

# Studies on Turkish and Turkic Languages

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# Differences in spatial conceptualization in Turkish and English discourse: Evidence from both speech and gesture

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## 1. Introduction

Languages vary typologically in terms of how they map lexical and syntactic elements on to semantic domains (Bowerman 1996, Slobin & Hoiting 1998, Talmy 1985). This variation has been most prominent in the domain of spatial relations, especially in expressions of motion events. For example while Turkish prefers to encode path of motion in a "verb" (e.g. *gir* 'enter', *çık* 'exit', *in* 'descend'), English encodes path of motion by "verb particles" or "satellites" (e.g. go *in*, *out*, *down*). In this regard Turkish and English belong to two typologically different groups of languages as defined by Talmy (1985). Turkish belongs to the so-called "verb-framed" languages (e.g. Semitic, and Romance languages as well as Japanese and Korean) and English belongs to "satellite-framed" languages (e.g. most Indo-European languages except Romance) since the core semantic domain, the path, is mapped on to the verb in Turkish but on to the satellite or verb particle in English.

These typological differences among languages have recently inspired another question: Do speakers of typologically different languages also have different ways of thinking about and conceptualizing spatial relations? For example, do Turkish speakers conceptualize motion events in different ways than English speakers?

Recent research by Slobin et al. has shown that speakers of typologically different languages allocate their attention to different aspects of spatial relations in narratives (e.g. Berman & Slobin 1996, Slobin 1987, Özçalışkan & Slobin, this volume). For example, it has been shown that, speakers of satellite-framed languages pay more attention to manner of motion than speakers of verb-framed languages, as a result of how manner is lexicalized in the two types of languages. Since satellite-framed languages prefer not to encode path in the main verb, this slot is available for manner verbs (e.g. *roll* down the hill). On the other hand verb-framed languages tend to use the main verb to encode path, that is, this slot is generally reserved for path verbs and manner tends to be encoded as subordinated to the main verb (e.g. *yuvarlanarak indi* 'descended rolling'). Since satellite-framed languages encode manner in the main verb, they have been shown to use manner verbs more frequently than speakers of verb-framed languages. However, since speakers of verb-framed languages such as Turkish have to encode manner as subordinated to the main verb, they express manner less frequently and usually omit it unless it is salient. Slobin et al. have concluded from findings of this sort that speakers of satellite-framed languages devote a great amount of narrative attention to details of manner of movement compared to Turkish speakers. They have also reported similar results about speakers of verb-framed languages applying more attention to scene setting than speakers of satellite-framed languages (see Özçalışkan &

Slobin, this volume)

In these studies, spoken linguistic patterns have been the only information used to show the differences in allocation of attention to certain aspects of the spatial domain. However, it is possible that these differences remain only at the linguistic level and have limited value in terms of informing us about the underlying on-line thinking processes during speaking. Therefore we need a measure additional to the linguistic expressions that will provide an insight into the speakers' thinking and representational processes during communication.

One other way that speakers externalize their on-line representations during speaking is the spontaneous gestures they use accompanying their speech. After detailed observation of speakers' spontaneous gestures used in narratives, McNeill (1992) has shown that gestures and speech are systematically organized in relation to one another. Gestures together with the speech segments they synchronize with form meaningful combinations. For example, a speaker raises both his hands with an imaginary crawling motion to express that a character in the story is climbing up a drainpipe. At the same time she says "and he climbs up the drainpipe". In this example both gesture and speech represent the manner (crawling motion of the hands and the verb *climb*) and path of the moving figure (the rising hand expressing upward path and the verb particle *up*). The content of gesture and speech can match, as in this example, but need not do so. The content of speech and gesture might also be complementary. For example, the speaker might say "he went up the pipe" as she raises her hands with an imaginary crawling motion. In this case the manner content in gestures complements the path content expressed in speech. That is, gesture and speech can form meaningful combination in ways one can not detect by looking at either one of these externalized representations alone.

