

The Distribution of the Hebrew Possessive Dative Construction: Guided by Unaccusativity or Prominence?

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This article challenges the empirical generalization that the possessed element in the Hebrew possessive dative (PD) construction cannot be an external argument (Borer and Grodzinsky 1986), a generalization that has been leveraged in the use of the PD construction as an unaccusativity diagnostic. An acceptability judgment experiment shows that the PD construction is dispreferred when the possessor is less prominent than the possessee on the animacy or definiteness scale; however, it shows no effect of unaccusativity, raising serious doubts regarding the construction's validity as an unaccusativity diagnostic.

Keywords: unaccusativity, Hebrew, external possession, dative, animacy

1 The Hebrew Possessive Dative as a Diagnostic for Unaccusativity

Hebrew uses two constructions for expressing possession. In one, the possessor and the possessee form a single constituent, and the possessee is marked with the preposition *šel* 'of', as in (1a). The second construction, which is the focus of this article, is a form of external possession (Payne and Barshi 1999), in which the possessor and the possessee do not form a single constituent. In this construction, a DP marked with the dative clitic *le* is interpreted as the possessor of another DP, as shown in (1b). Since the possessor is dative-marked, Borer and Grodzinsky (1986) (henceforth B&G) name it the *possessive dative (PD) construction*, and I adopt this term here.

- (1) a. [ha- iparon šel dan] nafal
 the pencil of Dan fell
 'Dan's pencil fell.'—possession with *šel*
 b. [ha- iparon]_{possessee} nafal [le- dan]_{possessor}
 the pencil fell to Dan
 'Dan's pencil fell.'—possessive dative

Although both constructions express possession, they are not always interchangeable. A first observation is that they are not semantically equivalent: the PD implies that the possessor is somehow affected by the event, and it usually carries an adversity reading (Landau 1999).¹ But the difference goes beyond a nuance in meaning: the PD is more restricted in the syntactic environments it can appear in. B&G observe that in transitive sentences, a direct object or an

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¹ The affectedness implication is not captured by the English glosses; its sense is brought out by a sentence such as (i), which describes an event that need not necessarily have an adverse effect.

adjunct, but not the subject, can be interpreted as the possessee. For example, (2) can only be interpreted as ‘The girl broke Dan’s radio’, not as ‘Dan’s girl broke the radio’.

- (2) ha- yalda kilkela [le- dan]_{possessor} et [ha- radyo]_{possessee}
 the girl spoiled to Dan ACC the radio
 ‘The girl broke Dan’s radio.’–transitive
 (B&G 1986:181, (12a))

With respect to intransitive verbs, B&G state that the subject of an unaccusative verb, but not that of an unergative, can serve as the possessee in the PD construction.

- (3) [ha- maftexot]_{possessee} naflu [li]_{possessor}
 the keys fell to.me
 ‘My keys fell.’–unaccusative
 (B&G 1986:184, (21a))
- (4) *[ha- poalim]_{possessee} avdu [li]_{possessor}
 the workers worked to.me
 (Intended meaning: ‘My workers worked.’)–unergative
 (B&G 1986:182, (14c))

The Unaccusative Hypothesis (Perlmutter 1978, Burzio 1986) states that the subject of an unaccusative verb originates within the VP as an internal argument, like the object of a transitive verb, and subsequently moves to the subject position. Building on this insight, B&G propose that a single generalization can account for the data: that the possessor must c-command the possessee or its trace (in the case of a moved argument of an unaccusative verb). They conclude that they now have a ‘‘foolproof test of argument structure for Hebrew intransitive verbs’’ (B&G 1986: 188). To find out whether a certain intransitive verb is unergative or unaccusative, one need only check whether its subject can be understood as the possessed element in the PD construction.

A reliable syntactic diagnostic that neatly separates unaccusative and unergative verbs would be an invaluable tool, since the classification of a particular verb as unaccusative or unergative is often the subject of debate (Rosen 1984, Levin and Rappaport Hovav 1995, Kuno and Takami 2004). The PD construction has indeed been widely adopted in Hebrew generative linguistics as a test for unaccusativity and has become the standard in investigations of argument structure (e.g., Arad 1998, Landau 1999, Reinhart and Siloni 2004, Friedmann 2007). Despite its widespread use as a tool for examining argument structure, little attention has been paid to the PD construction itself since B&G’s original claim, and their basic observation has gone unchallenged.² In light

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- (i) ha- tisa hukdema le- dan
 the flight made.early to Dan
 ‘Dan’s flight was changed to an earlier time.’

Without additional context, the sentence implies that Dan was adversely affected by the change in flight time, and it would be felicitous if the change caused him to miss his flight (for instance, if he arrived at the airport only to discover that the plane had already taken off).

² Landau 1999, where the PD construction is analyzed in terms of raising, is an important exception; however, Landau does not question its validity as an unaccusativity diagnostic.

of this, it is worthwhile to carefully reconsider the empirical validity of the generalization that the subject of an unaccusative verb, but not that of an unergative verb, can be interpreted as the possessee in this construction. In the following sections, I show serious empirical issues with this generalization, and I propose that the relative prominence of the possessor and the possessee must be invoked in order to account for a broad range of data. I support this hypothesis with an acceptability judgment experiment.

