REFERENCE TO PHYSICAL AND ABSTRACT MOTION IN CHILD LANGUAGE: A CROSS-LINGUISTIC COMPARISON BETWEEN ENGLISH AND GREEK

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Περίληψη

Η έρευνα αυτή συμβάλλει στη συζήτηση περί επιδράσεων της γλωσσικής δομής στους συνήθεις τρόπους περιγραφής -ίσως και σύλληψης- του κόσμου. Συγκρίνει τις αναφορές σε γεγονότα φυσικής και αφηρημένης κίνησης σε συνομιλίες ενηλίκων και παιδιών 1;8-4;6 ετών στα αγγλικά και τα ελληνικά -γλώσσες που λεξικοποιούν τον Τρόπο και την Πορεία της κίνησης αντίστοιχα. Ενώ τα ρήματα Τρόπου υπερτερούν από νωρίς στην περιγραφή της φυσικής κίνησης στα αγγλικά, αυξάνονται αργότερα και στα ελληνικά. Ενισχύεται συνεπώς η υπόθεση ότι ο Τρόπος είναι αφενός γνωσιακά πιο προσιτός στις γλώσσες που τον λεξικοποιούν, αφετέρου πιο περίπλοκος από την Πορεία και ανοιχτός σε καθ' οδόν εμπλουτισμό. Μη κυριολεκτικές χρήσεις των ρημάτων κίνησης παρατηρούνται -έστω περιορισμένα- απροσδόκητα νωρίς. Βασίζονται ωστόσο και στις δύο γλώσσες σε ρήματα Πορείας, αν και έχουν αναφερθεί επιδράσεις της τυπολογικής διαφοράς στις μεταφορικές χρήσεις των ρημάτων σε μεγαλύτερες ηλικίες. Η Πορεία διαφαίνεται συνεπώς διαγλωσσικά πιο προσιτή έννοια από τον Τρόπο πολύ νωρίς στην ανάπτυξη, εξηγώντας και γιατί αποτελεί βάση για τις πρώτες αναφορές στην αφηρημένη κίνηση.

Keywords

motion, physical motion, abstract motion, typological differences, metaphor, acquisition, language and cognition

1.   Introduction

As Slobin (2003 in press) sums up, speaker's description of motion events, especially in narratives, is affected by linguistic, cognitive and cultural variables. Critical among these are typological differences in the lexicalization of motion event components in the verb. Among the most validated findings is that speakers of Verb-framed languages, which lexicalize the Path component of motion, tend to use Path-lexicalizing verbs and leave Manner unspecified at times (e.g. French *entrer/sortir* [*en courant*]), while those of Satellite-framed languages, where Path is coded through an element associated with the verb, tend to use Manner-lexicalizing verbs and code Path through satellites (e.g. English *run in/out*) (cf. Talmy 1985, 2000, Berman & Slobin 1994, Naigles, Eisenberg, Kako, Highter, & McGraw 1998, Ozcalışkan & Slobin 1999, Papafragou, Massey, & Gleitman 2002, 2003 in press, among many others).

Talmy's (1991, 2000) typological distinction into Verb-framed and Satellite-framed languages no longer seems a simple dichotomy; it moreover interacts with other factors, with the result of more complicated cross-linguistic differences (see Noonan 2003, Papafragou *et al.* 2003 in press, Slobin 2003 in press). Nonetheless, the effect upon speech patterns seems strong and has been detected even in child speech, though it is not clear how early given limited and contradictory relevant findings. Studying natural conversations, Choi and Bowerman (1991)

have found differences between Satellite-framed English and Verb-framed Korean even in the second year of life, whereas Hohenstein, Naigles and Eisenberg (2003 in press) claim no lexico-semantic differences between English and Verb-framed Spanish before the end of the third year. Slobin (2003) has additionally claimed that typology affects the rhythm of acquisition, by making Manner more salient in Satellite-framed languages and therefore Manner verbs developmentally earlier. Finally, Ozcalışkan (2002) has shown that typology also affects metaphorical use of motion verbs, as Manner lexicalization is more prevalent in English as opposed to Verb-framed Turkish.

