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Expressing manner and path in English and Turkish:

Differences in speech, gesture, and conceptualization

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Abstract

This study investigates how speakers of typologically different languages, Turkish (verb-framed) and English (satellite-framed) express motion events in their speech and accompanying gestures. 14 English and 16 Turkish speakers narrated an animated cartoon and one motion event scene was selected for analysis. English speakers depicted this scene with one verb with a satellite "the cat *rolls down*", combining manner and path of the motion in one clause. Whereas Turkish speakers used two verbal clauses (e.g., *yuvarlanarak iniyor* (rolling descends)), separating manner from path. Gestures showed a similar pattern. Turkish speakers compared to English were more likely to use a) pure rotation gestures (representing manner only) and b) pure trajectory gestures (representing path only). These findings support the claim that speakers of typologically different languages conceptualize motion events in different ways during on-line speaking. While more Turkish speakers represent two components of a motion event as separate, English speakers represent them as one unit.

Introduction

Languages vary typologically in terms of how they map lexical and syntactic elements onto semantic domains (Bowerman, 1996; Slobin 1996; Talmy, 1985). This variation has been most prominent in the domain of spatial relations, especially in expressions of motion events. The typological differences among languages have recently inspired other questions: Do speakers of typologically different languages also have different ways of thinking and conceptualizing spatial relations? In this paper we will address this question by comparing how speakers of two typologically different languages, Turkish and English, use their speech as well as spontaneous gestures to express motion events in narrative discourse.

Turkish and English belong to two typologically different group of languages in terms of how they map lexical elements onto semantic elements of motion events (Talmy, 1985). Turkish prefers to encode path of motion in a verb (e.g., *gir* 'enter', *cik* 'exit', *in*' descend'), whereas English encodes path of motion by verb particles or satellites (e.g., go *in*, *out*, *down*). In this regard 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 onto the verb in Turkish but onto the satellite or verb particle in English.

Recent research by Slobin et al. (e.g., Berman and Slobin, 1996; Slobin, 1987; Özcaliskan & Slobin, in press) has shown that differences in how semantic elements are mapped onto lexical elements influence speakers to conceptualize motion events in different ways. For example, it has been found that speakers of verb-framed languages pay less narrative attention to manner of motion than speakers of satellite-framed languages unless manner is the salient information in the discourse context. This difference is mainly due to how manner is lexicalized in the two types of languages. Since satellite-framed languages do not prefer 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 or foregrounded information in the narrative context. 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 speakers of verb-framed languages. They have also reported similar results about speakers of verb-framed languages applying more attention to scene setting than speakers of satellite-framed languages due to typological differences.

Slobin (1987) calls this way of conceptualizing events for purposes of speaking "thinking-for-speaking" hypothesis. According to this hypothesis, the preferred typological options in one's language tune speakers to deal with experience in different ways and these subjective orientations affect speakers to organize their thinking to

meet the demands of linguistic encoding during acts of speaking.

In these studies spoken linguistic patterns have been the only information used to show the differences in conceptualization of motion events in narrative. However, linguistic expreessions are limited in terms of informing us about the underlying on-line thinking processes during speaking. Therefore we need a measure additional to the linguistic expressions and yet that will still provide an insight into speakers' thinking and conceptualization processes used during narrative 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 (1985; 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. That is, gestures in form and manner of execution exhibit a meaning relevant to the simultaneously expressed linguistic meaning.

The meaning relations between the gesture and the linguistic segment can vary. For example the content of gesture and the content of the linguistic segment can parallel each other. Consider this example from a narrator telling a cartoon story:

(1) 'and he climbs up the drainpipe'
   [hands go up in a climbing manner]

In this example both gesture and speech represent the manner (i.e., climbing motion of the hands expressing manner of motion and the verb *climb*) and path of the moving figure (i.e., the rising hand expressing upward path and the verb particle *up*). The contents of gesture and speech can parallel each other as in this example but need not be. Consider this other example from a narrator telling the same cartoon story (McNeill, 1985).

(2) 'she chases him out again'
   [hand as if gripping an object swings from left to right]

Here speech conveys the concepts of pursuit (chases) and recurrence (again) and gesture conveys the means of pursuit that is, swinging an umbrella. Thus the content in gesture and content in speech might complement as well as be parallel to each other.

