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Locative verbs in Turkish: A psycholinguistic analysis

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The aim of this study was to investigate whether native Turkish speakers find alternations in locative verbs acceptable and whether ground-frame constructions in Turkish are perceived as less acceptable, as claimed by Kim & Landau & Phillips (1999). As earlier studies in the relevant literature have predominantly investigated English and typologically-related languages, and since the claims concerning Turkish locative verbs have not been experimentally tested, the present study investigates the processing of Turkish locative verbs by means of an acceptability judgment task and a self-paced reading task. The results show that the majority of Turkish locative verbs tested are figure-oriented non-alternating verbs, and that ground-oriented non-alternating locative verbs and alternating locative verbs also exist in Turkish. These findings run counter to earlier claims that ground-oriented non-alternating locative verbs do not exist in Turkish.

Keywords: Turkish, locative verbs, psycholinguistics

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1. Introduction

Native speakers of a language are able to judge the grammaticality of linguistic structures they have never encountered before and to interpret these in various possible ways. This knowledge of possible (and impossible) combinations of linguistic elements renders an unrealistic static view of the lexicon in which lexical knowledge is simply listed. Instead, the lexical knowledge of a typical native speaker appears to involve the ability to go beyond the idiosyncratic properties of individual lexical entries, generalize across various classes and structures, and understand argument structure variations (Levin 1993, Rappaport & Levin & Laughren 1993).

A case in point is the availability of several argument realization possibilities for a number of verbs in English and other languages. It is not uncommon for verbs to surface in various syntactic structures but have the same arguments, or to appear in one and the same syntactic structure with different arguments. An example is the availability of verb alternations, one of the best documented of which is the locative alternation in English (Levin 1993). Locative verbs denote the motion of contents to

a container or a surface (Pinker 1989) and occur with two arguments, which are the *figure* and the *ground*. While the *figure* refers to a moving object, a substance or set of objects, the *ground* denotes a location, a container or a surface. In spite of the fact that English locative verbs all display this semantic similarity, they can be classified into at least three syntactic subclasses based on their syntactic possibilities (Pinker 1989, Kim & Landau & Phillips 1999), as displayed in (1–3).

Locative verbs with the arguments *figure* and *ground* occur in non-alternating and alternating classes. The non-alternating class of locative verbs does not allow a change in the positions of the figure and the ground and surfaces and can be subdivided into the *figure-oriented non-alternating* and *ground-oriented non-alternating* classes. While in the figure-oriented non-alternating class of locative verbs, the figure occurs in the direct object position as in (1), it is the ground that occurs in the direct object position in the ground-oriented non-alternating class, as exemplified in (2). A change in the positions of the figure or ground leads to ungrammaticality in these configurations. With alternating locative verbs, on the other hand, the figure and ground can occur interchangeably in the positions direct and indirect object without leading to ungrammaticality.

(1) Figure-Oriented Non-Alternating Verbs

- a. *John poured* [*milk*]_{figure} *into* [*the jar*]_{ground}
- b. **John poured* [*the jar*]_{ground} *with* [*milk*]_{figure}
- c. *The student spilled* [*water*]_{figure} *on* [*his paper*]_{ground}
- d. **The student spilled* [*his paper*]_{ground} *with* [*water*]_{figure}

(2) Ground-Oriented Non-Alternating Verbs

- a. **The boy filled* [*tea*]_{figure} *into* [*the cup*]_{ground}
- b. *The boy filled* [*the cup*]_{ground} *with* [*tea*]_{figure}
- c. **The man covered* [*a blanket*]_{figure} *on* [*his legs*]_{ground}
- d. *The man covered* [*his legs*]_{ground} *with* [*a blanket*]_{figure}

(3) Alternating Verbs

- a. *John sprayed* [*paint*]_{figure} *on (to)* [*the wall*]_{ground}
- b. *John sprayed* [*the wall*]_{ground} *with* [*paint*]_{figure}
- c. *John loaded* [*hay*]_{figure} *on (to)* [*the truck*]_{ground}
- d. *John loaded* [*the truck*]_{ground} *with* [*hay*]_{figure}

