-paced reading experiment we present is the reading time of a certain part of the idiomatic phrase, i.e. the uniqueness point (Cacciari & Tabossi, 1988).

Reading times, initially used to elicit data on visual or spoken word recognition (e.g., among an extremely rich variety of studies, Marslen-Wilson, 1987) and later extended to the domain of multi-word expressions, are considered to reflect cognitive processes involved during reading the different types of stimuli. However, the reading time of the whole idiom may not reflect its processing, given that the individual constituents may not have the same relevance for the identification of the idiom. This is why Cacciari & Tabossi (1988) propose the uniqueness point, defined as the individual word permitting the subject to identify, without any ambiguity, the expression. The study by Flores d'Arcais (1993: 79-98) is one of the first to use the self-paced reading task, with the reading time of the uniqueness point as dependent measure, in order to study the syntactic processing and the role of familiarity during the interpretation of English idiomatic phrases. Anastassiadis-Symeonidis & Voga (2011) use this same technique to study the role of two variables, semantic transparency and compositionality, when processing Greek idiomatic phrases. In the study reported here, the self-paced reading experiment is preceded by a pre-test aiming to provide familiarity and uniqueness point measures.

4.1 Pre-test: familiarity and uniqueness point ratings

Given that we do not have lists of stimuli rated for these characteristics (familiarity and uniqueness point) we had to run two rating protocols, in order to obtain objective measures, validated by a large number of native Greek speakers. The aim of this pre-test was to constitute a list of experimental items of (approx.) equivalent familiarity, in order to avoid any bias related to an insufficient control of this variable, shown to influence processing (Flores d'Arcais, 1993).

4.1.1 Familiarity judgement

We submitted 53 idiomatic phrases to the judgement of native Greek speakers who were asked to rate the familiarity of each phrase on a scale from 1 ("this phrase is nearly unknown for me, I could not really explain how it is used") to 5 ("this phrase is extremely familiar to me"). For every idiomatic phrase, we obtained a familiarity mean and calculated a standard deviation: given that notations may vary between participants, we sought mainly to exclude the idiomatic phrases with a big standard deviation (close to 1), which were not then used in the main study.

4.1.2 Uniqueness point judgement

We asked our subjects to indicate, for the same phrases, the exact word (only one word could be accepted) by which the phrase is identified as a unique phrase. These judgements of the uniqueness point were used in the main study: they identify the part of the idiom whose reading time will be taken as the dependent measure (Cacciari & Tabossi, 1988: 679; Flores d'Arcais, 1993: 81-89, 96-97; Marslen-Wilson, 1987). Given that an idiomatic phrase contains several

constituents (articles, verbs, adverbs, nouns) the researcher has to operate a choice as to the exact word that constitutes the critical item, i.e., the reading times of which will be used as the dependent measure of the experiment. In our study, as well as in Anastassiadis-Symeonidis & Voga (2011), we follow Cacciari & Tabossi's (1988) recommendation: the critical item of every phrase was the word that the majority of participants chose as its uniqueness point. For instance, in the examples below, the critical item for recognising the phrase beyond ambiguity was, for our participants, 'heart' or 'soul':

(12) άνοιξε η καρδιά μου

anixe i kardi'a moy

opened heart my

'I'm extremely happy'

(13) ανοίγει η ψυχή μου

an'igi i psy'chi moy

opens soul my

'I become very happy'

(14) ο Γιάννης είναι έξω καρδιά

o Giannīs ine'exō kardi'a

Yiannis is outside heart

'Yiannis is sociable and pleasure seeking'

4.2 Experimental study of multi-word expressions

4.2.1 Participants

39 Greek native speakers participated in the experiment, on a voluntary basis, without being paid or receiving any other compensation.

4.2.2 Stimuli and Design

In order to operationalise the variable 'metaphor' in a methodologically sound way, we followed Nayak & Gibbs (1990) who asked their subjects to read short stories (contexts) reflecting different conceptual metaphors for the same emotional concept, and then make a judgement. In Greek, the multiword expressions:

(15) του ανέβηκε το αίμα στο κεφάλι

toy a'nevike to 'ema sto ke'fali

went up blood to head

‘His blood went up to his head’

(16) φούντωσε από το θυμό του

‘foyntōse a’po to thy’mo toy

he swelled with anger his

‘He swelled with anger’

(17) άφρισε από το κακό του

‘afrise a’po to ka’ko toy

he foamed with anger his

‘He foamed with anger’

(18) εν βρασμώ ψυχής

‘en vra’smō psy’chīs

in boiling psychic

‘psychic boiling’

(19) βράζει από το θυμό του

‘vrazi a’po to thy’mo toy

boiling with anger his

‘Boiling with anger’

all mean to be/become very angry and refer to the conceptual metaphor ANGER IS A BOILING AND OVERFLOWING THING (Gibbs, 1994).

