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Metaphorical Description of Non-Motion Events in Terms of Motion Events in Persian and English

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Abstract

The aim of this study was to investigate the ways that non-motion events are metaphorically described in terms of motion events in Persian and English. To achieve this objective, a corpus of Persian and English sentences collected from various sources was analysed. Results of this analysis showed that the ways that non-motion events are described in terms of motion events are similar in Persian and English in two respects: firstly, the percentages of expression of each main components of motion events (figure, manner, path, source, goal, ground) were very close to each other in Persian and English; secondly, manner was the most-expressed component in the metaphorical descriptions of non-motion events in terms of motion events. Furthermore, a comparison was made between Persian and English in terms of locus and semantic density in such metaphorical descriptions.

Keywords

metaphor, motion events, manner, path, Persian, English

1 Introduction

Motion events are the ubiquitous feature of our daily lives. Almost every corner of our lives includes some kind of motion activity. Every motion event consists of a number of elements; an object (figure) starts its movement from a source point and ends at a goal point. This movement is made along a certain path. Manner of movement and the ground, with respect to which movement is described, are the other elements of any motion event. The ways that motion events are encoded in various languages have attracted a lot of attention throughout the past four decades. Since the time that Talmy (1975, 1985, 1991, 2000) presented his model of cross-linguistic differences in describing motion events, a large body of research has been conducted on many languages across the world. The aim of these studies has been to find how elements of motion events are linguistically encoded and how various languages can be included in the categories of this model.

According to Talmy's typological model, languages fall into two categories: satellite-framed (S-framed) and verb-framed languages (V-framed). Satellite is the grammatical category of any constituent other than a noun phrase or prepositional phrase complement that

is in a sister relation to the verb root (Talmy, 2000). English verb particles and German verb prefixes are examples of satellites. S-framed languages encode manner in the verb and path in a satellite to the verb; on the other hand, V-framed languages encode path in the verb and manner in a satellite or an adjunct clause (Talmy, 2000). For example, in the English (a satellite-framed language) sentence *John sprinted into the* house, manner of motion is encoded in the main verb (*sprint*) and path in the satellite (*into*). It must be noted that the preposition *into* is a part of PP (the head of PP) and it is this PP which is a sister. We include prepositions (and not the rest of the PP) into the set of elements that can be satellites. Conversely, in the French (a verb-framed language) sentence *Jean est entré dans la chambre en courant*, path is encoded in the main verb (*est entré*) and manner in the satellite (*en courant*) at the end of the sentence (Slobin, 2005). Sometimes, the term 'manner languages' is used to refer to those languages that have the tendency to encode manner in the main part of the verb, and the term 'path languages' is used to refer to those languages that have the tendency to encode path in the main part of the verb.

Later works (Slobin, 2004; Slobin & Hoiting, 1994; Zlatev & Yangklang, 2004; Ameka & Essegbey, 2013) added a third class of equipollently-framed (E-framed) languages to Talmy's typology. In this third category, manner and path are both encoded in the main verb. However, the findings of an increasing number of studies have indicated that many previously-assumed S-framed languages show V-framed behaviour, and many formerly-supposed V-framed languages show signs of S-framed behaviour (e.g. Folli & Ramchand, 2005; Asbury et al., 2008). It has been suggested that these three categories can still be divided into subcategories according to the type of prepositions or verb inventories (Bohnemeyer et al., 2007; Croft et al., 2010). Even further categorical variations have been introduced on the basis of the ways that manner and path are expressed by morphosyntactic means such as adjunct clauses or prepositional phrases (Beavers, Levin, & Tham, 2010). Results of a study conducted by Feiz (2011) indicated that Persian has the properties of satellite-framed, verb-framed, and even serial verb languages.

Regardless of the fact that motion events are linguistically encoded in a variety of ways, all languages employ motion events to describe non-motion events. The metaphoric description of one event or one domain in terms of another event or another domain is one of the widely-shared features of many languages across the world. The first domain is called target domain and the second one base domain. According to Lakoff and Johnson's (1980) conceptual metaphor theory, a limited set of conceptual metaphors is the underlying source of a very large number of verbal metaphors in every language. For example, the conceptual metaphor *love is a journey* underlies a number of metaphors about love, such as *look how far we have come*, *we are spinning our wheels*, *we have hit a dead-end street*, etc. There are many Persian sentences that metaphorically describe non-motion events in terms of motion events, such as:

(1)	*Ma*	*darim*	*gamhaye*	*bolandi*	*beh*	*sæmteh*	*shokufaʔi:*	*bær midarim*
	1PL	GER	steps	long	PREP	direction	prosperity	take

'We are taking long steps toward prosperity.'