As can be seen in (1a) and (1c), the locative verbs *to pour* and *to spill*, both members of the figure-oriented non-alternating class, only allow the figure to be the direct object. Thus, having the figure in the indirect object position, as in (1b) and (1d), results in ungrammatical sentences. However, *to fill* and *to cover* are ground-oriented locative verbs and, therefore, this time it is having the figures in direct object positions that causes the ungrammaticality in (2a) and (2c). Unlike the verbs

in (1) and (2), *to spray* and *to load* in (3a) and (3b) allow for alternations of the figure and the ground.

As part of the discussions surrounding the learnability of such argument structure variations, Pinker proposed the *semantic verb class hypothesis*, which claims that verbs with similar meanings are members of the same semantic verb class. To exemplify, verbs like *open*, *melt* and *shrink* denote “extrinsic change of physical state”, while verbs like *roll*, *bounce* and *skid* mean “contained motion taking place in a particular manner” (Pinker 1989: 130). Verbs of the same semantic verb class therefore generally appear in particular constructions (Ambridge & Lieven 2011). Pinker proposed two levels of verb alternation in child language acquisition, *broad-range rules* and *narrow-range rules*. Broad-range rules act like an “initial semantic filter” which excludes the verbs from alternation (Bowerman & Brown 2008: 284) and limits the selection of argument structure (Joo 2003), as exemplified in (4).

- (4) a. *Kim loaded* [*hay*]_{figure} *onto* [*the wagon*]_{ground}
 b. *Kim loaded* [*the wagon*]_{ground} *with* [*hay*]_{figure} (Pinker 1989: 64)

While (4a) has the meaning of “X moves Y into/onto Z”, sentence (4b) encodes the meaning “X causes Y to change its state by means of moving Z to Y” (Pinker 1989: 64). The locative verb alternation in these sentences is determined by broad-range rules. Using a top-down process of abstraction, speakers are able to formulate such broad-range rules (Bowerman & Brown 2008).

Narrow-range rules, on the other hand, are used to distinguish verb classes more accurately. Narrow-range rules help to identify the verbs which meet the criteria of broad-range rules but are considered to be non-alternating. According to Bowerman & Brown (2008: 285), narrow-range rules are like “a more delicate filter” which picks up the alternating class of verbs. Moreover, unlike broad-range rules, narrow-range rules follow a bottom-up process and are particularly relevant to child language acquisition, as children acquire them applying to the narrowest semantic class (Yang 2016). Pinker (1989: 126–127) noted that narrow-range rules are language-specific properties and specified four major classes for English: *figure-oriented non-alternating* (the *pour*-class), *figure-oriented alternating* (the *spray*-class), *ground-oriented non-alternating* (the *cover*-class), and *ground-oriented alternating* (the *load*-class):

- Pour class (figure-oriented non-alternating): A mass is enabled to move via the force of gravity (e.g., *drip*, *pour*, *shake*, *spill*).
- Spray class (figure-oriented alternating): Force is imparted to a mass, causing ballistic motion in a specified spatial distribution along a trajectory (e.g., *spatter*, *splash*, *spray*, *sprinkle*).
- Cover class (ground-oriented non-alternating): A layer completely covers a surface (e.g., *cover*, *fill*, *face*, *inlay*, *pave*).

- Load class (ground-oriented alternating): A mass of a size, shape, or type defined by the intended use of a container is put into the container, enabling it to accomplish its function (e.g., *load*, *pack*, *stock*).