In addition, for the same emotional state (anger), we can detect at least one other metaphor, related less to the CONTAINER metaphor as above, and more directly to the animal world, which also provides a great variety of metaphors, coding, among many other characteristics, wildness and savagery. The expressions:

(20) αγρίεψε από το θυμό του

a’griēpse a’po to thy’mo toy

became wild with anger his

‘He became wild’

(21) έγινε Τούρκος

´egine ´Toyrkos

he became Turc

‘He became a Turk²’

(22) έγινε τάυρος μαινόμενος

´egine ´tavros me´nomenos

he became bull in trance

‘He became a bull in a trance’

(23) σκύλιασε

´skyliase

he became a dog

‘He became a dog’

(24) λύσσαξε από το κακό του

´lyssakse a´po to ka´ko toy

he enraged with bad feeling his

‘He enraged with his bad feeling’

all mean ‘to be/become very angry/furious’ and are all related to the second metaphor ANGER IS AN ANIMAL BEHAVIOR.

For every one of the 12 emotional states used in the experiment, we tested two metaphors, each one corresponding to at least three fixed phrases in the language. The metaphors were inferred from the authors on the basis of multi-word expressions contained in various specialised dictionaries (Dimitriou, 1991; Vlachopoulos, 2007; Brillouët & Kokkinidou-Maxime, 2004). There were often more than two metaphors per emotional state, but we chose the two most ‘productive’ and salient, although productivity and salience were not controlled as independent variables. The 12 emotional states, with the two metaphors tested in the experiment, are presented in Table 1.

² Here, the ethnonym Turc is synonym of savage.

Emotional state	Metaphor 1	Metaphor 2
Anger	ANGER IS A BOILING THING	ANGER IS ANIMAL
Happiness	BEING HAPPY IS BEING OFF THE GROUND	HAPPINESS OPENS YOU
Dignity	MORAL IS CLEAN	MORAL IS HIGH
Love	LOVE IS A DRINK	LOVE MAKES YOU BLIND
Kindness	KINDNESS IS HOLY	KINDNESS IS PRECIOUS
Meanness	MEANNESS IS POISON	MEANNESS IS ANIMAL
Intelligence	INTELLIGENCE CUTS	INTELLIGENCE IS ANIMAL
Shock	SHOCK IS A FALLING MOVEMENT	SHOCK IS A DISRUPTION
Worries	WORRIES ARE POISON	WORRIES DAMAGE INTERNAL ORGANS
Antipathy	ANTIPATHY LIES IN THE STOMACH	ANTIPATHY LIES IN THE EYE
Sadness	SADNESS IS A WEIGHT	SADNESS IS BLACK
Pressure	PRESSURE PULLS OUT YOUR SPIRIT	PRESSURE PULLS OUT YOUR JUICES

Table 1: The twelve emotional states used in the experiment and their corresponding metaphors

The twelve emotional states with the corresponding metaphors were used to create 24 story-contexts, each one of which referred to one of the two metaphors chosen for every state, e.g., for the emotional state anger, the first story was consistent with the first metaphor (ANGER IS A BOILING THING) and inconsistent with the second, and the second story was consistent with the second metaphor (ANGER IS ANIMAL) and inconsistent with the first one³.

Story-context 1: Η Κατερίνα περίμενε τον Τάσο να γυρίσει σπίτι για να την βοηθήσει με τις προετοιμασίες του γεύματος, στο οποίο περίμεναν 15 άτομα. Όσο αυτός αργούσε και αυτή προσπαθούσε να βάλει μια τάξη στα κατσαρολικά, τόσο η ανυπομονησία της φούσκωνε. Δεν θα τα κατάφερνε με τίποτα να είναι όλα έτοιμα στις οχτώ που θα έφταναν οι καλεσμένοι, κι αισθανόταν σιγά σιγά να ξεχειλίζει το ποτήρι. Όταν, πέντε λεπτά πριν από τις οχτώ, εκεί που η

³ We can indeed consider these two metaphors as being related, since the basis for the metaphor ANGER IS A BOILING AND OVERFLOWING THING is the metaphor ANGER IS A FLUID IN THE HUMAN BODY, which is a CONTAINER (Kövecses 2010). From this point of view, the two metaphors, the BOILING metaphor and the ANIMAL metaphor are related, exactly as in the description of Kövecses' happiness metaphor (Kövecses, 2010:97), which is jointly characterised by a number of conceptual metaphors: for instance, BEING HAPPY IS BEING OFF THE GROUND and HAPPY IS UP are distinct (though obviously related) metaphors. Our purpose here was to capture the two most important aspects of every emotional state and test their effects online. Our purpose was not to present evidence for the prototypical cognitive model related to a particular emotion (Kövecses, 2010:109).