In this study, spontaneous gestures will be considered as an enhanced index of speakers' thinking processes, additional to linguistic expressions. McNeill (1992, 1997) and Kita (in press) have proposed the following relations between gestural and verbal expressions and thinking processes. According to McNeill (1992, 1997) representational gestures and speech reflect different parts of one underlying unit of mental processing. This mental unit consists of both visuo-spatial cognition as manifested in gestures and linguistic content as manifested by the structural and lexical possibilities of languages. Thus when languages differ in their structural and lexical possibilities, there is a corresponding difference in the visuo-spatial content of thought, and this is manifested in gestures. Kita (in press), and Kita & Özyürek (under review) have also proposed a similar relation between visuo-spatial thought, gestures and linguistic structures, however with slight variation. In this view gestures are generated out of the dynamic interplay between between spatial imagery and the generation of linguistic messages (Interface Hypothesis). Due to this dynamic interface, gestures are shaped both by the available linguistic expressions in a particular language and the raw spatial imagistic information to be conveyed. According to this hypothesis, visual thinking adapts to the specific linguistic system in which gesture is performing its organizing function in utterances. The gesture is shaped "so as to make its informational content as compatible as possible to linguistic encoding possibilities"

while at the same time trying to retain the aspects of the raw spatial imagery.

The aim of this paper is to demonstrate that speakers of typologically different languages, Turkish and English, differ in the way they use their gestures as well as their speaking patterns. If gestures reflect the way the visuo-spatial content of mental processing is adapted to the linguistic content, then we expect speakers of different languages to use different types of gestures, and to use them in ways influenced by the lexicalization patterns in their languages. If this expectation proves justified, this will provide additional evidence for the differences in spatial conceptualization patterns during speaking between Turkish and English speakers.

## 2. Linguistic differences in motion event representations in English and Turkish

A motion event consists of 4 semantic components: path, manner, ground and figure. Path refers to the translational motion of a figure (a moving entity) which, in the most elaborated sense, moves from a source to a goal through some medium, passing one or more milestones. Ground refers to an explicit feature of the physical environment serving as source, medium, milestone, or goal. Manner refers to factors such as the motor pattern of the movement of the figure, rate, and degree of effort (Slobin 1996). In this paper the focus will be on the manner and path components of a motion event.

As mentioned above, Talmy (1991) has grouped the world's languages into two classes, according to the way lexical and syntactic structures are mapped on to these semantic elements of motion events. In this categorization Turkish belongs to the class of verb-framed languages whereas English belongs to that of satellite-framed languages. Here I will outline how English and Turkish differ in the way they lexicalize the following semantic elements of a motion event in terms of Talmy's typology: a) path, and b) both manner and path:

A) *expressing path*: Turkish, as a verb-framed language, encodes path of motion in a verb (e.g. *gir* 'enter', *çık* 'exit', *in* 'descend' ), whereas English, as a satellite-framed language, encodes path of motion with a particle or satellite (e.g. *go in, out, up, down*).

B) *expressing both manner and path*: If speakers of English and Turkish have to encode manner of motion in addition to path, the following differences arise due to the lexicalization patterns of the two languages. Since in English path is encoded by a verb particle but not in the verb, manner can be encoded in the main verb. Therefore English speakers can easily encode both manner and path within **one verbal clause**, that is manner in the verb and path in the satellite. However in Turkish, since the main verb is used to encode path, manner tends to be encoded as subordinated to the main verb (e.g., *yuvarlanarak indi* 'descended rolling'). Thus Turkish speakers have to use **two verbal clauses** to express both manner and path components of the motion event (see Figure 1).

**Figure 1.** Differences in the mapping of syntactic structures on to manner and path components of a motion event in English and Turkish

ENGLISH :	“rolls	down”
	<b>V</b>	satellite
	manner	trajectory.
TURKISH :	“yuvarlan-arak	iniyor”
	<b>V-roll-CONV</b>	<b>V-descend</b>
	manner	trajectory

I want to focus on possible consequences of these differences between English and Turkish for the conceptualization of these components for the speakers of both languages. The prediction is that since the verb + satellite construction in English allows speakers to package manner and path components within **one** verbal clause, it will be easier for English speakers to process both manner and path components within one mental processing unit. Since Turkish does not allow the expression of both manner and path within one verbal clause but instead needs **two**, Turkish speakers might have to conceptualize manner and path as separated components, that is, in two mental processing units. Therefore it will not be as easy for Turkish speakers as it is for English speakers to package both components in one unit during on-line speaking.