Pinker (1989), claimed that through the use of narrow-range classes, language-specific properties become fixed. Pinker's semantic verb class hypothesis has received support in more recent studies (Ambridge et al. 2012, Bidgood et al. 2014). What distinguishes these studies from earlier ones is the integration of semantic and statistical properties of language. It has been argued that the statistical learning measure of overall verb frequency plays a significant role in the use of locative verbs. Ambridge et al. (2012), for example, investigated the relationship between the semantic verb class hypothesis (Pinker 1989) and the entrenchment hypothesis (Braine & Brooks 1995), which essentially predicts that the high frequency of linguistic units decreases the rate of overgeneralizations. The results supported the semantics constraints and the entrenchment hypothesis for familiar verbs rather than for novel ones. Exploring the acquisition of figure locative constructions by children, Ambridge et al. (2012) discussed the findings on the basis of Pinker's (1989) semantic verb classes hypothesis, Braine & Brooks' (1995) entrenchment hypothesis and Goldberg's (1995) pre-emption hypothesis. According to the pre-emption hypothesis, errors are blocked by constructions with the same intended meaning but a non-observed use. The role of the first two hypotheses in the retreat of overgeneralizations was supported, while no effects of pre-emption were observed in the study. A similar result was reported by Bidgood et al. (2014), who studied how learners of different age groups acquired ground- and figure-locative constructions. It was found that as the frequency of a verb increased, the participants tolerated overgeneralizations to a lesser extent. In the same vein, Twomey & Chang & Ambridge (2014) investigated overgeneralizations and structural biases of locative verbs in the corpora of adults and children. Their findings suggested that learning from distributional regularities reduced structural biases.

Locative verb alternations have to date mostly been investigated in the context of first and second language acquisition. There is a relatively small body of literature that is concerned with the processing of locative alternations by adult native speakers. Additionally, the available psycholinguistic research on locative verb alternations is mostly restricted to Indo-European languages. It is therefore important to analyze how typologically different languages work in this respect, as cross-linguistic analyses may provide important insights about the (un)availability of universal mechanisms and the (non-)applicability of the hypotheses, verb classifications and rules proposed for English (Levin 2006). The aim of the present study is therefore to analyze locative alternations in Turkish, a typologically distant language. Unlike the majority of earlier studies, however, the present study further adds a psycholinguistic perspective, presenting the results of an offline and an online psycholinguistic experiment.

2. Locative verbs in Turkish

In one of the very few accounts of locative alternation verbs in Turkish, Uzun (2003) asserted that only a limited number of verbs in Turkish allow locative alternations when compared to English. According to Nakipoğlu (2009: 1263), *doldur*- ‘to fill’, *döşe*- ‘to spread, to carpet’, *ek*- ‘to plant’, *kapla*- ‘to cover, to envelop’, *ört*- ‘to cover’, *sar*- ‘to wrap’, *yükle*- ‘to load’ are alternating locative verbs in Turkish that allow figure and ground frames. In (5a–b), *doldur*- ‘to fill’ is presented as an example of alternating locative verbs. As can be seen in (5), with the Turkish verb *doldur*- ‘to fill’, both the figure and the ground can act as direct and indirect objects without leading to ungrammaticality.

- (5) a. *Ali* [bardağ]-ı_{ground} [süt]-le_{figure} *dol-dur-du*.
 Ali glass:ACC milk:WITH fill:CAUS:PAST
 ‘Ali filled the glass with milk.’
- b. *Ali* [süt]-ü_{figure} [bardağ]-a_{ground} *dol-dur-du*.
 Ali milk:ACC glass:DAT fill:CAUS:PAST
 ‘Ali filled the milk into the glass.’

The verb *dök*- ‘to pour’, on the other hand, is listed by Nakipoğlu (2009) as an example for figure-oriented non-alternating verbs, as exemplified in (6).

- (6) a. *Ali* [çay]-ı_{figure} [masa]-ya_{ground} *dök-tü*.
 Ali tea:ACC table:DAT pour:PAST
 ‘Ali poured the tea on the table.’
- b. **Ali* [masa]-yı_{ground} [çay]-la_{figure} *dök-tü*.
 Ali table:ACC tea:WITH pour:PAST
 ‘Ali poured the table with the tea.’