2 The Role of Animacy

B&G's claim that the possessor must c-command the possessee can be understood as an assertion that the possessor must be syntactically more prominent than the possessee. However, syntactic relations are just one form of prominence, and in recent years, other prominence scales have been shown to be crucial in determining the choice between two syntactic options. Of particular interest here is the animacy hierarchy (Silverstein 1976, Croft 2003), which plays a critical role in the choice between 's and *of* in English possessive constructions (e.g., Rosenbach 2002, Bresnan et al. 2007).

- (5) *Animacy hierarchy*
 human > animate > inanimate

B&G base their generalization on the data given in (6)–(7): the sentences in (6) have unergative verbs and are unacceptable, whereas the sentences in (7) have unaccusative verbs and are acceptable. However, when the animacy of the subject (the possessee) is taken into account, another explanation of the data presents itself: in all the unacceptable (unergative) sentences, the possessee is animate, whereas in all the acceptable (unaccusative) sentences, the possessee is inanimate.

- (6) a. *ha- kelev šaxav li
 the dog lay to.me
 (Intended meaning: 'My dog lay.')
- b. *ha- yalda yašva li
 the girl sat to.me
 (Intended meaning: 'My girl sat.')
- c. *ha- poalim avdu li
 the workers worked to.me
 (Intended meaning: 'My workers worked.')
- (B&G 1986:182, (14c))
- (7) a. ha- maftexot nafllu li
 the keys fell to.me
 'My keys fell.'
 (B&G 1986:184, (21a))
- b. ha- xalon nišbar li
 the window broke to.me
 'My window broke.'
 (B&G 1986:184, (21a–b))

These data suggest that an animacy-based approach is worth exploring. A useful initial hypothesis is that the possessee in a PD construction cannot be animate. It is impossible to differentiate between the animacy and unaccusativity generalizations on the basis of (6)–(7), and in fact, the two generalizations often make similar predictions, since unergative verbs, unlike unaccusative verbs, often require animate subjects.

The appropriate data for teasing these two accounts apart are sentences with an unaccusative verb and an animate possessee. If unaccusativity is the key factor, such sentences should be as good as (7), whereas if animacy plays a role, they should be clearly worse than equivalent sentences with inanimate subjects. (8)–(9) show a clear contrast: while (8), with an unaccusative verb and an inanimate possessee, is perfectly acceptable, (9), with an unaccusative verb and an animate possessee, is not.

- (8) ha- arnak nafal le- dan ve- hu lo moce oto
 the wallet fell to Dan and he no find it
 ‘Dan’s wallet fell and he can’t find it.’
- (9) *ha- ganan nafal le- dan ve- šavar et ha- regel
 the gardener fell to Dan and broke ACC the leg
 (Intended meaning: ‘Dan’s gardener fell and broke his leg.’)

The matrix clauses in (8)–(9) involve the same unaccusative verb (*nafal* ‘fall’) and their subjects therefore have the same semantic role: Theme. Crucially, they differ only in the animacy of the subject. Furthermore, the unacceptability of (9) cannot be attributed to the unavailability of a possessive reading; rather, it must be due to a constraint on the PD construction itself, as shown by the acceptability of the paraphrases of (8)–(9) with the preposition *šel* ‘of’, in (10)–(11).³

- (10) ha- arnak šel dan nafal ve- hu lo moce oto
 the wallet of Dan fell and he no find it
 ‘Dan’s wallet fell and he can’t find it.’
- (11) ha- ganan šel dan nafal ve- šavar et ha- regel
 the gardener of Dan fell and broke ACC the leg
 ‘Dan’s gardener fell and broke his leg.’

Therefore, the contrast in (8)–(9) suggests that the difference in animacy may account for B&G’s data, without requiring reference to a difference between unaccusative and unergative verbs.

³ Some insight into why prominence should play a role in the PD construction may come from Aissen’s (2003) discussion of the roots of differential object marking (DOM). Aissen proposes that DOM has its roots in additional marking on objects that are overall less typical Themes, such as humans; however, object marking may appear on nouns referring to humans in languages with DOM, even when they are expected to occur—for example, with verbs that can only take nouns referring to humans as direct objects. A similar motivation may be at play here, with the distribution of the PD construction ultimately having its roots in a preference for the properties of prototypical possessors—after all, generally it is humans who possess things, not vice versa. Similarly, the acceptability of the PD construction does not directly reflect the likelihood that any two specific DPs form a possessor-possessee pair; rather, it is sensitive to the animacy scale, even in cases where a human possessee is quite plausible (e.g., in (9)).

If animacy is the factor underlying the contrast in (8) and (9), a further prediction arises: unergative verbs are expected to *allow* the PD construction when their subject is inanimate. While expanding the unaccusative data to include animate subjects is straightforward, expanding the unergative data to include inanimate subjects is less simple, since most unergative verbs are incompatible with such subjects. However, certain unergative verbs do allow inanimate subjects, which can be used to test this prediction. According to Levin and Rappaport Hovav (1995), verbs representing the emission of sound or light (e.g., *sparkle, bubble, flash, click, ring*) are unergative.⁴ Perfectly acceptable Hebrew examples with such verbs are attested online, contrary to B&G's prediction, as shown in (12)–(15).⁵

- (12) ba- pgiša ha- revit cilcel le- xaim ha- telefon, . . .
 in.the date the fourth rang to Chayim the cell.phone
 'On the fourth date, Chayim's cell phone rang.'
 (www.tapuz.co.il/blog/ViewEntry.asp?EntryId=1154107&passok=yes)
- (13) kol ha- zman mehavhev li ha- masax
 all the time flicker to.me the screen
 'My screen keeps flickering.'
 (<http://hwzone.co.il/community/index.php?topic=71123.0>)
- (14) ha- šaon ha- biologi metaktek gam le- gvarim
 the clock the biological ticks also to men
 'Men's biological clocks tick too.'
 (<http://ynet.co.il/articles10,7340,L-3164626,00.html>)
- (15) pit'om ha- eynaim nacecu la
 suddenly the eyes sparkled to.her
 'Suddenly, she was excited.' (literally: 'Suddenly, her eyes sparkled.')