In order to test this prediction I will compare Turkish and English speakers' on-line speaking patterns as well as the gestural expressions for a given motion event. With regard to verbal expressions, I expect English speakers to combine both components using one verbal unit, whereas Turkish speakers will use separate verbs for each component. I also expect similar patterning with regard to gestures. If this is the case, English speakers will be more likely represent both manner and path components within one gesture (e.g. gesture 1: hands rising up in an imaginary crawling motion to depict a character climbing up a tree). However, Turkish speakers will prefer to represent manner and path components in separate gestures (e.g. gesture 1: hands representing an imaginary crawling motion (but not rising up); gesture 2: hands rising up (without the crawling motion). If the gestural representations of motion event components parallel differences in speaking patterns as predicted, this will provide further evidence that speakers of different languages differ in their spatial conceptualization as well.

### 3. Method

#### 3.1. Subjects

15 American English and 17 Turkish speakers participated in this study. All subjects were monolingual speakers. The English-speaking subjects were undergraduate students at the University of Chicago, USA and the Turkish speaking-subjects attended Yeditepe University in Istanbul, Turkey.

### 3.2. Procedure

Each subject was asked to watch an animated cartoon entitled "Canary Row" (8 minutes). In the cartoon Sylvester the Cat attempts to catch Tweety Bird in different ways, each including a series of motion events. Later, each subject was asked to narrate the story-line to an addressee who had not seen the cartoon. The narratives were videotaped but subjects were not told that the focus of the study was on gestures.

### 3.3. Coding

*Scene:* One scene from the cartoon was selected for detailed analysis of speech and gesture. In this scene Sylvester swallows a bowling ball that Tweety Bird throws into his mouth, and with the force of this bowling ball he rolls down the street. The coding was conducted on descriptions of the last scene. The reason for choosing this particular scene was that both components of a motion event (manner and path) are represented in it (i.e. Sylvester goes down the hill as he rolls).

*Linguistic expressions:* Verbal descriptions of this scene were coded for whether each speaker used a) verb + satellite construction or b) separate verbs to describe the manner and path components of the cat's rolling down the hill.

*Gestures:* Speakers' gestures<sup>1</sup> that accompanied verbal expressions of this scene were categorized into 3 types:

- a) *Manner-only gestures:* Representing only the manner of the motion event (e.g. hand(s) or fingers rotating without any trajectory component)
- b) *Trajectory-only gestures:* Representing only the path of the motion event (e.g. hand(s) moving along a trajectory without any rotation of the hands or fingers)
- c) *Manner-Trajectory conflated gestures:* Representing both the path and the manner of motion simultaneously (e.g. hand(s) moving along a trajectory while the hands or the fingers rotate).

## 4. Results

### 4.1. Motion event descriptions in speech

Do the differences in lexicalization patterns between English and Turkish have an effect on speakers' on-line verbalizations of this event? If this is the case, then the English speakers would be expected to use one verbal clause, whereas Turkish speakers would be expected to use separate verbs to express the manner and path components of the cat's rolling down the hill in the cartoon event. Here note that even though English allows speakers to express both manner and path in one verbal clause, speakers are not constrained to do so. That is, they can also use separate verbs such as "he *went* down the street *rolling*" to depict the scene. However, if the typological pattern has an influence on on-line verbalization of this scene then English speakers will use a single one verbal clause for this purpose.

In line with our expectations the results showed that all English speakers used a verb+satellite construction (e.g. *rolled down*). On the other hand, all but one Turkish speaker used separate verbs to talk about the motion event (e.g. *yuvarlanarak iniyor*

'descended rolling'). Only one Turkish speaker expressed both manner and path in one verbal clause: *yokus asagi kayiyo* 'slides downhill'. This one example also shows that it is possible for Turkish speakers to use one verbal clause instead of two to express both components, but most of them preferred not to do so. Thus typological differences influence Turkish and English speakers' on-line ways of speaking, causing them to express manner and path in different ways.

It was also predicted that since English easily allows the encoding of both manner and path within one verbal clause, English speakers would be more likely than Turkish speakers to mention both manner and path. But since Turkish does not allow this possibility, Turkish speakers would be likely to omit one or the other and let the other be inferred from the discourse context. In order to test this hypothesis, the percentage of subjects in each language who expressed both manner and trajectory versus either manner or path were calculated (Table 1).