When the ground *masa* ‘table’ in (6) occurs in the direct object position, the sentence becomes ungrammatical as in (6b). Although the figure-oriented non-alternating class of verbs is hence clearly available in Turkish, whether the ground-oriented non-alternating class of locative verbs exists for Turkish is rather controversial. Investigating locative verb alternations cross-linguistically, Kim & Landau & Phillips (1999) classified languages into two groups as *English-type* and *Korean-type* languages. Kim & Landau & Phillips claim that while English-type languages (English, French, Spanish, Singapore Malay, Najdi Arabic, and Hebrew) allow ground-oriented non-alternating verbs, this class of locative verbs is not available in Korean-type languages (Korean, Japanese, Chinese, Thai, Turkish, Hindi, and Luganda). Instead, all locative verbs in Korean-type languages are figure-oriented non-alternating verbs: “all locative verbs [in Korean-type languages] allow figure frames. These languages never have non-alternating ground verbs” (Kim & Landau & Phillips

1999: 8). From this perspective, the availability of non-alternating ground objects in Turkish as presented in (7) and (8) should not be possible.

- (7) a. **Ali* [*alçı*]-*yı*_{figure} [*duvar*]-*a*_{ground} *sıva-dı*.
 Ali plaster:ACC wall:DAT plaster:PAST
- b. *Ali* [*duvar*]-*ı*_{ground} [*alçı*]-*yı*_{figure} *sıva-dı*.
 Ali wall:ACC plaster:WITH plaster:PAST
 ‘Ali plastered the wall (with plaster).’
- (8) a. **Ali* [*kağıt*]-*ı*_{figure} [*duvar*]-*a*_{ground} *kapla-dı*.
 Ali wallpaper:ACC wall:DAT cover:PAST
- b. *Ali* [*duvar*]-*ı*_{ground} [*kağıt*]-*la*_{figure} *kapla-dı*.
 Ali wall:ACC wallpaper:WITH cover:PAST
 ‘Ali covered/coated the wall with wallpaper.’

As can be seen in (7) and (8), the Turkish verbs *sıva-* ‘to plaster’ and *kapla-* ‘to cover’ appear to be acting like typical ground-oriented non-alternating locative verbs, and, thus, seem to run counter to the claims presented by Kim & Landau & Phillips (1999) for Turkish. It should be noted, however, that the judgments presented for sentences (7) and (8) are those of the authors, and may therefore not be representative of all adult native speakers of Turkish. Nakipoğlu (2009: 1264), for example, does not appear to agree with the judgments provided above, as she judges (9a) and (9b) as grammatical, effectively classifying *kapla-* ‘to cover’ as an alternating locative verb.

- (9) a. *duvar-a kağıt-ı* / *kağıt-ø kapla-mak*
 wall:DAT wallpaper:ACC wallpaper cover:INF
 ‘to spread the wallpaper/wallpaper onto the wall’
- b. *duvar-ı kağıt-la kapla-mak*
 wall:ACC wallpaper:WITH cover:INF
 ‘to cover the wall with wallpaper’

The present study therefore aimed to come up with an experimentally informed account of locative alternations in Turkish by testing how adult native speakers of Turkish judge different types of locative alternations. A further, specific, aim of the present study was to test the hypothesis put forward by Kim & Landau & Phillips (1999) that ground-oriented non-alternating locative verbs do not exist in Turkish. To this end, an off-line acceptability judgment task and a self-paced reading test were administered to adult native speakers of Turkish.

3. The present study

3.1 Experiment 1: Acceptability judgment

This off-line task tested whether adult native speakers of Turkish preferred figure-frame or ground-frame constructions with Turkish locative verbs, or whether they judged locative verbs as alternating. If the classification of Kim & Landau & Phillips (1999) was correct (see discussion above), it can be expected that none of the Turkish locative verbs presented should receive higher ratings when presented in ground-frame constructions.

Participants. 38 adult native speakers of Turkish (18 males) participated in the acceptability judgment task. All participants were randomly selected university students studying at various universities in Ankara. All participants had normal or corrected-to-normal vision and were naïve with regard to the purpose of the experiments. None of the participants reported themselves to be bi- or multi-lingual. All participants took part in the study on a voluntary basis; none were paid or received academic credit for participating.