As the data for both the unaccusative and the unergative verbs show, not only does animacy play a role in the PD construction, but it appears to account for data that were previously explained as a reflex of unaccusativity. This contrast will be shown to be robust in the experiment described in section 4.

⁴ These two classes of verbs are accepted as unergative by many researchers, including some who use the PD construction as an unaccusativity diagnostic (e.g., Reinhart and Siloni 2004). For researchers who do not consider them unergative, there is no way to test unergative verbs with animate subjects; however, under that view, teasing apart unaccusativity and animacy is impossible to begin with.

⁵ A reviewer proposes that the restriction on the PD construction can be restated in thematic terms: namely, that the possessee in the PD construction must bear the Theme/Patient role. However, if the subject of an unergative sound emission verb does not receive a Theme/Patient role (a position that dates back to Levin and Rappaport Hovav 1995), such a restriction would rule out acceptable sentences such as (12)–(15). Conversely, if one takes the view that the subject of these verbs does receive a Theme/Patient role (Reinhart 2002), the thematic restriction could accommodate the data in (12)–(15), but it would still not be able to account for a contrast such as that in (8)–(9), in which both subjects clearly have the same role.

3 A Prominence Relation between the Possessor and the Possessee

3.1 Reconsidering Animacy

While the tendencies shown in section 2 are robust, the picture is clearly more complicated and involves more than the animacy of the possessee. Consider the contrast in (16), in which both the (a) and (b) sentences have the same inanimate possessee (*macber* ‘carburetor’).

- (16) a. ha- macber neheras le- dan
 the carburetor got.ruined to Dan
 ‘Dan’s carburetor got ruined.’
 b. *ha- macber neheras la- oto
 the carburetor got.ruined to.the car
 ‘The car’s carburetor got ruined.’

Here, the possessee is kept constant, and (16a), with an animate possessor, is acceptable, but (16b), with an inanimate possessor, is not. As in the case of (8)–(9), the paraphrases of both of these sentences with the preposition *šel* ‘of’ are equally and perfectly acceptable. Both this preference and the preference for an inanimate possessee shown in the previous section can be subsumed under a single generalization about the relation *between* the possessor and the possessee. I propose that the PD construction is most acceptable when the possessor is higher on the animacy scale (5) than the possessee. Combinations of animate possessors and inanimate possesseees are the most preferred, while those in which the possessor and the possessee have the same degree of animacy are less acceptable.⁶ This prediction is tested and confirmed experimentally in section 4.

3.2 Beyond Animacy: Prominence

Although the proposed animacy generalization is robust, it is not a categorical restriction. Perfectly acceptable sentences such as (17), in which both possessor and possessee are animate, can be found.

- (17) šney banim metu le- šula ba- milxama
 two sons died to Shula in.the war
 ‘Two of Shula’s sons died in the war.’

To make clear why (17) is acceptable, the animacy-based account needs to be elaborated. My proposal that the possessor needs to be higher on the animacy scale than the possessee shares an important intuition with B&G’s *c-command* restriction: both require the possessor to be more prominent (in some way) than the possessee. I have argued that *c-command* is not necessarily the relevant relation, but as (17) shows, animacy alone clearly cannot account for all the data

⁶ Haspelmath’s (1999) survey of external possession in European languages shows that many languages do not allow inanimate *possessors* in the relevant construction. Although in Hebrew this is not a categorical constraint, see Linzen 2010 for corpus results demonstrating a preference for animate possessors. This preference is predicted by my account, since the best possessor-possessee combinations would naturally have animate possessors.

either. However, that is not unexpected; crosslinguistic work on various phenomena has shown that animacy often works in tandem with other scales of prominence. For example, in her discussion of differential case marking on direct objects in a wide range of languages, Aissen (2003:436) states that “the higher in prominence a direct object, the more likely it is to be overtly case marked.” For Aissen, the dimensions along which prominence is assessed include not only animacy (as in (5)) but also definiteness, as in (18).

(18) *Definiteness scale*

personal pronoun > proper name > definite NP > indefinite specific NP > nonspecific NP

Aissen does not attempt to collapse the two scales into a single scale of prominence; rather, she claims that the scales tend to pattern in such a way that higher values on one scale typically behave similarly to higher values on the other scale. Following this approach, I propose that in the Hebrew PD construction, the preference is for the possessor to be not only more animate than the possessee, but also more prominent in other respects.

(19) The PD construction is more acceptable, the more prominent the possessor is with respect to the possessee (on various prominence scales: animacy and definiteness).