(2)	*Zæmane*	*moĝærær*	*beh*	*ma*	*næzdiktær*	*væ*	*næzdiktær*	*mishævæd*
	time	due	PREP	1PL	closer	CONJ	closer	get

'The due time is getting closer and closer to us.'

(3) B*œraye* *gereftæne* *doctora* *æz* *mæsire* *tulani*
PREP get PhD PREP way long

væ *doshvari* *oburkærdæm*
CONJ difficult passed

'I have passed through a long and difficult way to get my PhD.'

(4) P*œsœz* *salha* *kare* *saxt* *ʔu* *beh*
PREP years works difficult 3SG PREP

ĝoleyeh *movœfœĝiyœt* *rœsid*
peak success reach

'After years of hard work, he reached the peak of success.'

A question that is raised here is how non-motion events are metaphorically described in terms of motion events in satellite-framed and verb-framed languages, and how a metaphor that describes a non-motion event in terms of a motion event is realized in languages that are different in encoding motion events. Examining a corpus of Persian and English sentences, this study intended to answer the following questions:

1. Are there differences between Persian and English in metaphorical description of non-motion events in terms of motion events?
2. Which elements of motion events are expressed when non-motion events are described in terms of motion events in Persian and English?

2 Review of the literature

The findings of a growing body of research (e.g. Oh, 2003; Kersten et al., 2003; Von Stutterheim & Nüse, 2013; Flecken, Von Stutterheim, & Carroll, 2014) have suggested that cross-linguistic differences in describing motion events cause observers to perceive motion events in different ways and attend more strongly to different elements of such events. Slobin (2005) conducted a comparative study to examine the narrative habits among speakers of satellite-framed and verb-framed languages. He found that speakers of satellite-framed languages tend to mention more path segments in their narratives. On the other hand, speakers of verb-framed languages paid more attention to the physical characteristics of the environment. Papafragou, Hulbert, and Trueswell (2008) found that speakers of manner-oriented languages are more inclined to linguistically encode manner when they describe motion events. According to Slobin (2005), satellite-framed languages tend to have more manner verbs than do verb-framed languages. He adds that speakers of satellite-framed languages have to pay more attention to minor distinctions that are either completely ignored or not strongly attended in verb-framed languages. For example, English speakers (a satellite-framed language) distinguish among many types of bipedal motions such as *run*, *jog*, *lope*, *sprint*, *dash*, *rush*, *hurry*, *scurry*, *scramble*, etc. On the other hand, speakers of Spanish and Turkish (verb-framed languages) do not have such a large number of words to distinguish among different types of motion activities. The encoding features of languages have been suggested to have some degree of influence on the behaviour of individuals in eye-tracking

experiments (Flecken et al., 2015) and in categorization, matching, and recognition tasks (Genari et al., 2002; Kersten et al., 2010).

Reviewing a number of empirical studies that have demonstrated the impact of formal linguistic features on the perception of motion events, Thierry (2016) concludes that a neurolinguistic approach can help us to obtain a more profound understanding of the nature of relationship between formal aspects of language and perception of events on the basis of accurate physiological measurement rather than performance in tasks that are highly susceptible to misinterpretations. In recent two decades, the metaphorical understanding of abstract concepts in terms of motion concepts and spatial concepts has been studied by many behavioural, neuroscientific, and theoretical works. One study that was conducted by Cacciari et al. (2011) indicated that activities in motor regions of the brain are modulated by the motion components of the verb. Khatin-Zadeh et al. (2017) and Khatin-Zadeh et al. (2019) discuss several reasons behind the suitability of motion events in describing non-motion events such as emotions. They suggest that concreteness, imaginability, and the ability of people to simultaneously imagine the components of motion events are three reasons that make motion events suitable domains for describing non-motion concepts. Fussell (2002) noted that speakers of English have several options, literal and metaphorical, for describing emotional states. For example, the emotional state of anger can be expressed by the literal options of *angry*, *irked*, *furious* and the figurative options of *flip one's lid*, *hit the ceiling*, *fly off the handle*, etc. Taylor and Mbense (1998) and Fussell and Moss (1998) also demonstrated how motion expressions can be used to describe emotional states.