   In the present study, developmentally early conversations in Greek and English are compared in order to answer two questions. First of all, are there cross-linguistic differences in the literal use of verbs coding physical motion by both children and the adults addressing them, do they concern the coding of Manner and when do they emerge? Secondly, are motion verbs used non-literally? When exactly and in what ways? Are there differences across the two languages, moreover in ways predicted by the typology? Modern Greek has been seen by Talmy (2000) as equally lexicalizing Manner and Path, but Papafragou *et al.* (2002, 2003 in press) have convincingly described it as Verb-framed and have shown that in descriptions of pictures Greek speakers -including late preschool age children- use Manner verbs considerably less than English speakers.

2.   Method

The Greek data was drawn from the longitudinal corpus of one female, Anna, while the English data was extracted from the corpora of two girls, Eve and Sarah (CHILDES - Brown corpus) from the age range of 1;8 to 4;6. With the notable exception of Choi and Bowerman's (1991) and Hohenstein *et al.*'s (2003 in press) studies, spontaneous conversations in early development have not been the main concern of previous cross-linguistic research, which has focused instead on elicited narratives after the age of 3-4 years (e.g. Berman & Slobin 1994, Ozcalışkan & Slobin 1999, Hickmann 2003). For our analyses, we selected three more specific periods, each consisting of 6 recorded hours per language: an early one where Anna aged 1;8-1;11 was compared with Eve aged 1;8-1;10, as well as the age spans of 3;0 to 3;3 and 4;3 to 4;6, where Anna was compared with Sarah. Our attention was restricted to verbs denoting translocational movement of a Figure in the role of grammatical subject. We also distinguished between Manner and Non-Manner verbs. In the latter category, we included verbs which lexicalize only Path (e.g. *beno* "enter", *kateveno* "descend", *pijeno/go*, *erchome/come*), but also the neutral verb *move*. The former always code Manner (e.g. *trecho/run*, *peto/fly*, *perpato/walk*), but also possibly Path (e.g. Greek *skarfalono* "climb-upwards") -a conflation not uncommon across languages (cf. Ozcalışkan & Slobin 2000, Noonan 2003). Moreover, Manner was taken as encompassing not only characteristics of movement per se, but also evaluative elements such as the slyness evocated in Greek *kseghlistro* "slip-away" (cf. Talmy 1985: 110, Narasimhan 2003).

3. Results and Discussion

3.1. Literal reference to physical motion

We begin with the results on literal description of physical motion. Table 1 and Figures 1 and 2 present the relevant verbs employed in types rather than tokens. Though the latter have also been found to be effected by typological differences in elicited narratives (e.g. Ozcalışkan & Slobin 1999), and must in the future also be taken into account, they can be quite effected by situational factors and input frequency in spontaneous conversations as opposed to elicited narratives, as Uziel-Karl (2002) has also noted. These same factors can also effect the inventories of specific motion verbs of course, but this is less likely especially when an extended database is analyzed. After all, it is the impact of the lexicalization of Manner vs. Path components upon the lexicon used by the speakers in each language that matters. We decided to compare the percentages of Manner vs. Non-Manner verbs within each language, rather than their raw numbers, because the repertory of verbs did not seem comparable across the two languages. For one, the English child and child-directed lexicons turned out to be more restricted than the Greek ones in each developmental phase (as is apparent in Table 1). In addition, even when seemingly identical in translation, there were differences in meaning. For instance, the Manner verb lexicon in English is more fine-grained than the one in Greek, as seen in the fact that two such English verbs correspond to a single verb in Greek (e.g. both *fall* and *drop* correspond to Greek *pefto*).

Overall in child speech, the Non-Manner lexicon is more extensive in Greek than in English (44,8% vs. 12%, respectively), while the reverse holds for the Manner lexicon (88% in English vs. 55,2% in Greek). The differences are roughly similar in child-directed speech. Non-Manner verbs are more prevalent in the Greek lexicon (52%) in contrast to their counterparts in English (14,8%), whereas Manner verbs are more prevailing in English (85,2%) as opposed to Greek (48%). The same holds true when we compare the total lexicon of the child and child-directed speech in all three phases of development. Overall, Manner verbs are more predominant in the English than in the Greek lexicon (87,1% as opposed to 54,8%, respectively). On the other hand, the Path lexicon is more extensive in the Greek corpus (45,2%) in comparison with English (12,9%).