θερμοκρασία είχε φτάσει στο μέγιστο, ο Τάσος εμφανίστηκε σαν να μην τρέχει τίποτα, η Κατερίνα

- έβραζε από το θυμό της
- είχε λυσοσάξει από το κακό της

English translation: Katerina was waiting for Tassos to come back home so that he would help her to prepare the dinner for which they were expecting 15 guests. As he was late and she was trying to tidy up the pans⁴, she was bubbling with impatience. She would never be able to prepare everything for 8 o'clock, when the guests were going to arrive, and she was feeling that the glass was slowly overflowing. When, five minutes before eight, and when the temperature had reached its maximum, Tassos arrived as if nothing had happened, Katerina:

- was boiling with anger (consistent)
- was enraged (inconsistent)

The context based on the second metaphor was the following.

Story-context 2: Η Κατερίνα στριφογυρνούσε σαν άγριο ζώο μέσα στην κουζίνα που ήταν πραγματική ζούγκλα, προσπαθώντας να βάλει μια τάξη πριν φτάσουν οι 15 καλεσμένοι για φαγητό. Το ένστικτό της της έλεγε ότι ο Τάσος θα ερχόταν την τελευταία στιγμή και πως δεν θα τα κατάφερναν να είναι όλα έτοιμα στις οχτώ. Όσο εκείνη προσπαθούσε να μαγειρέψει και να τακτοποιήσει σε μια κατάσταση άγριου πανικού, τόσο αισθανόταν να μην ελέγχει πια τον εαυτό της. Όταν, πέντε λεπτά πριν από τις οχτώ, ο Τάσος εμφανίστηκε σαν να μην τρέχει τίποτα, η Κατερίνα :

- έβραζε από το θυμό της
- είχε λυσοσάξει από το κακό της

English translation: Katerina was turning into a tiger in the kitchen, which was a real jungle, trying to tidy up, before the 15 guests arrived. Her instinct was telling her that Tassos was going to arrive at the last minute and that they would never be able to prepare everything before 8 o'clock. As she was trying to cook and to tidy in a state of wild panic, she was feeling that she couldn't control herself anymore. When, five minutes before eight, Tassos arrived as if nothing had happened, Katerina:

- was boiling from anger (inconsistent)
- was wild with anger (consistent)

We therefore obtain 4 experimental conditions (C-M1, C-M2, NC⁵-M1 and NC-M2). The underlined passages in every story are those activating the corresponding metaphor, in other

⁴ The underlined passages were not underlined when presented to participants.

⁵ C: consistent; NC: inconsistent. 'C-M1' refers to the consistent condition of Metaphor 1, 'NC-M1' refers to the inconsistent condition of Metaphor 1, and so on.

words the elements inducing a kind of lexical priming, exactly as in Glucksberg et al. (1993).

4.2.3 Procedure

The 12 story-contexts with the final multi-word expression were presented to subjects in a self-paced reading protocol, i.e. fragment by fragment on the computer screen with a mobile window. Every time the subject pressed the spacebar, the next fragment appeared and the previous one disappeared, so that they could read only one fragment at a time, and going back was not possible. The stimuli were presented and reading times (i.e., reading time of the uniqueness point of every multi-word expression) were recorded through the DMDX program (Forster & Forster, 2003). Participants were told that they had to read the stories to themselves at a normal pace, neither too quickly or too slowly, without trying to memorise them. They were nevertheless told that they should stay concentrated, because they could be asked to recall some of these stories. Four lists were created for this experiment, in such a way that each subject saw all twelve emotional states preceded by one of the two contexts, without ever seeing two different metaphors associated with the same emotional state. Each participant was attributed one of the four lists, at random. Subjects had a small training session before the experiment. This procedure is quite similar to that used by Flores d'Arcais (1993) as well as Anastassiadis-Symeonidis & Voga (2011).

4.2.4 Hypotheses

The main hypothesis tested in the experiment is that consistency between the elements activated by the story-context and the metaphor conveyed in the multi-word expression affects reading times (of the uniqueness point of the expression). These reading times should be quicker for the consistent conditions and slower for the inconsistent ones.

4.2.5 Results

Mean reading times per condition were calculated (see Table 2) after replacing reading times below 250ms or above 1000ms, with the threshold values. We ran an analysis of variance (ANOVA), with the factors Metaphor (metaphor 1, metaphor 2) and Consistency (consistent, inconsistent) as independent variables, according to the experimental plan $S39 * M2 * C2$. The main effect of metaphor (metaphor 1 versus metaphor 2) was not significant [$F1 < 1$], but the main effect of consistency (consistent versus inconsistent) was significant [$F1(1, 38) = 6.28, p < .05$], meaning that the expressions that were consistent with the context were processed significantly quicker than the inconsistent ones, with a mean difference of 33ms between the two conditions (632ms for the inconsistent and 599ms for the consistent ones). The interaction between the two variables was not statistically significant⁶, $F1(1, 38) = 2.57$.