Before going to the next section, a quick review of Levin's (1993) categorization of motion verbs can help us obtain a better idea of how the data were classified in this study. Levin classifies motion verbs into six categories, two of which are manner verbs and path verbs. A manner verb has a meaning that includes a notion of manner but does not specify a direction as part of its meaning. This category includes verbs such as *bounce*, *drift*, *revolve*, *rotate*, *limp*, *lope*, etc. On the other hand, the meaning of a path verb includes a specification of direction of motion event. This category includes verbs such as *advance*, *arrive*, *ascend*, *descend*, etc. Among the past studies that have been conducted on metaphorical descriptions of non-motion events in terms of motion events, no study -to our knowledge- has investigated Persian. This study was conducted to fill one part of this gap in the literature of the field. Since there are many cases of metaphorical descriptions of non-motion events in terms of motion events in Persian (e.g. *time is a moving object*, *events are moving*, *emotions are movements*, etc.), this study could shed light on one specific aspect of metaphorical description of non-motion concepts in terms of motion concepts.

3 Methodology

3.1 Materials

To achieve the objectives of this study, a corpus of Persian and English texts was collected. This corpus included 63 Persian texts and 57 English texts. The texts were gathered from a range of online and paper resources. The content of these texts were about a variety of subjects, including news, social articles, scientific reports, literary notes, political writings, etc. The Persian part of this corpus consisted of around 40 thousand words, and the English part consisted of around 41 thousand words.

3.2 Procedure

In order to collect the data, a large number of online and paper resources were searched. The number of words in these texts ranged from 79 to 963. These texts were closely checked. Only those Persian texts whose writers were Persian native speakers and only those English texts whose writers were English native speakers were included in the corpus of the study. The collected texts included a variety of subjects written by different authors. Also, every attempt was made to ensure that the texts had been written in a variety of styles rather than a particular style.

3.3 Data analysis

All of the texts of the corpus were closely examined to identify those sentences that metaphorically described a non-motion event in terms of a motion event. In this analysis, the metaphorical descriptions by verbs and nouns were counted. The majority of metaphorical descriptions had been made by verbs and just a small portion of descriptions had been made by nouns. For example, the sentence *the country is moving rapidly toward prosperity* is an example of such metaphorical descriptions through verb. The sentence *movement toward economic prosperity is the first priority of the country* is an example of metaphorical descriptions through nouns. After listing these sentences, they were analysed to find which one of the main components of motion events (figure, goal, ground, manner, path, source) had been more expressed in metaphorical descriptions of non-motion events in terms of motion events. This was done by obtaining the percentages of cases in which various components of motion events were expressed to describe non-motion events. These percentages were obtained for Persian and English texts separately. These values allowed us to make a cross-linguistic comparison between the ways that non-motion events are described in terms of motion events.

Also, an analysis was conducted to compare Persian and English in terms of locus, a measure that captures the grammatical positions of spatial components (main part of the verb or periphery). This analysis was similar to a comparative analysis that was conducted by Soroli and Verkerk (2017) on English, French, and Greek. In this analysis, we specifically focused on manner and path. The following examples show possible forms that were investigated in the data:

(5) After defeat in election, the party is *reeling* (M: only manner is encoded in the main verb)
(6) We have *crossed* that hard period (P: only path is encoded in the main verb)
(7) Interest rates are *falling down* (MP: manner and path encoded separately)
(8) He *ascended* the throne of power (F: fused manner-path)
(9) The champion *went* to a new stage of his career (N: Neutral)

Finally, an analysis was conducted to compare Persian and English in terms of semantic density, a measure that captures the number of spatial components encoded in each sentence. This analysis was similar to the comparative analysis that was conducted by Soroli and Verkerk (2017) on English, French, and Greek. Again, we specifically focused on manner and path. The following examples show possible forms that were investigated in the data:

(10) He went to a new stage (only motion, semantic density 0)
(11) After losing a lot of seats, they were reeling (only manner, semantic density 1)
(12) He left his party (only path, semantic density 1)
(13) The party was stumbling across the corridors (manner and path, semantic density 2)