**Table 1.** Percentage of subjects who mentioned either Path or Manner versus both of them in the English and Turkish samples.

	Either Path or Manner	Both Path and Manner
English	6%	94%
Turkish	53%	47%

The results were in line with the initial prediction. That is, more Turkish speakers mentioned only one of the components in their description than English speakers. On the other hand almost all the English speakers mentioned both components<sup>2</sup>.

These differences in the on-line ways of speaking about manner and path support the idea that there might be differences between the speakers of both languages in conceptualizing motion event components. Since in English it is easier to combine the two components in one clause English speakers conceptualize both components together regularly. However, since packaging of both components in one verbal unit is not lexically easy for Turkish speakers, they conceptualize manner and path separately and thus easily omit one or the other.

#### 4.2. Motion event descriptions in gesture

According to the speech and gesture production theory outlined by Kita, I expected speakers' gestural representations to parallel differences in their on-line speaking patterns. That is, more Turkish speakers were expected to represent manner and path components in separate gestures than English speakers, whereas English speakers were expected to use one gesture to express both components. It is also predicted from this theory that the gestures of English and Turkish speakers would also show some similarities since the gestures would retain aspects of the raw imagery of the stimulus as observed.

For this analysis the percentage of subjects who used either one of the representational strategies in gestures, that is, a) Manner-only, b) Trajectory-only, and c) Manner-Trajectory conflated gestures were calculated. Many speakers used more than one gesture of different types to depict this scene. In view of this, for each of the three

gesture types the percentage of subjects who used this at least once in their descriptions were calculated.

Since the stimulus event in the cartoon scene included both manner and trajectory represented simultaneously, I expected similar percentages of English and Turkish speakers to use Manner-Trajectory conflated gestures at least once in their repertoire. In this type of gesture manner is represented simultaneously with path and within one gesture. This would be an isomorphic representation of this scene, and speakers of both languages would be as likely to use this type of gesture. However, if Turkish speakers also have cognitive representations in which manner and path are encoded as separate units, I expected more Turkish speakers to use Manner-only and Trajectory-only gestures in their repertoire. On the other hand, English speakers were expected to have fewer Manner-only and Trajectory-only gestures and to have mostly Manner-Trajectory conflated gestures where manner and path are represented as one unit.

The percentage of subjects who used Manner-Trajectory gestures at least once in their repertoire was calculated for both language samples (Table 2).

**Table 2.** Percentage of subjects who used Manner-Trajectory conflated gestures at least once in their repertoire of gestures

	Used at least once	Never used
English	71%	29%
Turkish	69%	31%

As expected, there was no difference between the language samples in terms of the percentage of speakers who used Manner-Trajectory conflated gestures at least once.

Tables 2 and 3 show the percentage of subjects who used Manner-only and Trajectory-only gestures in their repertoire at least once in both languages.

**Table 3.** Percentage of subjects who used Manner-only gestures at least once in their repertoire of gestures

	Used at least once	Never used
English	7%	93%
Turkish	50%	50%

**Table 4.** Percentage subjects who used Trajectory-only gestures at least once in their repertoire of gestures

	Used at least once	Never used
English	43%	57%
Turkish	69%	31%

As expected, more Turkish speakers than English speakers used Manner-only and Trajectory-only gestures, supporting the idea that Turkish speakers conceptualize the two components of this motion event separately. This pattern was more visible in the Manner-only gestures than in Trajectory-only gestures. However, not as many English



speakers had these types of gestures, where manner and path are represented as separate units.

Thus gestural representations by Turkish and English speakers parallel the differences in their verbalization of motion event components. Verbal and gestural representation patterns converge, and show differences between the two languages, providing further evidence for the claim that speakers of typologically different languages conceptualize elements of spatial relations differently.

### 5. Conclusion and discussion

This study has shown that typological differences among languages, that is, how they map lexical and syntactic elements on to semantic domains influence speakers' on-line speaking and gestural patterns in describing a motion event. Differences in both the verbal and gestural patterns give support to the idea that there might also be differences in the conceptualization of motion events between the speakers of typologically different languages.