Table 1. Manner and Non-Manner verb types in child (Ch) and child-directed (Ch-d) Greek and English across development

		Greek			English		
		+Manner	-Manner	*n*	+Manner	-Manner	*n*
Phase 1	Ch	41,2%	58,8 %	17	72,7%	27,3%	11
1;8-1;11	Ch-d	47,6%	52,4%	21	70%	30%	10
Phase 2	Ch	35%	65%	20	86,7%	13,3%	15
3;0-3;3	Ch-d	43,5%	56,5%	23	75%	25%	16
Phase 3	Ch	55,6%	44,4%	27	83,3%	16,7%	18
4;3-4;6	Ch-d	37,5%	62,5%	16	84,6%	15,4%	13

	Ch	55,2%	44,8%	29	88%	12%	25
Total lexicon	Ch-d	48%	52%	25	85,2%	14,8%	27
	Ch & Ch-d	54,8%	45,2%	31	87,1%	12,9%	31

Moreover, differences are quite notable in child speech even in the 1+ age range, further increasing in the 3+ years range. However, they decrease at 4+, when Manner verbs surpass Non-Manner ones for the first time in Greek (55,6% vs. 44,4%, respectively), without however eliminating the cross-linguistic difference. The peak in the percentage of Manner verbs, which is noted at 4+ in Greek, coincides with a newly added lexicon consisting entirely (*n*=8) of Manner verbs for the first time (*kolibo* "swim", *tsoulao* "roll", *kseghlistro* "slip-away", etc.). Precisely the same coincidence is noted in English (*n*=9) but one period earlier, at 3+ (*chase*, *hop*, *race*, *walk*, etc.).

Figure 1. Manner and Non-Manner verbs in child
Greek and English speech
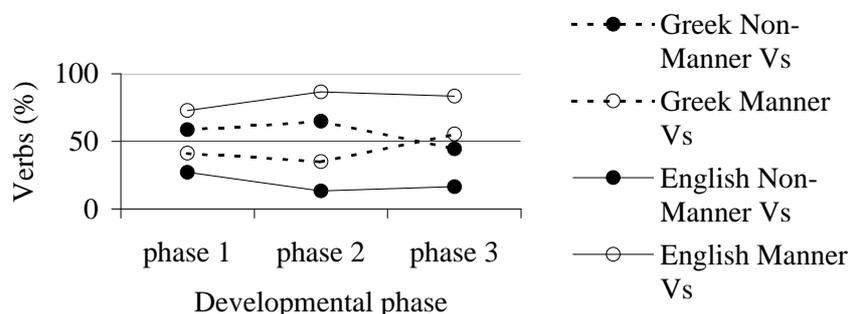
Figure 2. Manner and Non-Manner verbs in child-directed
Greek and English speech
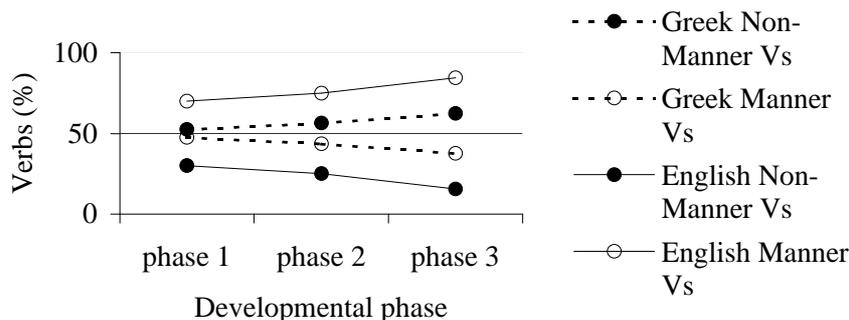
What can be concluded so far? Above all, the findings support the early effect of language structure upon speech patterns, in accord with Choi and Bowerman (1991). How can we explain, however, the discordance from Hohenstein *et al.*'s (2003 in press) claim of no differences between English and Spanish from the age of 2;1-2;8? We need to note that the latter study referred to the greater than expected similarity in the syntactic frames of the verbs in the

two languages, as less locative/ directional information is used in early English in comparison to adult patterns. It also did not always provide quantitative data, allowing the vague conclusion that both Path and Manner verbs are used in both languages early, which does not necessarily exclude difference. Finally, their criteria for inclusion and categorization of verbs do not completely coincide with ours.[1]