Materials. 32 locative verbs were selected. Each of these verbs was embedded in two different sentence contexts so as to construct a figure-frame and ground-frame sentence using the same verb, as exemplified in (10). There were two counterbalanced versions of the task, such that each participant saw a given verb either in a figure-frame or in a ground-frame. So, for example, (10a) and (10b) were not presented to the same participant, but appeared in separate versions of the task. The critical items were combined with 32 filler items, 16 of which were ungrammatical. The participants were instructed to carefully read the sentences and then to rate the acceptability of each sentence on a 5-point scale, with 1 corresponding to “not acceptable at all” and 5 corresponding to “very acceptable.”

- (10) a. *Bahçıvan kömür-ü bahçe-ye yığ-dı.*
 gardener coal:ACC garden:DAT pile:PAST
- b. *Bahçıvan bahçe-yi kömür-le yığ-dı.*
 gardener garden:ACC coal:WITH pile-PAST

Results. For 24 out of the total of 32 verbs (75%), the participants rated the figure-frame sentence construction as more acceptable than the ground-frame construction. Examples of verbs that fall in this class are *püskürt-* ‘to spray’, *yay-* ‘to spread’, *dök-* ‘to pour’, *as-* ‘to hang’, *tak-* ‘to mount’ and *çivile-* ‘to nail’. The mean acceptability rating for the figure-frame construction in this class of verbs was 3.30 out of 5.00 (range: 2.33–4.21), whereas the mean acceptability rating for the ground-frame construction in this class of verbs was 1.37 out of 5.00 (range: 1.06–2.15). For all pairwise t-test comparisons, $p < .05$.

For four out of the total of 32 verbs (12.5%), the participants rated the ground-frame sentence construction as more acceptable than the figure-frame construction.

The verbs that fall in this class are *sıva-* ‘to plaster’, *kapla-* ‘to coat’, *süsle-* ‘to adorn’ and *ört-* ‘to cover’. The mean acceptability rating for the ground-frame construction in this class of verbs was 3.75 out of 5.00 (range: 3.40–3.89), whereas the mean acceptability rating for the figure-frame construction in this class of verbs was 2.09 out of 5.00 (range: 1.22–2.56). For all pairwise t-test comparisons, $p < .05$.

For the remaining four verbs (12.5%), the participants rated the ground-frame sentence construction and the figure-frame construction as equally acceptable. The verbs that fall in this category are *döşe-* ‘to upholster’, *sar-* ‘to wrap’, *tutkalla-* ‘to glue’ and *doldur-* ‘to fill’. While the mean acceptability rating for the ground-frame construction in this class of verbs was 2.79 out of 5.00 (range: 2.33–3.28), the mean acceptability rating for the figure-frame construction in this class of verbs was 2.83 out of 5.00 (range: 2.06–3.65). For all pairwise t-test comparisons, $p > .05$.

The results show that the majority of locative verbs in Turkish were clearly judged as figure-oriented non-alternating verbs, because with 75% of the locative verbs tested, the figure-frame construction received a higher rating. Only a small proportion of the locative verbs tested were evaluated as alternating verbs or ground-oriented non-alternating verbs. However small the number may appear, it is important to note that the participants in the present study unambiguously marked four verbs as ground-oriented non-alternating verbs. This result is in conflict with the claim by Kim & Landau & Phillips (1999), who argued that in a number of languages including Turkish (Korean-type languages) ground-oriented non-alternating verbs do not exist and all locative verbs in these languages allow figure-frames.

3.2 Experiment 2: Self-paced reading

The purpose of this second experiment was to investigate in an online experiment, how native speakers of Turkish would read the locative verbs tested in the acceptability task in figure- and ground-frame sentence contexts. The results of the off-line acceptability judgment task showed that the participants rated the majority of locative verbs as figure-oriented non-alternating verbs, but evaluated a quarter of the locative verbs presented as alternating or ground-oriented non-alternating verbs. As off-line tasks only provide information about the participants’ final judgments, it was of interest to investigate how locative verbs were processed as the experimental sentences unfolded, and whether the patterns obtained in the acceptability judgment task could be replicated. The rationale behind the self-paced reading task is that increased reading times for a particular segment are indicative of a greater processing difficulty in that segment.