Planned comparisons examined the statistical significance of the differences between the consistent and inconsistent conditions for each group of metaphors: this difference (11ms) is not significant for the M1 conditions, $F1 < 1$, but it is for the M2 conditions (55ms), $F1(1, 38) = 8.07, p < .01$, and this while the consistent M1 conditions do not differ significantly to the consistent M2 conditions, $F1(1, 38) = 1.44$. The same is true for the inconsistent conditions: the NC-M1 conditions do not statistically differ from NC-M2 conditions, $F1(1, 38) = 1.05$.

Experimental conditions	Consistency (C)	Inconsistency (NC)	Net facilitation effect (NC – C)
Metaphor 1	611	622	11

⁶ Only the analysis by subjects will be reported here.

Table 2: Reading times of the uniqueness point (in milliseconds) and facilitation effects in the four experimental conditions (C-M1, C-M2, NC-M1, NC-M2). The facilitation effect is the difference between the reading times of consistent and inconsistent conditions (NC-C).

4.2.6 Interpretation

The main hypothesis of the study is confirmed, given that consistency between the context and the metaphor conveyed in the expression presented at the end of the story, plays a role during processing multiword expressions. Therefore, the first and major outcome of our study is that conceptual metaphors, based on our basic knowledge of concepts, manage to facilitate processing when activated through the context. When the multiword expressions used as critical stimuli were consistent with the knowledge and image-schema of a given metaphor, the facilitation on processing was significant, i.e., a 55ms facilitation effect (for Metaphor 2).

However, this consistency effect is not identical for Metaphor 1 and Metaphor 2: the former did not induce significant facilitation whereas the latter did. At the same time, the analysis did not yield any main effect for the factor ‘group of Metaphor’ (M1 vs M2): the two consistent conditions (C-M1 and C-M2), as well as the inconsistent ones (NC-M1 and NC-M2) did not statistically differ, i.e., they induced equivalent reading times, despite the fact that they convey different metaphors. This demonstrates that the two conditions (Metaphor 1 and 2) did not differ on familiarity grounds or in terms of another variable that could have biased our results, we can thus attribute the observed results to the controlled factors.

The main outcome of the experiment can therefore be summarized as follows: multi-word expressions consistent with the metaphor conveyed by the context induced a processing advantage (33ms on average) compared to inconsistent ones, thus corroborating Nayak & Gibbs’ (1990) results. Moreover, our results constitute a direct answer, despite the fact that our study was not designed to do so, to the criticisms that Glucksberg et al. (1993) expressed relative to the validity of Nayak & Gibbs’ results. Our data are fully compatible with Nayak & Gibbs’ findings and interpretation. Our aim here is not to address the differences between the three studies which are not directly comparable given the different protocols used (ratings versus self-paced reading experiments). However, it has to be stressed that our study avoids the methodological pitfall of Glucksberg et al.: here, the reading time taken as the dependent measure is that of the uniqueness point – and not that of the whole multiword unit, as in the Glucksberg et al. study, and this is probably the main reason why our results diverge from theirs.

That being said, an issue remains: if, as we showed, the ‘semantic network’ activated in the story-context manages to facilitate processing of multiword expressions in the consistent conditions, then why is this facilitation only found for one of the two metaphors and not for both? In order to answer this question, it would be useful to present our view of how processing multiword expressions conveying metaphors *works*, not in theoretical but in processing terms. To do this, let us briefly describe the general term ‘semantic network’: by this term, we refer to the knowledge, image or schemata on which metaphors are based and the mappings associated with this knowledge, image or schemata⁷. If we start from Kövecses’ (2010: 91) observation, according to which defining conceptual metaphors by the formula A is B, in which a target domain A is understood in terms of a source domain B, is not precise enough, the issue of

⁷ For the image-schema metaphor, see Kövecses (2010: 42), although, under his definition, an image-schema metaphor is not conceptual, in the sense that it is not based on conceptual elements of knowledge like ‘traveller’ or ‘destination’.

mappings becomes crucial. A conceptual metaphor of the structural kind is constituted by a set of mappings between a source and a target. Even if these mappings between A and B are only partial, the experimental results we presented demonstrate that they manage to activate, through the context operating a kind of priming, a given semantic network, relative to an aspect of the world's experience. The different mappings relative to various domains of knowledge (natural world, human body and/or organs, physical or spiritual world, religious events, schemata and so on, for examples from MG, see Anastassiadis-Symeonidis & Efthymiou, 2006) and their selection depend on human factors that reflect non-objective, nonliteral and non-pre-existing similarities between a source and a target domain. These form the 'experiential bases' or 'motivation' of conceptual metaphors. These mappings present different degrees of groundedness (Kövecses, 2010: 79-86) and are shaped by cultural and historical processes. For instance, in Greek there are many mythological metaphors, e.g. WORRIES DAMAGE INTERNAL ORGANS, based on the Prometheus myth, which can be assimilated to a more general metaphor NEGATIVE EMOTION DAMAGES YOUR ORGANS, which can be related to the CONTAINER metaphor (Lakoff & Johnson, 1987).