Turning now to the developmental trends we observed, we stand first of all upon the increase of Manner verbs at 4+ in Greek. It may, on the one hand, counteract expectations from previous studies that cross-linguistic differences increase with age (e.g. Berman & Slobin 1994, Slobin 1996, Hohenstein *et al.* 2003 in press). On the other hand, it seems compatible with claims that Manner is characterized by a greater range of dimensions than Path and is thus more open to long-term elaboration through a more extensive lexicon (as Ozcalışkan 2002, Uziel-Karl 2002 and Slobin 2003 have pointed out). After all, Manner verbs have been found to be more frequent than Path ones even in adult narratives of Path-oriented languages like Spanish and Turkish (cf. Ozcalışkan & Slobin 1999). At the same time, the earlier climax in the use of Manner verbs that we noted in English supports language-specific effects on the speed of acquisition, more specifically Slobin′s (2003) claim that Manner verbs develop earlier in Satellite-framed as opposed to Verb-framed languages. A similar acquisitional acceleration of Manner verbs in Satellite-framed English as opposed to Verb-framed Korean has been reported by Choi and Bowerman (1991).

3.2. Non-literal motion

Non-literal uses of motion verbs in early naturalistic conversations have hardly been studied (see nonetheless Johnson 1999). In the corpora examined here, several such uses were identified not only in child-directed but also in child-produced speech even at the 1+ phase. However, in comparison with the literal uses, they are clearly less frequent and also involve a more limited number of verbs. In fact, *go* and *come* and their Greek correspondents *pijeno/pao* and *erchome* are very predominant, especially in English. In spite of the limited evidence, certain suggestions arise as to the emergence of non-literal motion in early development, which seems to be characterized both by cross-linguistic differences as well as similarities.

To begin with, different types of non-literal uses are noted. Supposing a continuum of non-literality, some seem more literal than others as reference is made to physical rather than abstract motion. Non-literal description of veridical motion is observed in both languages and at all ages in the presentation of non-prototypical agents as volitionally moving entities. While some of these instances can be seen as conveying (veridically) caused motion as (non-veridically) self-generated one (ex. 1) or as simple personification (ex. 2), others seem more metaphoric (ex. 3 and 4). All these cases argue against the traditional literal/ non-literal division and reinforce, instead, the idea that metaphoricity involves continua (see Givon 1984 and, more particularly for Greek motion verbs, Antonopoulou 1987; cf. Johnson′s 1999 Conflation Hypothesis about lexical acquisition).

(1)	*edho*	*tha*	*pai*	*i*	*fotoghrafia*
	here	FUT	go- NPAST-PERF-3SG	the	photo
	"the photo will be placed here"				[Anna 4;5]
(2)	*(a cat and) the fiddle chase the moon*				[Sarah 4;5]
(3)	*tha*	*trechi*		*ema*	
	FUT	run-NPAST-IMPERF-3SG		blood	
	"blood will be running"				[Anna 3;2]
(4)	*your nose is running*				[Engl. Ch-d 3;1]

Non-literal description of non-veridical motion now appears in various shades. One prominent type involves what may be described as mental movement towards a state/ action. Most typical is the use of imperative *come on* and the corresponding Greek *ela* when urging compliance with the speaker's suggestion (ex. 5 and 6), as well as use of *be going to* and the corresponding Greek *pao na* to denote mental intent to do something (ex. 7-9). *Come on* and its Greek counterpart *ela* appear before the age of 2 years in child-directed speech but only after 3 years for the children. Moreover, the latter is more frequent than the former in the child-directed speech. On the other hand, *be going to* is more frequent and early in English than *pao na* in Greek, present even at 1+ in both child and child-directed speech. By contrast, in Greek, there are no uncontested instances by the child. In example (10), intent is conflated with physical motion. Johnson (1999) has more generally pointed out that such conflation is not unusual in early language, often marking the passage into the non-literal. Even in the Greek child-directed speech, clear instances are infrequent and appear only after the age of 3 (ex. 9). This cross-linguistic difference probably reflects the more advanced grammaticalization of *go* as a marker of intent/ futurity in English as opposed to Greek where the process seems to have just begun (Newton & Veloudis 1980).

(5)	*ela*	*fonakse*	ligho	
	come-IMPER-2SG	shout-IMPER-2SG	a bit	
	"come on speak a bit loudly"			[Anna 3;3]
(6)	*come on, eat*			[Sarah 3;2]
(7)	*Sue gon read Lassie*			[Eve 1;9]
(8)	*Fraser's paper is going to be written on by Fraser*			[Engl. Ch-d 1;9]
(9)	*"tis*	*Marilenas"*	*pigha*	*na*	*po*
	the-GEN	Marilena-GEN	go-PAST-1SG	to	say-NPAST-1SG
	"*Marilena's* I meant to say"			[Grk. Ch-d 3;1]
(10)	*pa(me)*		*na*	*fighoume*
	go-IMPER-1PL		to	leave-NPAST-1PL
	"let's go"			[Anna 3;1]

Clear metaphors, i.e. cross-domain correspondences (cf. e.g. Lakoff & Johnson 1980, 1999), appear before the age of 2 years in both languages. In Greek however, they are more frequent and involve a greater range of verbs and mappings than in English -especially in child speech.