In the case of the definiteness scale, (19) predicts that the most favored configuration is a definite (more prominent) possessor and an indefinite (less prominent) possessee. Once again, that is not to say that definite possesseees are impossible. In fact, the examples in (7), which are perfectly acceptable, both have definite possesseees; however, in those instances, the possesseees are less prominent along the animacy dimension. Similarly, sentences that would otherwise be unacceptable because of a lack of prominence difference in animacy can be ameliorated with a prominence difference in definiteness. This can be seen in the contrast between (17) and (20): in (17) both possessor and possessee are animate, but the possessee is indefinite, making it overall less prominent than the possessor (*Shula*), whereas in (20) both possessor and possessee are not only human but also definite.

(20) ??ha- ben ha- bexor met le- šula ba- milxama
 the son the eldest died to Shula in.the war
 ‘Shula’s eldest son died in the war.’

4 The Experiment

The predictions of the prominence-based account outlined in section 3 were tested in an acceptability judgment experiment, designed to evaluate the effect of animacy and definiteness, as well as unaccusativity.

4.1 Participants

Forty-one native speakers of Hebrew, currently living in Israel, participated in the experiment.

4.2 Method

The experiment consisted of acceptability judgments. Participants received a questionnaire with Hebrew sentences and were asked to rate each one for its acceptability (1 being the lowest rating and 6 the highest). Each participant saw the sentences in one of eight different random orders.

4.3 Materials

The questionnaire consisted of 120 sentences, 39 of which contained the PD construction. Of these, 25 had an intransitive verb as the matrix verb, and 14 had a transitive verb as the matrix verb.

4.3.1 The Fillers Eighty-one of the sentences were fillers. Half of them (40 sentences) featured the dative clitic *le* in contexts that are unambiguously not the PD (e.g., the goal of a motion event), and the other half (41) did not feature the dative clitic at all. The fillers included both acceptable and unacceptable sentences, as well as sentences on which my own acceptability judgments varied.

4.3.2 The Target Sentences The target sentences all featured the dative clitic *le* in a construction that can only be understood as a PD. To create natural-sounding stimuli and avoid short sentences with no context, each target sentence was composed of two clauses, the first of which contained the PD construction. Since the PD construction usually carries a malefactive or adverse reading (Landau 1999), the second clause elaborated on the circumstances, clarifying why that first clause had unfortunate consequences. A sample stimulus is shown in (21).

- (21) ha maxšev met le- inbal ve- hi crixá lešaxzer kama kvcaim
 the computer died to Inbal and she needs to recover some files
 ‘Inbal’s computer died and she needs to recover a few files.’

The sentences varied in the animacy of the possessee and the possessor. To reduce the number of conditions, animacy was considered as a binary distinction between humans and inanimates, and no nonhuman animates were included. This resulted in three configurations: a human possessor with a human possessee, a human possessor with an inanimate possessee, and an inanimate possessor with an inanimate possessee.⁷ In addition, the possessee varied in number (singular vs. plural) and definiteness (definite vs. indefinite).

For both possessors and possessee, person was held constant: all possessors and possessee were third person lexical nouns (no pronouns were used).⁸ In the case of possessors, definiteness and number were also held constant: they were all singular and definite (for human possessors,

⁷ Theoretically, a fourth configuration is also possible: inanimate possessors and human possessee. However, plausible-sounding sentences of that kind are hard to find and unlikely to be common in texts. This configuration was therefore not included.

⁸ Pronouns were avoided to eliminate the chance of ambiguity with the ethical dative—another Hebrew construction that can only occur with a dative-marked pronoun (Borer and Grodzinsky 1986).

Table 1

List of intransitive predicates used in the stimuli

Unaccusative	Unergative
nafal 'fall'	pihek 'yawn'
met 'die'	hitrocec 'run around'
hitlaxlex 'get dirty'	rakad 'dance'
hištana 'change'	hištael 'cough'
hitakev 'get delayed'	cilcel 'ring'
hitkalkel 'get ruined'	xarak 'squeak'
neheras 'get destroyed'	
hitalef 'faint'	

common Israeli names were used). Word order was also held constant (in an SV order).⁹ The sentences were between 6 and 11 words long (based on the Hebrew orthography, which treats clitics as part of the word).

The intransitive verbs used in the stimuli are listed in table 1. The predicates were classified into verb type on the basis of the semantic criteria defined in Levin and Rappaport Hovav 1995.

When possible (e.g., for *met* 'die' and *nafal* 'fall'), the same predicate was used with both animate and inanimate possessors. However, some predicates, such as *pihek* 'yawn', allow only one or the other. To allow for inanimate subjects with unergative verbs, two sound emission verbs (Levin and Rappaport Hovav 1995) were used: *xarak* 'squeak' and *cilcel* 'ring'. In addition, 8 transitive predicates were used; however, since they are not relevant to the question of unaccusativity, they will be discussed separately in section 5.

4.3.3 Plausibility and Adversity Rating To make sure that the participants were not distracted by the fact that some sentences might be more plausible than others, or more amenable to a possessive reading, plausibility ratings were also collected for the target sentences, to be used as a control in the statistical model. These ratings were gathered via Mechanical Turk, with 30 responses per sentence. The participants in this preliminary stage were English speakers, and the English translations of the stimuli were used;¹⁰ the participants were asked how likely it is for the event described to actually happen (on a scale of 1 to 6).