These mappings, relevant for what we have called 'semantic network' focus nevertheless on a particular aspect. As Kövecses (2010: 91) underlines, when a source domain is applied to a target, only some (but not all) aspects of the target are brought into focus. Happiness can be something OPENING THE HEART, as in the examples 12-14 (and our Metaphor 2, for happiness), or something taking you OFF THE GROUND (as for our Metaphor 1), and each one of the two metaphors focuses on one aspect of the target concept. To use Kövecses' terms (2010: 92), a certain aspect is *highlighted*, which implies that the other aspect or aspects are *hidden*. The fact that metaphors can be related does not prevent this mechanism: in the happiness example (12-14) the openness of the heart is clearly related to the *upward* movement, through what we could call the Apollonian 'force' of human existence, i.e. a force leading us upwards, to the light, the sky and other beautiful things such as music. Still, there are two quite different mappings, and when the first (openness) is highlighted, the other (happiness takes you off the ground) is hidden. In processing terms, this can be described as a difference in connections between a given mapping and the representation of the target concept (e.g. happiness) in the lexicon. As can be seen in Table 1, the mappings conveyed in the metaphors we used under the 'metaphor 1' and the 'metaphor 2' label, cover a great deal of semantic networks, from human body and organs, to the downward movement of negative emotions such as shock or sadness. Nevertheless, the specific nature, the *content* of the mappings was not controlled in this experiment. The reason why the nature of mappings was not strictly 'balanced' for conditions 1 and 2, is that our initial hypothesis was to see if metaphors play a role in processing Greek multiword expressions, and not to operate a taxonomy of the different kinds of mappings. The reason we selected not just one, but two metaphors for every emotional state, was that it seemed incomplete to test just one metaphor whereas (at least) two salient metaphors existed, appearing in a considerable number of multiword expressions.

This hypothesis, i.e. differential effect of the type of metaphor on processing, cannot be confirmed or refuted by the present data, especially given the different kinds of relation between the referent of each story-context and the target idiom, e.g., between the antipathy metaphor where it is an external referent who is 'seen with a bad eye' (metaphor 2) versus the love metaphor, where it is the protagonist of the story-context who 'loses his sight' (χάνει το φως του [chani to 'fōs toy], metaphor 2). Nevertheless, the fact that 'metaphor 2' conditions did not induce effects equivalent to those of metaphor 1, despite the fact that the inconsistent conditions lead to equivalent reaction times, could be a clue in favour of different representations, in terms of availability, accessibility or both, to use Glucksberg's et al. (1993) terms. This pattern of results is also compatible with the Relevance Theory (Sperber & Wilson, 1986/1995; Wilson & Sperber, 2002a, b), according to which the comprehension procedure is based on relevance, which bridges the gap between what is linguistically encoded and what is communicated. The differential processing patterns that our study put forward may spring from a difference in relevance in the linguistic encoding of an emotional state.

To sum up, the unexpected outcome that Metaphor 1 and Metaphor 2 give rise to different processing effects can be accounted for in terms of a possible difference in groundedness of the

mappings or, to use another term, relevance. This differential effect of metaphors on idiom processing is something that our experiment did not control for, it points however to an interesting direction for future psycholinguistic work, i.e. the groundedness and availability of the mappings and their effect on processing.

5. General discussion

As we saw in the introduction, the transparency and analysability of a multiword expression is a result of the phrase constituents and its overall conventional meaning (Keysar & Bly 1995: 89), i.e., the relation between a certain string of words and a particular semantic representation. What our data clearly show is that conventional meaning, through the multiple semantic networks conveyed in conceptual metaphors, influences on-line processing. As far as diachronic processes are concerned, the study of morphological facts related to folk etymology and language change, also argues in favour of the trend of languages to construct meaningful structures on the basis of different domains of knowledge, in order to reduce morphological opacity (Fliatouras, Voga & Anastassiadis-Symeonidis, submitted).

The conventionality of meaning embedded in a given conceptual metaphor is based on social acceptance and on the metaphor's integration in collective memory (Grunig, 1997). In other words, the multiword expression is an inscription engraved in long term memory, coded to a large extent through 'institutionalisation', i.e. its common acceptance by the linguistic community (Moon, 1998). To put it in the terms of Nunberg et al. (1994) our data show that the relation between linguistic regularity, situation of use and participants' implicit agreement to conform to the institutionalised metaphor, influences processing. A largely conventionalised scheme such as LOVE MAKES YOU BLIND is consequently automatically and effortlessly retrieved from memory. The relation to frequency and familiarity is evident here, although it would be an error to assimilate conventionality and frequency. The degree of entrenchment of a given structure is not necessarily a function of its frequency: for conceptual metaphors, the nature and the direction of mapping can also be relevant, as metaphors structuring a more abstract concept by borrowing elements of a concrete domain (ex. the human body) are particularly apt to serve an explanatory function (Handl, 2016: 64).