4 Results

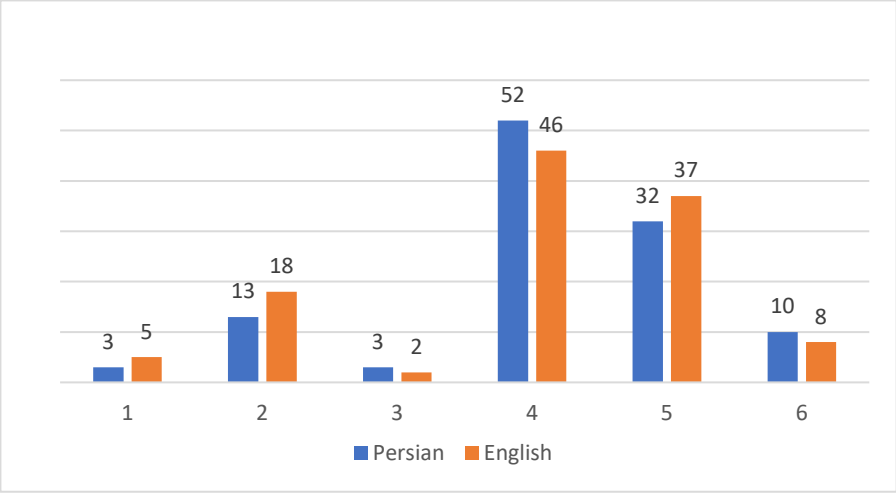
The analysis of collected sentences showed that 189 cases of Persian sentences and 203 cases of English sentences described a non-motion event in terms of a motion event. Therefore, in almost every 211 words of Persian texts and in every 201 words of English texts, there was one metaphorical description of a non-motion event in terms of a motion event. The interesting point in these metaphorical descriptions was that a variety of non-motion events had been metaphorically described in these sentences, such as *the rapid movement of developments*, *movement toward prosperity*, *ascending pace of economic growth*, *rapid passing of time*, *the ending point of this difficult path of hardship*, etc.

All of the collected sentences were analysed to find which one of the six main components (figure, goal, ground, manner, path, source) had been expressed in the metaphorical description of non-motion events. The percentages and numbers of expression of each main component of motion events were calculated separately for Persian and English sentences. These results are given in Table 1.

Table 1. Frequency of each main component of motion events in metaphorical descriptions

Components of motion events	Figure	Goal	Ground	Manner	Path	Source
Persian	3% 6	13% 25	3% 6	52% 98	32% 60	10% 20
English	5% 10	18% 37	2% 4	46% 93	37% 75	8% 16

There are several interesting points about the values mentioned in Table 1. The first point which attracts attention is that the percentages of each motion component in Persian and English are close to each other. This can be seen more clearly in the Graph 1:



Graph 1. Percentages of main components of motion events in Persian and English (1 Figure, 2 Goal, 3 Ground, 4 Manner, 5 Path, 6 Source).

However, a chi-square test was inconclusive ($p = 0.46$).

The second observation is that in both languages, there are high percentages of manner and path and low percentages related to figure and ground. Thirdly, we found employment of multiple motion components within individual examples, to describe a non-motion event.

As can be seen in Table 1, the sum of percentages for both Persian and English sentences is higher than 100% (113% and 116%, respectively). The reason for this is that in

some sentences more than one main component of motion events had been the focus of metaphorical description of non-motion events.

Results of the analysis comparing Persian and English in terms of locus are given in Table 2.

Table 2. Percentage and number of components encoded in the main part of the verb (locus)

Language	M	P	MP	F	N
Persian	90.4% 171	1.5% 3	2.1% 4	1.5% 3	6.8% 13
English	93.1% 189	1.9% 4	1.9% 4	0.9 % 2	4.9% 10

The percentages show that Persian and English are relatively similar in terms of locus (a chi-square test was also inconclusive, p=0.85).

Results of the analysis that was conducted to compare Persian and English in terms of semantic density are given in Table 3. The values in the first row show the number of components in each metaphorical sentence.

Table 3. Percentage and number of components encoded in the sentences (semantic density)

Language	0	1	2
Persian	4.2% 8	30.1% 57	65.6% 124
English	5.4% 11	46.3% 94	48.2% 98

The values in this table show that there is again similarly for a preference of a higher semantic density in both languages. In other words, a semantic density of 2 is preferred to 1 in Persian and English.

5 Discussion

The analysis of the data showed that in 52% of Persian metaphorical sentences and 46% of English metaphorical sentences (Table 1), manner of motion was the focus of metaphorical descriptions of non-motions event in terms of motion events. Therefore, manner seems to be the most salient element of a motion event that is employed to describe a non-motion event. This is seen in the following Persian sentence:

(14) *Hærekæte* *særi:ʔ* *beh* *sæmteh* *shokufaʔi:*
movement quick PREP direction prosperity
'Rapid movement toward prosperity.'