Since the PD construction involves an adversity reading, it is possible that the sentences would be more acceptable not only if they were more plausible, but also if they described an event with worse consequences. Therefore, adversity ratings were also collected in the preliminary stage and were used as a control in the statistical model. These were also gathered via Mechanical Turk for the English translations of the stimuli; the participants were asked to rate how unfortunate the consequences of the event described in the stimulus are.

⁹ In some Hebrew intransitive sentences, VS order is also possible. Shlonsky (1987) claims that VS is only possible with unaccusative verbs; therefore, only SV order, which does not have a preference for particular verb classes, was used.

¹⁰ The Israeli names were changed to American names, taken from the 50 most common names in the United States, according to <http://names.mongabay.com>.

4.4 Predictions

The prominence-based account outlined in section 3 makes the following prediction:

- (22) Sentences with the PD construction will receive higher ratings when the possessor is more prominent than the possessee.

This prediction makes several more specific predictions that can be tested on the basis of the factors manipulated in this experiment.

- (23) a. Sentences with inanimate possesseees will receive higher ratings than sentences with animate possesseees.
 b. Sentences with animate possessors will receive higher ratings than sentences with inanimate possessors.
 c. Sentences with indefinite possesseees will receive higher ratings than sentences with definite possesseees.¹¹

4.5 Results

Figure 1 shows the sentences ordered by the average ratings received, from the lowest to the highest, and coded for the animacy of the possessor and possessee. The figure suggests a clear

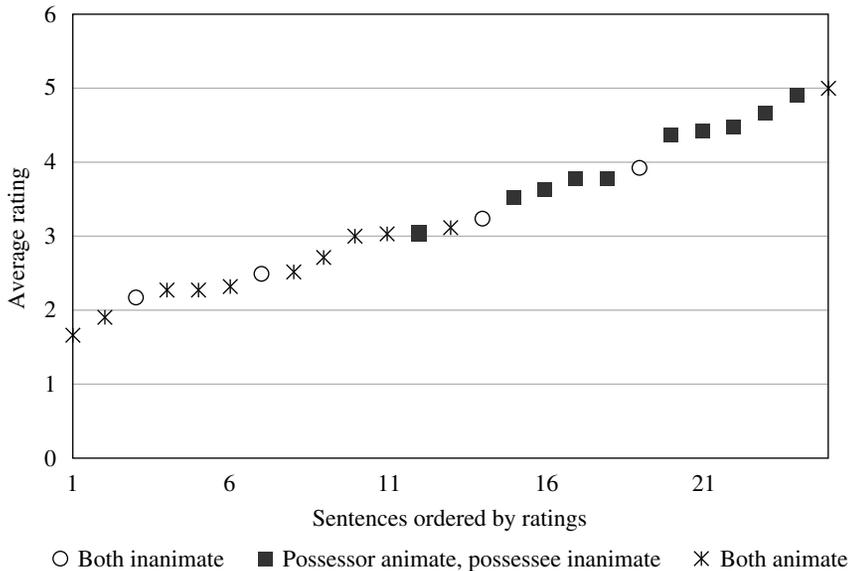


Figure 1

Stimulus sentences ordered by average rating (coded for animacy)

¹¹ This account also predicts that sentences with definite possessors should receive higher ratings than sentences with indefinite possessors. However, since all possessors in the stimuli were definite, the results can shed no light on this prediction.

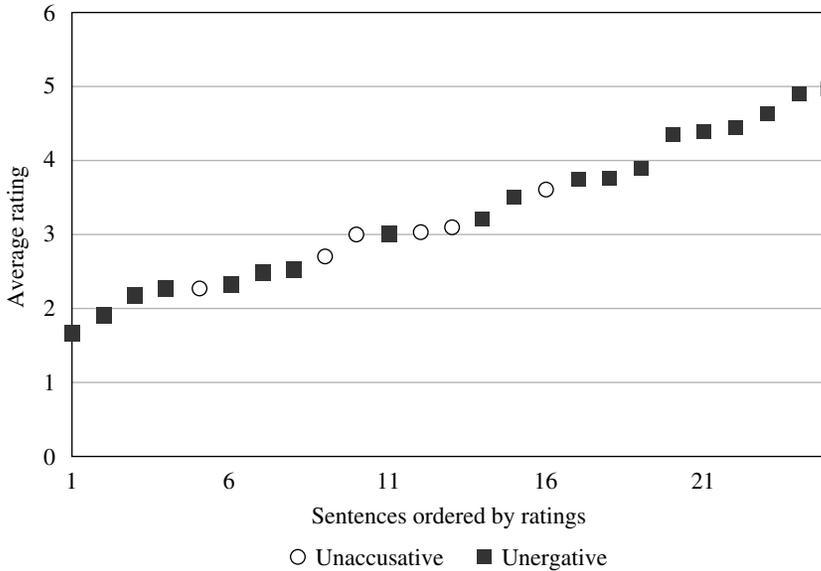


Figure 2

Stimulus sentences ordered by average rating (coded for verb type)

effect of animacy: sentences with an animate possessor and an inanimate possessee tend to outrank sentences in which both possessor and possessee are either animate or inanimate.¹²

In figure 2, the sentences are once again ordered from the lowest-ranked to the highest-ranked, but this time coded by verb class. B&G's analysis predicts that unaccusatives should cluster toward the higher ratings, and unergatives toward the lower ratings. However, as figure 2 shows, the ratings span the entire range of possible values from highest to lowest, and the different verb types do not cluster together: the sentences with unergative verbs are not consistently the lowest-ranked; rather, they outrank many unaccusatives. In fact, it would appear that unergative sentences tend to cluster in the "middle," with unaccusative verbs exhibiting a wider range of ratings.