In the study reported here, the target idioms were controlled for familiarity, however their degree of entrenchment, i.e. the degree in which they correspond to Johnson's (1987) 'embodied schemata', or 'image schemata', has not been considered. We must acknowledge that the entrenchment of a given idiom relative to one or several 'embodied schemata', defined by Johnson as "a recurrent pattern, shape, and regularity in, or of, these ongoing ordering activities. These patterns emerge as meaningful structures for us chiefly at the level of our bodily movements through space, our manipulation of objects, and our perceptual interactions" (Johnson 1987: 29), could be a factor influencing processing. This factor should be tested in future work, provided that a satisfactory definition of the variable 'entrenchment/embodiment' and its modalities is developed.

The fact that conceptual metaphors are found to influence processing and the particular role that variables such as conventionality could play calls for two final observations:

a) as Anastassiadis-Symeonidis, Kyriakopoulou & Fotopoulou (this volume) remark, the above organisation of the mental lexicon, according to which subjects' linguistically 'institutionalised' knowledge, instantiated through semantic networks in which factors such as (idiom) conventionality seem to play a role, argues in favour of the constructional character of natural languages. This aspect, more evident in the domain of lexicon and morphology, implies that complex sets of representation are constructed upon simple units, and on the basis of rules and structural schemes. These sets, in turn, form broader sets, in such a way that an extremely economical system, coding almost every aspect of human experience emerges. This system facilitates acquisition as well as recall/identification in comprehension and production and leads to a coding which is profoundly grounded in memory;

b) The issues related to representation in the mental lexicon and/or on-line processing cannot

be viewed through some binary distinction (multiword expression versus free phrase), but should be considered in a graded manner, i.e. as a part of a continuum between the two extremes. At one end of the spectrum, the simple, non-analysable units, forming whole-word entries in LTM (Long Term Memory), and at the other, the free phrases, the interpretation of which can only be the result of constituent processing. Between these two extremes, we can place the intermediate units, i.e., complex units (derived, composed words) and multiword units, subject partly to memorisation (at least for the frequent ones) and partly to processing, at least for those presenting some degree of analysability and conventionality.

6. Brief presentation/Περίληψη

Με τον γενικό όρο πολυλεκτικές εκφράσεις (multi-word expressions) καλύπτουμε ένα ευρύ φάσμα γλωσσικών δομών που στη διεθνή βιβλιογραφία αποκαλούνται γενικά idioms, frozen/fixed & semi-fixed/semi-frozen expressions, (set) phrases, formulae, collocations, cranberry collocations, phraseologisms, phraseological units, κτλ. Στην ελληνική βιβλιογραφία συναντάμε όρους όπως παγιωμένες και ημιπαγιωμένες εκφράσεις, στερεότυπες εκφράσεις, ιδιωτισμοί, ιδιωτισμοί, ιδιωτισμικές εκφράσεις, φράσεις, εκφράσεις, φρασεολογισμοί, συνεμφανίσεις, συνάψεις κτλ.

Το γεγονός ότι δεν υπάρχει κοινώς αποδεκτή ορολογία είναι εν μέρει ενδεικτικό της σύγχυσης που επικρατεί γύρω από το τι ακριβώς είναι φράση/έκφραση όχι μόνο από την άποψη της ταξινόμησης αλλά και από αυτήν της επεξεργασίας και της αναπαράστασης. Από τα ερωτήματα που έχουν τεθεί στη βιβλιογραφία θα μας απασχολήσουν η οργάνωση, η αναπαράσταση και η επεξεργασία των πολυλεκτικών εκφράσεων στο νοητικό λεξικό. Η μεταβλητή που εξετάζεται στην παρούσα εργασία σχετίζεται με τη συμβατικότητα (conventionality) των εκφράσεων, η οποία αποδεδειγμένα επηρεάζει την επεξεργασία τους (Keysar & Bly, 1995) και η οποία ορίζεται ως σχέση μεταξύ ενός συνόλου λέξεων (ή μιας γλωσσικής ακολουθίας, string of words) και μιας συγκεκριμένης σημασιολογικής αναπαράστασης. Οι αναπαραστάσεις αυτές είναι εννοιολογικού τύπου, τουλάχιστον σύμφωνα με μεγάλο αριθμό μελετών, όχι αναγκαστικά πειραματικών (Sweetser, 1990, Kövecses, 2010, Veloudis, 2005). Για παράδειγμα, η αντίθεση καθαρό/βρόμικο που χρησιμεύει, σε πολλές γλώσσες και όχι μόνο στα ελληνικά, ως βάση για μεγάλο αριθμό εκφράσεων σχετικών με την τιμότητα, την υπόληψη, π.χ., Fr. son nom, sa réputation a été souillée/NE *λερώθηκε το όνομά του, η υπόληψή του*. Διαπιστώνεται λοιπόν ότι η συμβατικότητα που αποτελεί τη βάση για τη σημασιολογική διαφάνεια είναι προϊόν νοητικών σχημάτων μεταφορικής φύσης (images and image-schemas, Lakoff & Johnson, 1980a, Sweetser, 1990, Gibbs, 1994), των οποίων η οργάνωση αντανακλά την εννοιολογική δομή των συναισθημάτων (Kövecses, 2010).