Participants. 23 adult native speakers of Turkish (6 males) participated in the self-paced reading task. As in the acceptability judgment task, all participants were randomly selected university students studying at various universities in Ankara. All participants had normal or corrected-to-normal vision and were naïve with regard to the purpose of the experiments. None of the participants reported themselves to be bi- or multi-lingual. All participants took part in the study on a voluntary basis; none

were paid or received academic credit for participating. None of the participants tested in the self-paced reading task had taken part in the acceptability judgment task.

Materials and Procedure. The same 32 locative verbs that were tested in the first task were used in the self-paced reading task. As in the first task, each of the critical verbs was embedded in two different sentence contexts, so as to construct a figure-frame and ground-frame sentence using the same verb. Again there were two counterbalanced versions of the task, so that each participant saw a given verb either in a figure-frame or in a ground-frame. Participants read the sentences in a non-cumulative, segment-by-segment fashion (Just & Carpenter & Woolley 1982). The presentation of each new segment was triggered by the participants' pressing the space bar. The times (in milliseconds = ms) between button presses constituted the experimental measure. Each sentence was divided into four segments, as shown in (11).

- (11) *Çocuk / su-yu / bardağ-a / dök-tü.*
 child / water:ACC / glass:DAT / pour:PAST
 'The child poured the water into the glass.'

After reading each sentence, the participants were prompted to judge the acceptability of the sentence on 5-point scale. These ratings were recorded to enable comparisons with the results obtained in the first task. In addition to the experimental sentences, 64 filler items were included to distract the participants' attention from the critical materials. Like the experimental items, the filler items were also divided into four segments and were followed by a rating task.

The experiment was designed and executed using *E-Prime* (Schneider & Eschman & Zuccolotto 2002). The stimuli were presented on a laptop computer screen in white letters (Arial 24pt) on a dark background. The participants reacted by pressing the space bar after reading each sentential segment.

Results. The analyses were performed on the reaction time data, with Segment 3 and Segment 4 being the critical regions. Table 1 presents an overview of the mean raw reading times and standard deviations by verb type and sentence frame for each segment. All reaction times are given in milliseconds, with standard deviations presented in parentheses. The verb-type classification presented in Table 1 is based on the acceptability judgments obtained from the participants in Task 1 (see above). In line with the results from the first task, 24 of the verbs were classified as figure-oriented non-alternating, four were classified as ground-oriented non-alternating and four as alternating locative verbs.

Table 1: Mean reading times (Standard Deviation [SD]) by verb type and sentence frame for all segments.

Verb Type	Frame	Segment 1	Segment 2	Segment 3	Segment 4
Figure-Oriented Non-Alternating	Figure	600 (358)	683 (317)	677 (314)	795 (666)
	Ground	578 (323)	700 (380)	734 (409)	787 (699)
Alternating	Figure	551 (326)	778 (445)	700 (311)	944 (759)
	Ground	564 (295)	709 (358)	658 (271)	769 (595)
Ground-Oriented Non-Alternating	Figure	598 (322)	703 (333)	736 (383)	899 (575)
	Ground	520 (210)	679 (524)	648 (294)	626 (414)

As can be seen in Table 1, the participants were slower at reading figure-oriented non-alternating verbs presented in ground-frame sentences than in figure frame sentences, which is particularly obvious from the reading-time difference in Segment 3 (677 ms vs. 734 ms; $t(22) = 2.08$, $p < .05$). For the verbs classified as alternating locative verbs, no differences were observed in the reading times for Segments 3 or 4 ($p > .05$ in both instances), although a tendency to read ground-frame sentences faster is visible. For the verbs classified as ground-oriented non-alternating locative verbs, the reading times were indicative of a preference in favor of ground-frame sentences. As can be seen in Table 1, the participants were faster at reading Segments 3 and 4 in the ground frame. This tendency was statistically significant for Segment 4 (899 ms vs. 626 ms; $t(22) = 2.36$, $p < .05$).