Statistical analysis was performed using a mixed-effects model—a linear regression with random effects—using R's (R Development Core Team 2007) `lmer()` function. All ratings were normalized per participant: for each participant, the mean and standard deviations of all of his or her ratings were calculated, and the normalized rating was defined as the difference between the rating and the mean, divided by the standard deviation.

The fixed effects considered in the model are the type of verb (unaccusative or unergative), the animacy of the possessor, the animacy of the possessee, the number of the possessee, and the definiteness of the possessee (since the possessor was always definite). Controls included the

¹² As shown in the graph, the highest-ranking sentence actually has an animate possessee. This sentence is example (17), in which the animate possessee is indefinite, and its high rating can be understood when the full prominence account is considered.

Table 2

Factors considered in the linear regression

<i>Fixed variables</i>					
	Values		Mean	SD	
Verb type	unaccusative, unergative				
Possessee animate	no, yes				
Possessor animate	no, yes				
Possessee number	plural, singular				
Possessee definite	no, yes				
Adversity	1–6 (1 is least adverse, 6 is most)		3.37	1.02	
Plausibility	1–6 (1 is least plausible, 6 is most)		4.14	0.55	
Sentence length	6–11 words		8.4	1.44	
<i>Random variables</i>					
Predicate (see table 1 for list)					
Item ID					

adversity ratings, the plausibility ratings, and the length of the sentences, to ensure that the effects truly stem from the difference in prominence and not from the meaning of the sentences. The random variables are the predicate, to confirm that the preferences with respect to the PD construction are general and not specific to each predicate, and the item number itself, to guarantee that the effects are not artifacts of specific sentences' getting particularly high or low ratings, owing to factors that may not have been controlled for. The model is summarized in table 2.

The data for the model include all the intransitive sentences; the results are shown in table 3. For each of the nonnumeric variables, the `lmer()` function chooses one value as its baseline, based on alphabetical order (the first value given in table 2 for each variable). Therefore, for a variable like ‘‘verb type,’’ the baseline was ‘‘unaccusative’’ (hence, it does not appear in the results table), and the estimate given in the table for each value (in this case, ‘‘unergative’’) is

Table 3

Statistical analysis of intransitive sentences only

Factor	Value	Estimate	Std. error	t value	Pr(> t)
(Intercept)		0.4049	0.990784	0.409	0.6828
Verb type	unergative	–0.031295	0.200718	–0.156	0.8761
<i>Possessee animate</i>	yes	–0.885408	0.173154	–5.113	0.000
<i>Possessor animate</i>	yes	0.92826	0.236555	3.924	0.0001
Possessee number	singular	–0.190521	0.185545	–1.027	0.3047
<i>Possessee definite</i>	yes	–0.956367	0.365264	–2.618	0.009
Adversity		0.015679	0.100094	0.157	0.8756
Plausibility		0.004871	0.120181	0.041	0.9677
Sentence length		–0.003626	0.066538	–0.054	0.9566

relative to that given baseline. A negative estimate for a specific value means that this combination results in a lower rating than the chosen baseline, and a positive estimate means that it results in a higher one. The statistically significant effects ($p < 0.05$) are marked in bold italics.

As the table shows, sentences with an animate possessee had significantly lower ratings ($p < 0.00001$) and sentences with an animate possessor had significantly higher ratings ($p < 0.0001$). Therefore, the effect of animacy goes in opposite directions in the case of the possessor and the possessee; this suggests that the best configuration is an animate possessor with an inanimate possessee, the configuration of maximal difference on the animacy hierarchy, as predicted in (23a–b). Furthermore, running an additional linear regression model in which the animacy of the possessor and the animacy of the possessee are collapsed into one variable (the possible values being “possessor animate and possessee inanimate,” “both animate,” and “both inanimate”) shows that the configuration in which the possessor is animate and the possessee is inanimate receives significantly higher ratings than either the configuration in which both are animate ($p < 0.00001$) or the configuration in which both are inanimate ($p < 0.0001$).

The definiteness of the possessee is a significant predictor as well: definite possesseees received lower ratings, as predicted ($p < 0.01$). Finally, the type of verb was not a significant predictor; that is, the unergative verbs as a group did not receive significantly worse ratings than the unaccusative verbs.

4.6 Discussion

The results of the ratings experiment show that the acceptability of the PD construction is a gradient phenomenon that is affected by several factors. The most important factor found was an effect of animacy, which is significant in the case of both the possessor and the possessee and which works in opposite directions for the two of them. Sentences with animate possessors receive higher ratings, and sentences with animate possesseees receive lower ratings—and when the two animacy factors are combined into one, the best overall configuration is that of an animate possessor and an inanimate possessee. In addition, the results show that indefinite possesseees are preferred over definite possesseees. This supports the hypothesis that the preferred PD construction is one in which the possessor is maximally more prominent than the possessee.

The experiment therefore clearly supports the importance of prominence-related factors in determining the acceptability of the PD construction. There are two ways to understand these data: the first is that B&G’s generalization holds in addition to these effects, and the second is that these effects can subsume the c-command account. Finally, the results of the experiment found no significant difference between unaccusative verbs and unergative verbs. While not finding an effect is not evidence for its nonexistence, this suggests that the data that led to B&G’s original observation can indeed be better explained as an effect of animacy.