At 1+ we encounter the domains of Time, Illness, Change and Activity (ex. 11-14), as opposed to Change and Bodily Action in English (ex. 15 and 16). In subsequent phases, mappings are enriched earlier in Greek in comparison to English. Characteristically, conceptualization of static scenes in terms of motion -what Talmy (2000) calls fictive motion and Langacker (1991) subjective motion- emerges at 3+ years in Greek as opposed to 4+ years in English (ex. 17 and 18). Increasing diversity and frequency of metaphors in Anna′s speech is clearly seen in instantiations of the Motion-to-Time mapping after the age of 3 years (ex. 19-21). With increasing age, new temporal notions emerge, which are moreover combined with a wider variety of motion verbs. In fact, in the 4+ age range, we also encounter the location-version of the metaphor (ex. 21) in addition to the earlier established object-version (cf. ex. 11, 19 and 20). In English, the Motion-to-Time mapping, though supposedly very entrenched in the adult language, is not encountered in the children′s speech at all. Moreover, metaphors are somewhat enriched only at 4+ years, when motion verbs start to refer to Auditory Perception (ex. 22) and Stasis (ex. 18). In fact, cross-linguistic comparison of the total of metaphoric uses by the children indicates that, in comparison with her two English-speaking peers, Anna refers to more specific target concepts such as Time, Illness and Mental Activity (ex. 23). Furthermore, in Greek both the child and the adults talk roughly about the same target domains, while the children′s domains in English are more restricted than the adult ones. Characteristically, Time and Mental Activity are attested only in the child-directed speech (ex. 24 and 25). Finally, it is clear at least in Greek that even when both the child and the adults refer to the same domains, their appearance in child speech is not necessarily early. For instance, Anna produces metaphors for Mind after the age of 4;3, while she has heard roughly similar metaphors before the age of 2 years (ex. 23 and 26). In English, this is clearly true at least for some non-literal uses categorized here as Other. For instance, use of *go on* to denote continuation of an action/ activity is attested in child-directed speech from the beginning but only after the age of 4;3 in child speech.

(11) *tin (=i)*   *ora*   *erchete*
     the   hour   come-PRES-3SG
     ″the time is coming″   [Anna 1;9]

(12) *tha*   *perasi*   *to*   *vava*
     FUT   pass-NPAST-3SG   the   wound
     ″the wound will pass (i.e. heal)″   [Anna 1;9]

(13) *pai*   *o*   kipos
     go-NPAST-3SG   the   garden
     ″the garden is gone″   [Anna 1;8]

(14) *bic(e)*   *i*   *ghata*   *sto*   *choro*
     enter-PAST-3SG   the   cat   into-the   dance
     ″the cat started dancing″   [Anna 1;9]

(15) *it′s all gone* (i.e. the cookies)   [Eve 1;10]

(16) *she gon burp*   [Eve 1;9]

(17) *i*   *tsoulithra*   *pai*   *apo*   *(e)ki*
     the   slide   go-PRES-IMPERF-3SG   from   there

"the slide goes from there"   [Anna 3;0]

(18) *one goes across and one goes down* (while describing drawings) [Sarah 4;6]

(19) *kodevi*   *na*   *erthi*   *o*   *chimonas*
approach-PRES-3SG   to   come-NPAST-3SG   the   winter
"winter is approaching"   [Anna 3;2]

(20) *tora*   *irthe*   *to*   *1996*
now   come-PAST-3SG   the   1996
"(the year) 1996 has now come"   [Anna 4;6]

(21) *…na*   *pernas*   *tin*   *ora*   *sou*
…to   pass-NPAST-IMPERF   the   hour   your
"…to pass (i.e. to spend) your time"   [Anna 4;5]

(22) *did my breath went in there ?*   [Sarah 4;6]

(23) *ke pia*   *(mera)*   *perases?*
and which   (day)   pass-PAST-2SG
"which one did you pass over (i.e. which day did you forget)?" [Anna 4;4]