Table 2 presents the mean scores of the end-of-trial ratings. As can be seen, the mean ratings closely mirrored those obtained in the Acceptability Judgment Task (Experiment 1) and the overall reading patterns observed in the self-paced reading task. For the verbs classified as figure-oriented non-alternating locative verbs, there was a clear rating preference for verbs presented in a figure-frame construction (4.5 vs. 1.5; $t(22) = 28.6$, $p < .0001$). For the verbs classified as ground-oriented non-alternating locative verbs, on the other hand, verbs presented in a ground-frame construction were rated as more acceptable (2.7 vs. 4.7; $t(22) = 7.6$, $p < .0001$). The ratings provided for alternating verbs were rather close, with a preference for verbs presented in a ground-frame construction (3.7 vs. 4.3; $t(22) = 3.0$, $p < .05$).

Table 2: Mean acceptability ratings (Standard Deviation [SD]) by verb type and sentence frame.

Verb Type	Frame	Mean Rating (out of 5)
Figure-Oriented	Figure	4.5 (0.9)
Non-Alternating	Ground	1.5 (0.9)
Alternating	Figure	3.7 (1.5)
	Ground	4.3 (0.9)
Ground-Oriented	Figure	2.7 (1.7)
Non-Alternating	Ground	4.7 (0.7)

4. Discussion and conclusion

The main aim of the present study was to present the results of an experimentally informed exploration of figure- and ground-frame non-alternating and alternating classes of locative verbs in Turkish. As the vast majority of studies on locative verbs and locative alternations to date have focused on English and typologically related languages, it was important to present data from Turkish, a non-Indo European language that so far has been underexplored in this respect. A second aim was to test the hypothesis put forward by Kim & Landau & Phillips (1999) that Korean-type languages, including Turkish, do not have ground-oriented non-alternating locative verbs.

The results of an acceptability judgment task (Experiment 1) showed that the participating native Turkish speakers judged the majority of the locative verbs presented (75%) to be figure-oriented non-alternating locative verbs. Of the remaining 25% of the locative verbs presented, 12.5% were evaluated as alternating verbs and 12.5% were judged to be ground-oriented non-alternating verbs. In Experiment 2, the same verbs were presented to a separate group of Turkish native speakers in ground- and figure-frame constructions in a self-paced reading task. The aim was to test whether the results obtained in Experiment 1 would also hold in an online task. If so, it was expected that the participants would read the verbs classified as figure-oriented non-alternating locative verbs in Experiment 1 more quickly when presented in figure-frame constructions and those classified as ground-oriented non-alternating locative verbs faster when presented in ground-frame constructions. The reading time patterns obtained in Experiment 2 by and large confirmed the findings of Experiment 1. Most importantly, the participants displayed clear ground-frame preferences for verbs earlier classified as ground-oriented non-alternating locative verbs. These findings were further supported by the results of the end-of-trial acceptability judgment task in Experiment 2 (see Table 2).

The results of this small-scale study indicate that locative verbs in Turkish are indeed predominantly of the figure-oriented non-alternating class. However, they also disprove the hypothesis that ground-oriented non-alternating locative verbs do

not exist in Turkish (Kim & Landau & Phillips 1999). Even in such a small-scale study as this one, it was possible to identify ground-oriented non-alternating locative verbs for Turkish (*sıva-* ‘to plaster’, *kapla-* ‘to coat’, *süsle-* ‘to adorn’ and *ört-* ‘to cover’). This was substantiated by the fact that in two experiments adult native speakers of Turkish produced response and reading patterns which showed the same preference.