In this example, economic growth is understood in terms of a rapid movement. In this metaphorical description, the moving object, its path, source of movement, goal of movement, and ground are not mentioned. Economic growth is described by the rapid movement of a non-mentioned object along a non-mentioned path. However, it must be noted that rapidity is the only aspect of manner that is used in this metaphorical description. Sometimes, a larger set of features related to manner is used to describe a non-motion event. For example, in the metaphorical phrase *the limping movement of the company*, the word *limping* refers to a number

of properties associated with manner, including a *slow* movement that is accompanied by *difficulty*. In other words, the manner properties of *slow* and *difficult* are used to metaphorically describe the growth of the company. The word *limping* conflates a number of manner properties, all of which are employed to present a metaphorical description of bad economic conditions of a company. Those languages which are rich in manner verbs (such as English) have a higher capability in such metaphorical descriptions. The English manner verbs such as *jog*, *lope*, *sprint*, *dash*, *rush*, *hurry*, *scurry*, and *scramble* convey more information than does a general verb such as *move.* In fact, these specific manner verbs provide a detailed picture about the manner of movement of the figure in both literal and metaphorical description of an event.

When a general motion verb is used, the details of manner might be expressed by adverbs. This can be seen in the following Persian example:

(15) *Hærekate* *shetaban* *væ* *bi vaĝfe-ye* *tæhævolat*
movement fast CONJ continuous development
'Fast and continuous movement of developments.'

In this case, the two adverbs of *shetaban* and *bi vaĝfe* have been used to give more information about the metaphorical movement. This particularly happens in path languages which are rich in path verbs. In the following example, the path verb of *enter* has been used to present a metaphorical description of a non-motion event:

(16) The country entered a new stage.

The verb *enter* indicates path of the movement. However, it does not provide any additional information about the manner of movement. The additional manner information can be expressed by adverbs such as *slowly* and *unwillingly* in the following modified sentence:

(17) The country slowly and unwillingly entered a new stage.

Therefore, the information can be encoded in the main verb itself or adverbs and other tools. If manner verbs (such as *jog*, *lope*, *sprint*, *dash*, *rush*, *hurry*, *scurry*, *scramble*, etc) are used, detailed information can be expressed without using adverbs. If path verbs are used, the information regarding the manner must be expressed by adverbs. Speakers of manner languages can effectively use manner verbs to describe non-motion events in terms of motion events. On the other hand, speakers of path languages have to resort to adverbs and other tools to provide more information about the manner of a metaphorical movement.

Results of data analysis given in Table 2 and Table 3 suggest that Persian and English are similar in terms of locus in metaphorical descriptions of non-motion events in terms of motion events, although they are relatively dissimilar in terms of sematic density in such metaphorical descriptions. As the fourth column of Table 3 suggests, this is particularly true of the number of spatial components that are encoded in these sentences.

Many metaphors that were collected in this study were shared by Persian and English, such as *emotions are movement*, *life moves*, *time moves*, *observers of life move*, *people are in movement in their relations with each other*, and *events move*. These cases suggest that even at a conceptual level of describing non-motion events in terms of motion events, Persian and English share many similarities. In other words, Persian and English share some similarities in metaphorical descriptions of non-motion events in terms of motion events both at a structural level and a conceptual level.

5.1 Emotion metaphors

Among the non-motion events that had been described metaphorically in the data of this study, emotions had a high frequency. The interesting point about the metaphorical description of emotions is that they are usually expressed by path verbs or path elements. In the English metaphorical sentence *he went through the roof*, the word *roof* is used to show direction of the path. Although the main verb does not indicate the direction or path of the movement, the path has been expressed by another word. In fact, the state of anger is understood as an upward movement. The following example is another case in which an emotional state is expressed by a downward movement:

(18) He brought me down with his remarks.

This sentence expresses the state of sadness by a motion verb (*bring*) and a path satellite (*down*). Emotional states can even be expressed by a path verb without using path satellite or other path elements. This happens in the following example:

(19) He drowned his sorrow.

In this sentence, the motion verb *drown* indicates a downward movement. The path is encoded within the verb itself, and there is not a satellite or any other elements to show the path of this metaphorical movement.

Expressing the emotional state of anger by an upward movement is common in both English and Persian. The following Persian metaphorical sentence is used to say someone is extremely angry:

(20) *Amperæsh* *bala* *ræft*
amperage.3SG up go
'His amperage went up.'