5 Transitive Verbs

Since the key interest of this article is in the use of the PD construction as a diagnostic for unaccusativity, the experiment naturally focused on intransitive verbs. However, if indeed promi-

nence plays a role in the PD construction for intransitives, it should account for the construction's distribution among transitives as well. In this section, I will survey the issues and how the account can be expanded to also explain the distribution of the construction in sentences with a transitive verb.

5.1 Subject Experiencer Verbs

As stated in section 1, B&G observe that the PD is possible with the object of a transitive verb, which is expected on their c-command account. However, the picture is more complicated for transitive verbs as well. As Landau (1999) observes, while the PD construction is generally acceptable with agentive transitive verbs, it is unacceptable with subject experiencer verbs, as shown in (24).

- (24) *gil ahav le- rina et ha- tisroket
 Gil loved to Rina ACC the hairstyle
 (Intended meaning: 'Gil loved Rina's hairstyle.'
 (Landau 1999:27, (52a))

The experiment included only one subject experiencer verb, *sana* 'hate' (which occurred in two different sentences), and therefore cannot contribute much to this observation, but the results certainly do support it: the two stimuli with *sana* received the lowest overall ratings across all PD sentences.¹³ This difference is clearly not predicted by the c-command account, but it is not predicted by my account either. It is important to note that the incompatibility of external possession with events that do not affect the possessee is common crosslinguistically, and various authors (e.g., Cheng and Ritter 1987) have proposed a "theme affectedness" constraint, which the event denoted by experiencer verbs fails to satisfy; this may be what is at play here as well. Conversely, Landau (1999) argues that such a constraint is neither well-defined nor able to account for the Hebrew data. In his analysis of the PD construction as an instance of raising, raising is blocked in the case of a subject bearing the Experiencer role, not because of its meaning, but because of the syntactic configuration he posits for such verbs. Since the experiment included only two examples of experiencer verbs, I cannot make strong claims on the matter. It is quite likely that Landau is correct in rejecting the "theme affectedness" constraint for Hebrew and that certain thematic roles (such as Experiencer) do play an important part in determining the acceptability of the PD construction.

As the data for the intransitive verbs show, even if we assume different syntactic structures for different thematic roles, examples like (8)–(9) exhibit divergent outcomes for the *same* thematic role; clearly, therefore, more than thematic roles must be at issue. Nevertheless, the thematic hierarchy can also be considered a prominence hierarchy, and although it is not included in the

¹³ This difference is even more striking when these sentences are compared to transitive sentences with agentive subjects: while the average rating for all the transitive sentences is 4.11, the two sentences featuring *sana* 'hate' are rated 1.39 and 1.55, respectively.

current proposal, effects like those shown in (8)–(9) can be incorporated into the proposed account in a natural way.

5.2 *Agentive Transitive Verbs*

As stated before, B&G observe that in clauses with a transitive verb, the PD construction is possible, and it is the object, and not the subject, that is interpreted as the possessee. If we move away from subject experiencer verbs and focus on agentive transitive verbs, this generalization appears to be robust. B&G state that this restriction on the subject can be explained by the same restriction as the one posited for unaccusatives: namely, that the possessor needs to c-command the possessee. If one takes the position that the prominence effects found in the experiment exist alongside the c-command generalization, this requires no further explanation. However, since the experimental results suggest that the prominence effects can explain the intransitive data on their own, an alternative explanation that does not rely on c-command should be considered for transitives as well.

Such an explanation arises naturally if we consider an important difference between clauses with transitive verbs and clauses with intransitive verbs. If we confine ourselves to looking only at a verb and its argument, in a clause with an intransitive verb the dative-marked DP is the possessor, and only the subject may serve as the possessee. Therefore, if the sentence is acceptable, there is never a question of what the actual possessee is. With transitive verbs the situation is different, since both the subject and the object could in principle serve as possessees. If the PD construction is most acceptable when the prominence difference between possessor and possessee is greatest, then when applying the prominence-based account to transitive verbs, maximizing prominence would involve choosing the optimal pairing of possessor and possessee.

An additional universal scale of prominence to consider alongside animacy and definiteness is the relational scale, which refers to syntactic roles (see, e.g., Aissen 1999). While various orders have been suggested for this scale, it is uncontroversial that the subject is ranked over all other syntactic roles.

(25) *Relational scale*

subject > nonsubject

On this scale, the object is always less prominent than the subject and hence serves as a better possessee. The object may be more prominent than the subject along other dimensions, but if the contribution of the relational scale to the overall prominence is sufficiently large, we can ensure that the subject of a transitive verb is never the possessee. Of course, making a precise prediction that the subject is always disallowed would require a full account of the relative contribution of the different scales, which is beyond the scope of this article. Further study into the distribution of the PD construction with transitive verbs is needed, both to show that this preference is truly categorical and to disentangle the different prominence effects. However, the experimental results reveal support for the addition of the relational scale.

The assumption that being a subject makes a large contribution to the overall prominence not only explains the subject-object asymmetry in transitives, but also makes a further prediction with respect to the difference between transitive and intransitive sentences. If the PD construction prefers a less prominent possessee, then sentences with intransitive verbs (in which the only possible possessee is generally in subject position) are at a disadvantage, and require that the possessee compensate for that along other dimensions (such as animacy). On the other hand, sentences with transitive verbs, by virtue of the availability of a nonsubject possessee, may be more flexible along other dimensions and allow a wider range of possessees. As (26) shows, such examples (involving, e.g., definite animate possessee) can indeed be found on the Web.