Needless to say, the present study is limited and does not lend itself to making bold claims or wide generalizations, as the number of verbs tested was small. It nevertheless shows the importance of testing typologically-different languages using psycholinguistic experiments. Even in a limited study such as the present one, it is possible to arrive at new insights regarding the language at hand and, by extension, about possible cross-linguistic implications—a point that was recently highlighted by Clahsen (2016: 612):

I conclude that insights from linguistic typology are indeed beneficial for psycholinguistic research in that they may help (i) to prevent illusions, by discovering that supposedly general notions and accounts developed for one language may not directly translate to other languages, (ii) to enrich the scope of research, by pointing to phenomena that are potentially revealing but unavailable from the most commonly studied languages, and (iii) to lead to new insights, by disentangling universal from language-particular properties in acquisition, processing, and disorders.

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Appendix. Experimental data

1. *Adam boyayı duvara püskürttü. / Adam duvarı boyayla püskürttü.*
2. *Aşçı unu tabağa yaydı. / Aşçı tabağı unla yaydı.*
3. *Çocuk suyu bardağa döktü. / Çocuk bardağı suyla döktü.*
4. *Öğretmen resmi duvara astı. / Öğretmen duvarı resimle astı.*
5. *Usta parçayı arabaya taktı. / Usta arabayı parçayla taktı.*
6. *Memur notu dosyaya ilişti. / Memur dosyayı notla ilişti.*
7. *Kütüphaneci kağıdı kutuya tutkalladı. / Kütüphaneci kutuyu kağıtla tutkalladı.*
8. *Teknisyen süsü duvara çiviledi. / Teknisyen duvarı süsle çiviledi.*
9. *Öğrenci ilanı panoya yapıştırdı. / Öğrenci panoyu ilanla yapıştırdı.*
10. *Müdür masayı duvara çekti. / Müdür duvarı masayla çekti.*
11. *Görevli dolabı duvara itti. / Görevli duvarı dolapla itti.*
12. *Bahçıvan kömürü bahçeye yığdı. / Bahçıvan bahçeyi kömürle yığdı.*
13. *Dadı örtüyü yatağa serdi. / Dadı yatağı örtüyle serdi.*
14. *Satıcı sütü şişeye aktardı. / Satıcı şişeyi sütle aktardı.*
15. *Kütüphaneci kitabı rafla koydu. / Kütüphaneci rafı kitapla koydu.*
16. *İşçi çuvalı odaya sürükledi. / İşçi odayı çuvala sürükledi.*

17. *Şoför portakalı arabaya yükledi. / Şoför arabayı portakalla yükledi.*
18. *Mühendis boyayı duvara sürdü. / Mühendis duvarı boyayla sürdü.*
19. *Garson tuzu çorbaya serpti. / Garson çorbayı tuzla serpti.*
20. *Kasiyer boyayı örtüye sıçrattı. / Kasiyer örtüyü boyayla sıçrattı.*
21. *Sekreter çayı örtüye damlattı. / Sekreter örtüyü çayla damlattı.*
22. *Hemşire ilacı kutuya yerleştirdi. / Hemşire kutuyu ilaçla yerleştirdi.*
23. *Yönetmen sosu gömleğine bulaştırdı. / Yönetmen gömleğini sosla bulaştırdı.*
24. *Çiftçi buğdayı tarlaya ekti. / Çiftçi tarlayı buğdayla ekti.*
25. *Kasiyer makarnayı rafa dizdi. / Kasiyer rafı makarnayla dizdi.*
26. *Doktor bandajı kola sardı. / Doktor kolu bandajla sardı.*
27. *Çırak parkeyi zemine döşedi. / Çırak zemini parkeyle döşedi.*
28. *Kadın danteli televizyona örttü. / Kadın televizyonu dantelle örttü.*
29. *Çaycı suyu bardağa doldurdu. / Çaycı bardağı suyla doldurdu.*
30. *Mimar alçıyı duvara sıvadı. / Mimar duvarı alçıyla sıvadı.*
31. *Adam kağıdı duvara kapladı. / Adam duvarı kağıtla kapladı.*
32. *Asker çiçeği arabaya süsledi. / Asker arabayı çiçekle süsledi.*