In this sentence, the emotional state of anger is understood as an increase in the amperage of electricity current. This increase in amperage itself is understood as an upward movement. In other words, this metaphor can be analysed into two metaphorical elements: (1) emotional state is understood as electricity current; (2) change in emotional state (increase in electricity current) is understood as an upward movement. In fact, it can be said that two sub-domains are involved in this metaphorical description. The first metaphorical sub-domain (electricity current) mediates between target domain (anger) and base domain (upward movement). The understanding of this metaphor involves a chain of domain transformation. Initially, the emotional state is transformed into electricity current. In this stage, features of emotional state, such as change in body temperature during emotional change, are embodied as properties of electricity current. Then, the domain of electricity current is transformed into the domain of a moving object. In this stage, the increase in the amperage of electricity current is embodied as an upward movement in the next sub-domain. This chain process takes place in the comprehension of many metaphors. When we look closely at metaphors, we see that there are several sub-domains in operation when the target domain is understood in terms of the base domain. In other words, the base domain can be analysed into several interrelated and interacting sub-domains.

5.2 Embodied semantics

According to embodied semantics theories, concepts are represented in the same sensory-motor circuitry in which the actual doing of that concept relies (Aziz-Zadeh & Damasio, 2008). For example, the concept of 'kicking' is represented by the same sensory-motor areas that control the actual doing of kicking actions. Lakoff and his colleagues extended this theory to metaphor processing and argued that the phrase 'kick off the year' involves the motor representations related to kicking (Lakoff & Johnson, 1999). Similar ideas have been discussed by a number of other researchers (e.g. Pulvermüller, 2005; Pulvermüller et al., 2005; Feldman & Narayanan, 2004; Glenberg & Kaschak, 2002; Barsalou, 1999). Therefore, when non-motion events, such as emotions, are understood in terms of motion events, the same sensory-motor areas that are involved in motion events become activated. That is, when anger is described in terms of an upward motion, the understanding of the concepts of 'anger' and 'going upward' (and the actual action of going upward) involves the same sensory-motor areas.

In the same line, Wilson and Gibbs (2007) found that real and imagined body movements related to metaphors facilitate immediate comprehension of these metaphors. The results of their experiment showed that people were faster in understanding a metaphor (such as *push the argument*) when that metaphor had been preceded by an appropriate body action (such as a pushing movement). They even found that people were faster in understanding metaphorical phrases when they had previously imagined making that body movement. It has been reported that hearing a learned word activates brain regions that command those body parts (e.g. Fischer & Zwaan, 2008; Watson et al., 2013). All these findings suggest that the understanding of non-motion events in terms of motion events and the actual performance of those motion events (or imagining those motion events) involve similar neural activities and the same sensory-motor areas.

6 Conclusion

This study was conducted to probe differences and similarities between Persian and English in terms of metaphorical descriptions of non-motion events in terms of motion events. We also wanted to find out which elements of motion events are typically expressed in such metaphorical descriptions. Our results indicate similarities between Persian and English in terms of the ways that non-motion events are described and understood through motion events. These similarities between Persian and English were salient in two respects. First, the percentages of focus on various aspects of motion events were similar in Persian and English (Table 1). Secondly, manner is the most salient aspect of motion events used to metaphorically describe a non-motion event (52% in Persian and 46% in English). Manner is followed in preference by path, which is the second most-expressed aspect of motion events (32% in Persian and 37% in English) used to describe non-motion events. However, among the metaphors that described emotions in terms of motion, path verbs (or verbs accompanied by path satellites) were the mostly-used type of verbs. In other words, emotions (or those who experience the emotions) are mainly understood as movements along a certain direction (or moving objects). The other components of motion events (figure, goal, ground, source) had low frequency and were not the focus of attention in the majority of metaphorical sentences that were collected in this study. Finally, it must be noted that like any other study, this study had some limitations. Since the data were collected from a variety of sources with different subjects, the compatibility of Persian and English corpora was a challenge for this study. Findings of this study emphasize cross-linguistic similarities in the ways that metaphors are

employed in human languages. How these similarities emerge in various languages has been the subject of a large body of research in the past and can be one of the major lines of enquiry in future research projects.

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Abbreviations

1	first person
2	second person
3	third person
CONJ	conjunction
GER	gerund
PL	plural
PREP	preposition
SG	SINGULAR