Προκειμένου να μελετηθεί η παραπάνω εννοιολογική δομή καθώς και ο ρόλος της στην επεξεργασία των πολυλεκτικών εκφράσεων, η πειραματική έρευνα που παρουσιάζεται εδώ επικεντρώνεται στον ρόλο των μεταφορών στις οποίες βασίζονται οι πολυλεκτικές εκφράσεις. Προηγούμενες μελέτες καταδεικνύουν ότι η μεταφορική σκέψη παίζει ρόλο στη χρήση και στην κατανόηση της σημασίας μιας έκφρασης (Nayak and Gibbs, 1990), αν και άλλες μελέτες (Glucksberg, Brown & Mc Glone, 1993), χρησιμοποιώντας χρονομετρικές μεθόδους, φτάνουν στο αντίθετο συμπέρασμα, ότι, δηλαδή, ακόμα και όταν το εννοιολογικό ανάλογο (μεταφορά) είναι παρόν στο συγκεκριμένο που χρησιμεύει ως ερέθισμα, η επεξεργασία και κατανόηση της πολυλεκτικής έκφρασης δεν γίνεται μέσω της πρόσβασης στο εννοιολογικό ανάλογο.

Προκειμένου να ελέγξουμε τον βαθμό στον οποίο ο μεταφορικός χαρακτήρας των εκφράσεων της NE επηρεάζει την επεξεργασία τους σε πραγματικό χρόνο (on-line), πραγματοποιήσαμε ένα πείραμα το οποίο είναι μία πιο σύγχρονη εκδοχή της μελέτης των Nayak & Gibbs (1990), οι οποίοι χρησιμοποιούν ένα απλό τεστ κρίσης (συνεκτικότητας). Το πείραμα, στο οποίο συμμετείχαν 39 φυσικοί ομιλητές της ελληνικής, χρησιμοποιεί το πρωτόκολλο ανάγνωσης καταταμημένης αυτοπαρουσίασης (self-paced reading task), τεχνική που επιτρέπει στους συμμετέχοντες να διαβάζουν τις προτάσεις του συγκεκριμένου κομμάτι-κομμάτι, έτσι ώστε κάθε συμμετέχων να διαβάζει σύμφωνα με τον ρυθμό του. Επίσης, το πείραμα είναι μια βελτιωμένη

εκδοχή αυτού των Glucksberg, Brown & Mc Glone, 1993, οι οποίοι ναι μεν έλαβαν υπόψη τον χρόνο ανάγνωσης-αντίδρασης, πλην όμως έλαβαν υπόψη τον χρόνο ολόκληρης της έκφρασης, και όχι του σημείου μοναδικότητας (uniqueness point, Cacciari & Tabossi, 1988, 1993), πράγμα που ενδεχομένως συσκότισε τον ρόλο της μεταβλητής ‘μεταφορά’ που οι Glucksberg & al. στόχευαν να ελέγξουν. Για καθεμία από τις 12 συναισθηματικές καταστάσεις (état émotionnel, π.χ. έρωτας, θυμός, κακία), δημιουργήσαμε δύο ιστορίες, εκ των οποίων η μία ενεργοποιούσε τη μία από τις δύο μεταφορές (π.χ. για τον έρωτα, Ο ΕΡΩΤΑΣ ΕΙΝΑΙ ΠΟΤΟ) και η άλλη, την άλλη (Ο ΕΡΩΤΑΣ ΤΥΦΛΩΝΕΙ). Στο τέλος κάθε ιστορίας εμφανιζόταν είτε το συνεκτικό ερέθισμα, π.χ. η έκφραση μεθυσμένος από έρωτα είτε το μη συνεκτικό, π.χ. η έκφραση τυφλός από έρωτα. Ο χρόνος αντίδρασης που λάβαμε υπόψη ήταν αυτός του σημείου μοναδικότητας για κάθε έκφραση.