This kind of gestures cited above is called 'iconic' or 'representational' gestures. That is, they have a formal resemblance to the referents they represent[1]. In this study

these kind of spontaneous gestures will be the focus of study and considered as an enhanced index of the speakers' thinking processes in addition to linguistic expressions.

McNeill (1985, 1992; McNeill & Duncan, in press) and Kita (in press) have proposed the following relations between gestural and verbal expressions and thinking processes. According to McNeill representational gestures and speech reflect different parts of one underlying unit of cognitive representation. The thrust of McNeill's argument is that "to get the full representation that the speaker had in mind both the sentence and the gesture must be taken into account" (McNeill 1985; 353). For example, in the above utterance (2), the speaker had the chasing, and the recurrence aspects of the action expressed by speech and the pursuit of chasing expressed by gesture as one unit of cognitive representation underlying the utterance. 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. Kita (in press) further proposes that, one of the functions of gestures is to help the "organization of complex information into a message that can be verbalized". 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 the informational content as compatible as possible to linguistic encoding possibilities." In both views the gesture content and the linguistic content are integrated to each other and the joint representation of the two informs us about the underlying cognitive representation of the speaker rather than one or the other alone[2].

The aim of this paper is to investigate whether speakers of typologically different languages differ in the way they use their gestures as well as their speaking patterns in expressing motion events. If both speech and gesture index the full representation of the speaker during speaking, then differences in gestures will provide additional insight about the differences in spatial conceptualization among speakers of different languages. McNeill and Duncan (in press) have provided evidence for this claim by comparing English, Spanish and Chinese speakers' gestures accompanying motion event expressions and have shown that the content in speech and gesture are combined in different ways suggesting different conceptualizations among speakers. Here we investigate a similar question by comparing speakers of Turkish and English and focusing on the differences in verbal packaging of manner and path elements of a motion event.

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[1] Iconic gestures differ from the conventional or emblematic ones such as "OK" gesture which can be used in the absence of speech or hand signs used in sign languages (Kendon, 1997; McNeill, 1992). In the conventional gestures the form-meaning relationship is arbitrary and the form of the gesture does not bear an iconic relation to the referents represented.

[2] This hypothesis argues against the other assumptions that speech and gesture are independent communicative channels (Sanders, 1987) or that the function of gestures is merely lexical retrieval (Butterworth and Hadar, 1989).

Linguistic Differences in Motion Event Representations in Turkish and English

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 manner and path components of a motion event.

As mentioned above, Talmy (1985) has grouped world's languages into two according to the way lexical and syntactic structures are mapped onto these semantic elements of motion events. In this categorization Turkish belongs to verb-framed languages whereas English belongs to satellite-framed languages. Here we will outline how English and Turkish differ in the way they lexicalize the following semantic elements of a motion event: a) path, and b) both manner and path with regard to Talmy's typology.

a) expressing path: Turkish, as a verb-framed language encodes path of motion in a verb (e.g., *gir* 'enter', *cik* '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. Since in English path is encoded by a verb particle but not in the verb, the 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 iniyor* 'descends rolling'). Thus Turkish speakers have to use two verbal clauses to express both manner and path components of the motion event (Figure 1).

ENGLISH :   "rolls   down"

	V	satellite
	manner	trajectory.

TURKISH :   "yuvarlan-arak   in-iyor"

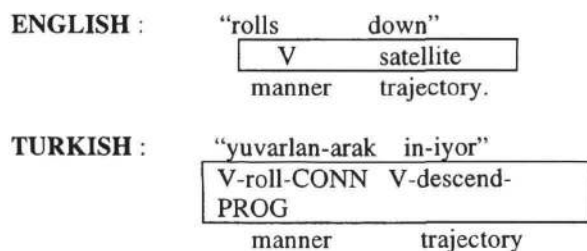|	V-roll-CONN	V-descend-PROG
	manner	trajectory

Figure 1. Differences in the mapping of manner and path components of a motion event onto syntactic elements in English and Turkish (CONN = connective marker, PROG = progressive tense marker)

We 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. However, since Turkish does not allow expressing 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 conceptual unit during on-line speaking.