(24) *days… are coming*   [Engl. Ch-d 3;1]

(25) *where'd ya ever come up with that name?*   [Engl. Ch-d 3;3]

(26) *pos*   *sou*   *(i)rthe*   *oti*   *(dh)e(n) chalase?*
how   to-you   come-PAST-3SG   that   NEG   get-wrecked-PAST-3SG
"how did (the idea) occur to you that it didn't get wrecked?" [Grk. Ch-d 1;9]

So, as far as the scant evidence on non-literal motion is concerned, we offer the following tentative conclusions. Non-literal uses are early, though infrequent. They include metaphors, even if very entrenched ones, such as those for Time and Illness in Greek. Even so, Ozcalışkan's (2002) claim that metaphor comprehension/use is earlier than originally thought seems strengthened.[2] Furthermore, non-literal uses do not always follow clearly literal ones, as is apparent, for instance, with the 3rd Singular Present Tense form *pai* "(it/ he/ she) goes/ is gone" in Greek not only for physical translocation but also for object disappearance and cessation of an event from the earliest recordings. This observation favours the Conflation Hypothesis according to which children produce uses of verbs that combine properties of the literal and metaphorical senses before they produce any unambiguous metaphorical uses (Johnson 1999). Other non-literal uses however, including the abstract imperative *come on* and *ela* and the fictive *go* and *pao,* do not seem very early.

The predominance now of Path verbs is understandable in the case of mental intent and fictive motion, which inherently involve directionality and seem predominantly coded with Path verbs even in adult speech. On the other hand, metaphor seems more related to Manner, at least because it more frequently signals the speaker's evaluation of an event (Slobin 2003). It may not be after all accidental that even in a Verb-framed language like Greek, Selimis and Katis (2003) found a much more extensive Manner lexicon in metaphorical motion as opposed to that found for literal motion here and in another study by Koletti (2001). But common spontaneous metaphors in very early speech have not previously been studied. The dominance of Path verbs that we noted leads us to assume that early metaphorical language does not for

the most part involve Manner verbs even in Manner lexicalizing languages like English. It may therefore be surmised that it is easier for young children across languages to move into metaphor with general Path verbs, which seem conceptually simpler in comparison with specific verbs -the latter often including Manner incorporating verbs (cf. Uziel-Karl 2002).

Finally, it must be noted that three concepts found, at least in Greek, to be conceptualized via motion in the early age range studied, i.e. Time, Illness, and Mental States/ Activities, were also found to be so conceptualized in English and Turkish and were moreover equally comprehended by English- and Turkish-speaking preschoolers in experimental testing by Ozcalışkan (2002). It is thus possible that the domains in question are cross-linguistically among the earliest in ontogenesis.

4.   Conclusion

There is no question that the data presented here must be enriched in various ways, to include more children, ages, information about the frequencies and the syntactic context of verbs, before safer conclusions can be drawn. It may nonetheless be concluded that both cross-linguistic differences and universal tendencies characterize the literal and non-literal coding of motion. Above all, typological differences in the lexicalization of motion events can have their effect very early upon preferences of verbs literally coding physical motion as well as upon the speed of acquiring Manner verbs. In addition, the fact that the latter are gradually enriched in the Greek-speaking child's speech as well may indicate that within the group of Verb-framed languages Greek is more open to Manner lexicalization than say Turkish and Spanish. It nonetheless still indirectly strengthens the idea that Manner is a more complex conceptual notion than Path and thus open to elaboration through a lexicon of more specific rather than general verbs later in development (cf. Ozcalışkan & Slobin 1999, Uziel-Karl 2002, Slobin 2003). If indeed Path is a simpler and ontogenetically earlier conceptual notion, it may be understood why it serves as the stepping-stone for moving into the non-literal.

Notes

[1] For purposes of illustration, we note that they counted *sit* as a motion verb, while we did not consider it translocational or even necessarily dynamic. Moreover, they classified *fall* as a Path verb (as Naigles *et al.* 1998, Ozcalışkan 2002 and Narasimhan 2003 have among others also done), while we coded it as a verb specifying both Path and Manner (as Ozcalışkan and Slobin 1999 and Noonan 2003 also did).

[2] In fact, it is here claimed that children can use metaphors even earlier than Ozcalışkan (2002) concluded, i.e. before the age of 4-5 years.

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