Μετά από στατιστική ανάλυση των αποτελεσμάτων (ανάλυση διακύμανσης, ANOVA) προκύπτει ότι ο παράγοντας συνεκτικότητα παίζει στατιστικά σημαντικό ρόλο: οι συνεκτικές συνθήκες οδηγούν σε πιο γρήγορους χρόνους αντίδρασης, δηλαδή σε γρηγορότερη επεξεργασία της πολυλεκτικής έκφρασης. Όταν οι εκφράσεις που χρησιμοποιούνται ως κριτικά ερεθίσματα είναι συνεκτικές με τις εικόνες-σχήματα (image-schemas) που αντιστοιχούν σε μία συγκεκριμένη μεταφορά, το όφελος στην επεξεργασία ανέρχεται στα 55χλδ. (για την Μεταφορά 2), πράγμα που αποδεικνύει τη συμμετοχή του παράγοντα ‘εννοιολογική μεταφορά’ στην επεξεργασία πολυλεκτικών εκφράσεων σε πραγματικό χρόνο (on-line). Αυτό το συμπέρασμα είναι απόλυτα συμβατό με προηγούμενες έρευνες όπως αυτή των Nayak & Gibbs (1990). Είναι επίσης συμβατό με θεωρήσεις όπως αυτή του Kövecses (2010) σύμφωνα με την οποία οι αντιστοιχίσεις (mappings) μεταξύ ενός τομέα-πηγής και ενός τομέα-στόχου (π.χ. έρωτας), παρά το γεγονός ότι είναι μερικές και όχι καθολικές (π.χ. ο έρωτας δεν εκφράζεται μεταφορικά αποκλειστικά μέσω του σχήματος Ο ΕΡΩΤΑΣ ΣΕ ΚΑΝΕΙ ΝΑ ΠΕΤΑΣ), ενεργοποιούν άμεσα την αναπαράσταση του στόχου στο νοητικό λεξικό. Η έρευνά μας αποτελεί από αυτή την άποψη μια πειραματική απόδειξη ότι η εννοιολογική μεταφορά συμμετέχει και καθορίζει σε μεγάλο βαθμό την επαφή με την αναπαράσταση του τομέα-στόχου στο νοητικό λεξικό, μέσω του σημασιολογικού δικτύου (semantic network) που ενεργοποιείται στο εκάστοτε συγκεκριμένο.

Ωστόσο, στην έρευνά μας διαπιστώνεται ότι ο παράγοντας ‘συνεκτικότητα’ δεν επηρεάζει με τον ίδιο ακριβώς τρόπο όλες τις μεταφορές, δεδομένου ότι οι μεταφορές που απαρτίζουν την κατηγορία 1 δεν οδηγούν σε στατιστικά σημαντικό αποτέλεσμα, όπως αυτές της κατηγορίας 2. Πέρα από το ότι το πείραμα δεν σχεδιάστηκε για να ταξινομήσει τις διάφορες μεταφορές και τις αντιστοιχίσεις τους με τους στόχους (αγάπη, κακία, κτλ.), ερώτημα που μπορεί βέβαια να ελεγχθεί πειραματικά σε μελλοντική εργασία, οφείλουμε να υπογραμμίσουμε ότι οι αντιστοιχίσεις μεταξύ του τομέα-πηγής και του τομέα-στόχου δεν θα πρέπει απαραίτητα να θεωρούνται συμμετρικές, σε ό,τι τουλάχιστον αφορά τη σύνδεσή τους με το νοητικό λεξικό. Η παραπάνω διαπίστωση οδηγεί στην παραδοχή ότι σε ό,τι αφορά τη μελέτη των αναπαραστάσεων στις οποίες βασίζεται η επεξεργασία των πολυλεκτικών εκφράσεων, είναι κρίσιμης σημασίας να προσδιοριστεί η φύση και το περιεχόμενο των αναπαραστάσεων αυτών αλλά και η έδρασή τους (groundedness, Kövecses, 2010), η οποία καθορίζει χαρακτηριστικά όπως η σημασιολογική διαφάνεια, η συμβατικότητα, κ.ά.

Ανακεφαλαιώνοντας, η συμβατικότητα της σημασίας μιας πολυλεκτικής έκφρασης συνδέεται στενά με τις αντιστοιχίσεις με διάφορα σημασιολογικά δίκτυα που καθορίζονται σε εμπειρική βάση. Οι παραπάνω αντιστοιχίσεις και η έδρασή τους εξαρτώνται σε μεγάλο βαθμό από την κοινωνική αποδοχή και την ενσωμάτωση στη συλλογική μνήμη της μεταφοράς που τις περιέχει (Grunig, 1997). Από αυτή την άποψη, η πολυλεκτική έκφραση είναι εγγεγραμμένη στη μακρόχρονη μνήμη μέσω της θεσμοποίησής της, της κοινής της, δηλαδή, αποδοχής από τη γλωσσική κοινότητα. Η έρευνά μας αποδεικνύει ότι η παραπάνω εγγραφή στο νοητικό λεξικό, το οποίο δεν είναι παρά η μακρόχρονη μνήμη της γνώσης των λέξεων, επιτελείται χάρη στις εννοιολογικές μεταφορές που περιέχονται στις πολυλεκτικές εκφράσεις.

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