

# Typological differences influence motion event perception: Evidence from production, similarity judgment tasks and eye tracking

Efstathia Soroli

University of Lille & CNRS 'Savoirs, Textes & Langage' Lab, UMR 8163

[efstathia.soroli@univ-lille.fr](mailto:efstathia.soroli@univ-lille.fr)

Keywords: linguistic typology, motion events, visual perception, similarity judgments, eye tracking

The languages of the world show great variation in core schema motion encodings: *Verb-framed* languages (e.g. French) allow mostly for Path lexicalization; *Satellite-framed* (e.g. English) leave Path in peripheral elements lexicalizing Manner of motion instead; some (e.g. Greek) present parallel systems of conflation (Talmy, 2000). It has been argued that such typological differences not only affect how people describe events verbally but also how people behave in non-verbal tasks (e.g. adopt different visual exploration strategies (Soroli 2018), attend to different aspects or follow different criteria for motion recognition (Flecken et al. 2014) and memorization (Engemann et al. 2015)). For others, our cognitive system has a common genetic basis: humans are all equipped with the same set of general conceptual categories that allows for common processing of core features, irrespective of different linguistic or cultural background (e.g. Kvas & Plomin 2006, Chomsky 2014).

The question I address here is the following: Can typological differences influence our non-verbal behavior (the way we perceive and the way we categorize motion events)? In this study I present data from three typologically different languages (English, French, Greek). Participants performed three controlled tasks: (1) a non-verbal similarity judgment task; (2) a verbal similarity judgment task; and (3) a production task, all coupled with eye-tracking for further insights on on-line processing. In experiment 1, participants saw a target-video presenting a motion event performed in a certain Manner and along a certain Path. The target was then followed by two video variants: one Manner-congruent and one Path-congruent. Participants had to choose the variant that looked most like the target as fast as they could. Experiment 2 was the same, except that the target was replaced by a target sentence describing the event. In experiment 3 participants had to describe verbally the scene.

The results show that all groups followed the typological patterns of their native language: French participants preferred to lexicalize Path leaving Manner either unexpressed or peripheral; English participants systematically encoded Manner within the main verb and Path in satellites; Greek-speaking participants alternated their verb- and satellite-framed constructions using lexicalized Path as well as many peripheral devices, preverb configurations and complex Manner-first patterns. French participants were less focal in their non-verbal behaviour than English participants. They made more Path-choices in the similarity judgment tasks, attended more and longer to Path components combining this preference with ballistic (from-source-to-goal) gazes, as opposed to English who paid less attention to Path and followed a rather focal (linear/step-by-step) strategy for visual processing. Greek participants, depending on the context and the salience of the components, alternated their visual strategies, showing however that when verbal input is not explicit, overt attention to specific components may differ in fixation counts but not in visit durations.

Participants were largely influenced by the typological properties of their native language, not only when performing verbal descriptions but also when making their non-verbal decisions: They categorized and shifted attention mostly based on the features of their language but in some cases, when no verbal input was explicitly involved, the language effect was only superficial. These findings confirm, at least partially, the impact of typological constraints on event perception mechanisms.

## References

- Chomsky, N. (2014). *The Minimalist Program: 20th Anniversary edition*. Cambridge, MA: MIT Press.
- Engemann H., Hendriks H., Hickmann M., Soroli E. & Vincent C. (2015). How language impacts memory of motion events in English and French. *Cognitive Processing*, 16(1), 209–213.
- Flecken, M., von Stutterheim, C. & Carroll, M. (2014). Grammatical aspect influences motion event perception: Evidence from a cross-linguistic non-verbal recognition task. *Language and Cognition*, 6(1), 45–78.
- Kvas, Y., Plomin, R. (2006). Generalist genes: Implications for the cognitive sciences. *Trends in Cognitive Sciences* 10(5), 198–203.
- Soroli, E. (2018). Focal vs. global ways of motion event processing and the role of language: Evidence from categorization tasks and eye tracking. *Proceedings of 9th Tutorial and Research Workshop on Experimental Linguistics*, 109–112.
- Talmy, L. (2000). *Toward a cognitive semantics*. Cambridge: MIT Press.