Here I demonstrated evidence for this claim by comparing how Turkish (verb-framed) versus English (satellite-framed) speakers express the manner and path of a motion event in both their linguistic expressions and their gestures. Results on linguistic patterns showed that the Turkish speakers used separate clauses to express manner and path, and also half of the speakers omitted one or the other in their descriptions. However, the English speakers used one verbal clause to express both manner and path, and all of them mentioned both components in their descriptions. With regard to gestures, English speakers mostly used one gesture where both manner and path components were represented as one unit. Even though the English speakers' repertoire also included gestures where manner and path were presented separately, fewer speakers chose to use those than in the case of Turkish speakers. Turkish speakers also had gestures where they represented manner and path within one gesture in ways similar to the English speakers. However, in addition to this, more Turkish speakers than English speakers represented manner and path in separate gestures. These findings support the idea that while more Turkish speakers are likely to represent both components of a motion event as separate components, English speakers represent the two components as one unit due to typological differences. In this sense the findings are in line with the "thinking for speaking" hypothesis outlined by Özçalışkan & Slobin:

"Each language involves a subjective orientation to the schematization of experience, in that it offers a different set of lexical and grammatical and lexical options, rather than being a neutral coding system. It is proposed that these options, which constitute the preferred typological frame, tune speakers to deal with experience in different ways, and that such subjective orientations affect ways of thinking in the process of producing discourse such as speaking, or writing -- which can be called: "thinking for speaking" (Özçalışkan & Slobin, to appear).

Gestures of Turkish and English speakers also showed similarities in ways that represent the raw imagery of the observed event providing further evidence for the Interface Hypothesis proposed by Kita (in press) and Kita & Özyürek (under review).

Further research, however, is needed in the Turkish sample to find out how gestures and linguistic expressions are related to each other in cases where Turkish speakers omit in their gestures one of the motion event components in their speech. Do speakers also omit those representations that they omit in their speech? Or do they use complementary strategies in their speech and gesture (e.g. speech: Manner-only; gesture: Trajectory-only)?

Even though gestural representations paralleled differences in the speaking patterns, there might be other reasons for the differences between the gestural patterns of English and Turkish speakers, such as cultural factors. In order to attribute the differences in gestures to lexicalization patterns for sure, one needs to test these predictions in another language and culture. In fact, Kita (1996) has conducted the same study with Japanese speakers. Japanese belongs to the same typological group as Turkish, that is, it is a verb-framed language, and yet the Japanese cultural context is quite different from that of Turkish. The gestural patterns of Japanese speakers paralleled the gestural patterns of Turkish speakers and thus differed than those of English speakers. This finding is evidence for the claim that differences in the gestural patterns observed with regard to path and manner representations are due to typological differences among languages rather than to cultural factors.<sup>3</sup>

The analysis in this paper has been based on the description of one scene, in order to make a detailed analysis of speech and gesture organization. However, it is necessary to extend this analysis to other motion events such as climbing, running etc. Naigles et al. (1998) have found that motion event conceptualizations among English and Spanish speakers differ with the activity represented and the context of the representations. The same might be true for differences between English and Turkish speakers.

Lastly, analysis conducted so far raises other questions about the developmental patterns that give rise to the differences in the adult patterns. Are there differences between the linguistic and gestural patterns of Turkish and English children from early on? Or do verbal and gestural representations start in similar ways in both language communities and the differences emerge later on? In this sense, the developmental investigation of speech and gesture patterns will also provide an enhanced window into the development of conceptualization in speakers of typologically different languages.

### Notes

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<sup>1</sup> According to McNeill (1992), gestures have three phases in their production: a preparation phase, a stroke, and a retraction phase. The three phases together constitute a *gesture phrase*. In the present study the gesture phrase was the basic unit of analysis. See McNeill (1992) for more information on how to define a gesture unit.

<sup>2</sup> As mentioned before, Slobin et al. have found that Turkish speakers omit manner more frequently than English speakers, owing to the differences in lexicalization patterns. However, in the present data set Turkish speakers did not omit much manner more frequently than path. That is, both components were almost equally likely to be omitted (55% of all the omitted verbs were Manner and 45% were Path). This might be due to the fact that both manner and path were salient components for the description of this scene.

<sup>3</sup> This claim does not deny that there might be other differences between gestures that are due to cultural factors, such as the size of the gestures.

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