- (26) axat ganva la- šniya et ha- xaver
 one stole to.the other ACC the boyfriend
 ‘One of them stole the other one’s boyfriend.’
 (<http://www.globes.co.il/news/article.aspx?did=1000517032>)

If sentences with transitive verbs permit a wider range of arguments in the PD construction, the prediction with respect to such sentences is that in the experiment described in section 4, they would receive higher ratings on average than the sentences with intransitive verbs.¹⁴ A statistical model that includes the sentences with transitive verbs as well as the sentences with intransitive verbs shows that this prediction is borne out: the sentences with intransitive verbs received significantly lower ratings than the sentences with transitive verbs ($p < 0.005$ for unaccusative verbs, $p < 0.05$ for unergative verbs).¹⁵ However, not all the sentences with transitive verbs were equally acceptable. Among the transitive verbs, some prominence effects were detected: the sentences received significantly higher ratings when the possessor was animate ($p < 0.0005$) and when the possessee was indefinite ($p < 0.005$). There was no effect of the animacy of the possessee for the transitives, which may be due to the smaller number of data points (as the experiment was originally designed to investigate unaccusative and unergative verbs). Although the results for transitives are not as clear-cut as the results for intransitives, they do show that (a) prominence does play a role in transitives as well and (b) transitives are overall more acceptable than intransitives, as the account predicts.

6 Conclusion

Much recent work in syntax demonstrates that phenomena that were thought to illustrate clear-cut distinctions in grammaticality turn out to be more gradient in nature, once a wider range of data is considered and careful empirical methods are used to gather judgments (e.g., Bresnan et al. 2007, Wasow 2007). In-depth exploration of data while controlling for other possible factors is crucial

¹⁴ The agentive transitive verbs used in the experiment were *ganav* ‘steal’, *racax* ‘murder’, *daxaf* ‘push’, *haras* ‘destroy’, *kilkel* ‘ruin’, *šavar* ‘break’, *ibed* ‘lose’.

¹⁵ The results in this section pertain only to the agentive transitive verbs; they exclude the subject experiencer verb *sana* ‘hate’, which, as stated in section 5.1 and footnote 13, merit a separate analysis.

when examining unaccusativity, which is invariably correlated with possible confounding features, such as animacy. For example, Potsdam and Polinsky (2011) demonstrate that Babyonyshev et al.'s (2001) analysis of the Russian genitive of negation as involving covert A-movement crucially relies on the unacceptability of a certain example, and that its unacceptability may have more to do with other factors (i.e., marked verb-initial word order and the use of an animate theme with a modal biased toward volitionality) than with the proposed A-movement. The present article adds to this line of research by showing that more factors are involved in determining the acceptability of the PD construction in Hebrew than has been traditionally assumed.

The experimental results reported here do not provide empirical support for B&G's (1986) claim that the grammaticality of the PD construction is determined by the unaccusativity of the verb. Rather, the results demonstrate several prominence-related effects, each showing a preference for a more prominent possessor, a less prominent possessee, or both. There are two ways to interpret the results. The first is that the observed link between unaccusativity and the PD construction is actually an epiphenomenon—having more to do with the types of fillers for arguments that unaccusative and unergative verbs tend to take than with the syntactic properties of the verbs themselves. Of course, not finding an effect in an experiment does not mean it does not exist, and a more conservative reading of the results may be that B&G's generalization stands, but prominence factors also play a role. This position would have the advantage of providing a straightforward explanation for some of the data regarding transitive verbs, but the acceptable examples of unergative verbs with inanimate subjects would require further stipulations.

Further research is required to determine whether an account based on prominence effects can subsume B&G's generalization. Although the experimental results seem to support this position, the account as it stands still cannot fully explain all of the data. Taking semantic roles into account might be crucial for fully understanding the behavior of specific verbs, and there are additional prominence-related factors, such as distinctions of person and word order, that may affect the acceptability of the PD construction. What the results undeniably show, however, is that no single binary distinction is likely to neatly separate all the acceptable instances of the PD construction from the unacceptable ones. While this article cannot offer a complete account of the distribution of the PD construction, it provides a framework into which further prominence effects can be integrated naturally; and the experimental results suggest that an account based on the relative prominence of the possessor and the possessee is on the right track.

Although the PD construction is widely used as a diagnostic tool in Hebrew linguistics, there has not been much interest in the construction itself since B&G's original work, and its validity as an unaccusativity diagnostic has not been challenged. Levin and Rappaport Hovav (1995) provide reasons why unaccusativity diagnostics should be used with caution. Even if a specific construction exhibits different behavior with clear cases of unaccusative and unergative verbs, the distinction may not necessarily depend only on unaccusativity, and a connection to unaccusativity must be thoroughly made for the construction to be used as a diagnostic tool. The present article shows that this critique is equally applicable to the PD construction. If the effects thought to be related to unaccusativity are in fact related to other scales of prominence, the PD construction

is clearly invalid as a diagnostic. But even if the c-command generalization stands, the results raise an important warning sign: if the PD construction is to be used as a diagnostic at all, the significant effects found in the experiment must be carefully controlled for.

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