In order to test this prediction we will compare Turkish and English speakers' on-line speaking patterns as well as the gestural expressions of a given motion event. With regard to verbal expressions we expect English speakers to combine both components using one verbal unit whereas Turkish speakers to use separate verbs to do so. We 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 climbing 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 climbing motion (but not rising up); gesture 2: hands rising up (without the climbing manner of the hands). 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.

Method

Subjects

14 American English and 16 Turkish speakers participated in this study. All subjects were monolingual speakers. English speaking subjects were undergraduate students at the University of Chicago, USA and Turkish speaking subjects attended Yeditepe and Marmara Universities in Istanbul, Turkey.

Procedure

Each subject was asked to see an animated cartoon '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. Each subject was asked to narrate the cartoon story to an addressee who has not seen it. The narratives were videotaped but subjects were not told that the focus of the study was on gestures.

Coding

Scene sampling: 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 and ends up in a bowling alley. The aim of picking descriptions of this scene is that in this scene both manner and path components are represented in a simultaneous way (i.e., Sylvester goes down the hill as he rolls).

Coding speech: Each subject's verbal descriptions of this scene were coded in terms of 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.

Coding gestures: Speakers' gestures[3] that accompanied verbal expressions of this scene were categorized into 3 types:

a) Manner-only gestures: Represent the manner of the motion event only (i.e., hand(s) or finger(s) rotate/wiggle without any trajectory component)

b) Trajectory-only gestures: Represent the path of the motion event only (i.e., hand(s) move along a lateral or sagittal trajectory without any rotation/wiggling of the hand(s) or finger(s))

c) Manner-Trajectory Conflated gestures: Represent both the path and the manner of motion simultaneously (i.e., hand(s) move along a lateral or sagittal trajectory while the hand(s) or the finger(s) rotate/wiggle).

All gestures were initially coded by a single coder and reliability was established by having a second coder code 25% of the data. Agreement between coders was 100 % for categorizing gesture phrases.

Results

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 English speakers are expected to use one verbal clause whereas Turkish speakers are expected to use separate verbs to express both manner and path components to express 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 one verbal clause to do so.

The results showed in line with the expectations that all English speakers used verb+satellite construction (i.e., *rolled down*) to express both components. On the other hand, all but one Turkish speaker used separate verbs to talk about the motion event (e.g., *yuvarlanarak iniyor* 'descended rolling') to express both manner and path. Only one Turkish speaker expressed both manner and path in one verbal clause: *yokus asagi kayiyo* 'slides down hill'. 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 did not prefer to do so. Thus typological differences influence Turkish and English speakers' on-line ways of speaking about manner and path in different ways.

It was also predicted that since English easily allows to encode both manner and path within one verbal clause, speakers would be more likely to mention both in their description. But since Turkish does not allow this possibility, speakers would be more likely to omit one or the other and let the other be inferred from the discourse context. To answer this question, percentage of subjects in each language who expressed both manner and path 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 Turkish and English sample

Language	Either Path or Manner	Both Path and Manner
English	0	100% (N=14)
Turkish	56% (N=9)	43% (N=7)

The results were in line with the initial prediction. More Turkish speakers mentioned either one of the motion event components in their description than English speakers (Chi square = 11.1, df=1, p<.001). On the other hand all English speakers mentioned both components[4].

These differences in 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 it is easier to combine the two components in one clause English speakers conceptualize both components together all the time. However, since packaging of both components in one

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[3] According to McNeill (1992) conventions, 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 phrase.

[4] As mentioned before Slobin et al. has found that Turkish speakers omit manner more frequently than English speakers due to the differences in lexicalization patterns. However, in the present data set Turkish speakers did not omit manner more frequently than the path. That is both components were 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 in the narrative discourse.

verbal unit is not lexically easy for Turkish speakers, they conceptualize manner and path separately and thus easily omit one or the other.

Motion Event Descriptions in Gesture

We 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 simultaneously.

For this analysis the percentage number 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. Thus percentage subjects who used either one of the 3 types at least once in their descriptions were calculated.

Since the stimulus event in the cartoon scene included both manner and trajectory represented simultaneously, we expected similar amount of English and Turkish speakers to use Manner-Trajectory Conflated gestures at least once in their repertoire. In this type of gesture (e.g., the hand moves along a trajectory while the hand or the fingers rotate/wiggle), manner is represented simultaneously with path 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, we 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 but rather have mostly Manner-Trajectory Conflated gestures where manner and path are represented as one unit.

First, percentage of subjects who used Manner-only and Trajectory-only gestures in their repertoire at least once in both languages was calculated (Tables 2 and 3).

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

Language	Used at least once	Never used
English	14 %(N=2)	86% (N=12)
Turkish	62 %(N=10)	38% (N=6)

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

Language	Used at least once	Never used
English	35% (N=5)	65% (N=9)
Turkish	75% (N=12)	25% (N=4)

As expected more Turkish speakers than English speakers used Manner-only and Trajectory-only gestures (for Manner-only: Chi square = 7.18, df=1, p<.001; for Trajectory-only: Chi square = 4.58, df=1, p<.05). These findings support the idea that Turkish speakers conceptualize both components of this motion event separately. This pattern was more visible in Manner-only gestures than in Trajectory-only gestures. However not as many English speakers had these types of gestures where manner and path were represented as separate units.

On the other hand there was no difference found between language samples in the percentage of speakers who used Manner-Trajectory Conflated gestures at least once in their repertoire. This was also in line with the inital predictions since Manner-Trajectory Conflated represented the stimulus as perceived. Thus equal number of speakers in both languages had Manner-Trajectory Conflated gestures in their descriptions.

In sum the repertoire of English speakers' gestures can be characterized mostly with Manner-Trajectory Conflated gestures where manner and path are represented simultaneously within one gesture. However, Turkish speakers also had Manner-only and Trajectory-only gestures in their descriptions more than English speakers did. The additional use of Manner-only and Trajectory-only gestures by Turkish speakers parallel their verbalization patterns about this motion event. On the other hand, since English speakers could verbalize both components of this motion event within one verbal clause, they used Manner-only and Trajectory-only gestures less frequently than Turkish speakers did.

Conclusion and Discussion

This study showed that typological differences among languages, that is, how they map lexical and syntactic elements onto semantic domains influence speakers' on-line speaking and gestural patterns that describe a motion event. Differences in both verbal and gestural patterns give support to the idea that there might also be differences in the conceptualization of motion events among speakers of typologically different languages as also have been suggested by McNeill and Duncan (in press).

Here we demonstrated further evidence for this claim by comparing how Turkish (verb-framed) versus English (satellite-framed) speakers express manner and path of a motion event both in their linguistic expressions and gestures. Results on linguistic patterns showed that Turkish speakers typically used separate clauses to express both manner and path and also half of the speakers omitted one or the other in their descriptions. However, English speakers used one verbal clause to express both manner and path and all the speakers mentioned both components in their descriptions. With regard to gestures, English speakers mostly used one type of gesture where both manner and path components are represented as one unit. Even though English speakers' repertoire also included gestures where manner and path are presented separately,

fewer speakers preferred to do so than Turkish speakers. Turkish speakers also had gestures where they represented manner and path within one gesture in ways similar to English speakers. However, in addition to this, more Turkish speakers than English speakers represented manner and path in separate gestures.

These findings support the claim about differences in conceptualization of motion events. While more Turkish speakers are likely to conceptualize manner and path of a motion event as separate components, English speakers conceptualize the two components as one unit during on-line speaking.

If Turkish speakers are more likely to conceptualize manner and path as separate components, one would also expect them to use speech and gesture combinations where speech expresses Manner-only but gesture represents Trajectory-only or vice-versa. In fact out of all speech and gesture combinations where Turkish speakers used Manner-only and Trajectory–only gestures, gestures complemented speech 30% of the time. This is further evidence for the claim that Turkish speakers can decompose representations about manner and path and express them as a combined unit of representation through speech and gesture together.

The findings presented in this paper are in line with "thinking-for-speaking" hypothesis outlined by Slobin (1987) and show that speakers' gestures as well as their speaking patterns index different ways of conceptualizing motion events for purposes of speaking. The findings also support the idea that the speech content and gestural content are integrated to each other as proposed by McNeill (1985; 1992). They further show that speakers organize their gestures in order to make the informational content as compatible as possible to the linguistic encoding possibilities of their language (Kita, in press).

Even though this study has shown that there are differences in gestural patterns in line with differences in typological 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 their correlation with the 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 than 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 due to cultural factors[5]

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[5] This claim does not deny that there might be other differences between gestures that might be due to cultural factors such as the size of the gestures.

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