A Prominence Account of the Hebrew Possessive Dative Construction

First Qualifying Paper

3/12/2010

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Contents

1. Introduction ......................................................................................................................... 4
2. The possessive dative in Hebrew ......................................................................................... 7
   2.1. Berman’s (1982) account of the ethical dative and the extended dative .......... 8
   2.2. The possessive dative (Borer and Grodzinsky (1986)) ................................................. 9
   2.3. Towards a prominence based account ........................................................................ 11
   2.4. The PD construction as a diagnostic for unaccusativity ........................................... 12
3. A prominence based account of the possessive dative ...................................................... 14
   3.1. The animacy of the possessee ..................................................................................... 15
   3.2. Animacy or unaccusativity? ....................................................................................... 18
   3.3. The animacy of the possessor ..................................................................................... 20
   3.4. Definiteness and number ............................................................................................ 22
   3.5. Transitive verbs .......................................................................................................... 23
   3.6. Further factors ............................................................................................................ 24
4. The experiment .................................................................................................................... 27
   4.1. Subjects ....................................................................................................................... 27
   4.2. Method ......................................................................................................................... 27
   4.3. Materials ...................................................................................................................... 27
   4.4. Predictions ................................................................................................................... 31
   4.5. Results ........................................................................................................................ 31
   4.6. Discussion .................................................................................................................... 39
5. Conclusion .......................................................................................................................... 40
6. References .......................................................................................................................... 42
7. Appendices ........................................................................................................................ 44
   7.1. Appendix I: Full list of stimuli ..................................................................................... 44
   7.2. Appendix II: Average rating per stimulus ..................................................................... 47
   7.3. Appendix III: The instructions for the questionnaire ................................................. 50
   7.4. Appendix IV: Summary of stimuli .............................................................................. 51
List of Tables

Table 1: Google hits for hitmotet ‘collapse’ ................................................................. 17
Table 2: Google hits for met ‘die’ ................................................................................. 17
Table 3: List of predicates used in the stimuli .............................................................. 29
Table 4: Factors considered for linear regression ....................................................... 34
Table 5: Statistical analysis of all stimuli ................................................................... 35
Table 6: Statistical analysis of all stimuli, excluding sana ‘hate’ .............................. 37
Table 7: Statistical analysis of intransitive sentences only ......................................... 38
Table 8: Summary of stimuli by condition ................................................................... 51

List of Figures

Figure 1: Stimuli sentences ordered by average rating, marked for verb type .......... 32
Figure 2: Stimuli sentences ordered by average rating, marked for animacy .......... 33

List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B&amp;G</td>
<td>Borer and Grodzinsky</td>
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<tr>
<td>PD</td>
<td>Possessive dative</td>
</tr>
<tr>
<td>SV</td>
<td>Subject-verb order</td>
</tr>
<tr>
<td>VS</td>
<td>Verb-subject order</td>
</tr>
</tbody>
</table>

1. Introduction

Many of the world’s languages feature external possession – a construction in which the possessor and possessee do not form a single constituent (as they do in English “my book”), but rather the possessor is coded in a constituent separate from the one that contains the possessee (Payne and Barshi 1999). In Hebrew, external possession appears in the form of the Possessive Dative (PD) construction, in which a dative marked argument is interpreted as the possessor of another NP. However, the PD is not always an acceptable way of expressing possession, as exemplified in (1)-(2).1

(1) a. ha-arnak nafal le-dan
    the wallet fell to Dan
    “Dan’s wallet fell”

   b. * ha-ganan nafal le-dan
    the gardener fell to Dan
    “Dan’s gardener fell”

(2) 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”2

In the good sentences, (1a) and (2a), the possessor is animate and the possessee is inanimate, whereas in the bad sentences, they are both animate (as in 1b) or both inanimate (as in 2b). Based on this pattern, I propose that the PD construction is more

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1 First and foremost, I would like to thank my Qualifying Paper committee, Beth Levin, John Rickford and Tom Wasow, whose guidance helped this project evolve and develop. Special thanks go to Victor Kuperman and Uriel Cohen Priva for many hours of discussing both statistical modeling and Hebrew data. I would also like to thank Matthew Adams, Inbal Arnon, Joan Bresnan, Jessica Spencer and Hilel Taub-Tabib for many useful comments on various versions of this project. And finally, a very special thanks to my parents, Uzi and Michal Gafter, subject recruiters extraordinaire.

2 The sentence in (1)-(2) are adapted from stimuli used in an experiment, which will be described in detail in section 4. The judgments with respect to them are based on the experimental results.

The Hebrew clitic le- is arguably a dative marker, and referred to as such by the works cited (Borer and Grodzinsky 1986, Landau 1999). However, I gloss it as ‘to’, following the convention used by those authors.

The transliteration used throughout this paper is a broad phonetic representation of Hebrew as currently spoken in Israel. This paper includes examples from several different writers, who differ slightly in their transliteration style. While the wording of the examples was not changed, the transliterations were made consistent in order to prevent confusion.
acceptable when the possessor is higher on the animacy hierarchy (Silverstein 1976) than the possessee.

To substantiate this hypothesis, I conducted an acceptability judgment experiment, with over 40 native Hebrew speakers. The target sentences were created so that the possessor and possessee had varying combinations of animacy. Statistical analysis using a mixed-effects linear regression shows that PD sentences in which the possessor is animate and the possessee inanimate received significantly better ratings than sentences with other combinations of animacy.

Animacy effects often covary with other prominence hierarchies, such as definiteness and grammatical relations (Aissen 1999, 2003). The experimental results suggest that the PD construction is also sensitive to more than one scale of prominence. Sentences with an indefinite possessee and a definite possessor received significantly better ratings than sentences in which both were definite. Furthermore, transitive sentences, in which neither possessee nor possessor was the subject, received significantly better ratings than intransitive sentences, in which the possessee was in the subject position, and hence higher on the grammatical relation scale than the possessor. Therefore, I propose that the more prominent the possessor is with respect to the possessee, on various scales of prominence, the more acceptable the PD construction.

The experimental results also show the availability of the PD construction to be a gradient phenomenon, which is not likely to be explained by any single binary distinction. The hypothesis that the various scales of prominence influence the acceptability of this construction is consistent with the gradient nature of the ratings: a sentence may have an animate possessee but still be acceptable, if the possessor is more prominent on other scales.

The prominence-based account provides a new perspective for examining the distribution of the PD construction. Most of the attention given to the PD construction in the syntax literature thus far relies on the influential analysis in Borer and Grodzinsky (B&G, 1986), which is based solely on syntactic configuration. B&G observed that the possessed element may be an internal argument or adjunct, but not an external argument. Therefore, the object of transitive verbs or the subject of
unaccusative verbs may take part in this construction, but the subject of unergative verbs cannot, as shown in (3)-(5).

(3) ha- yalda kilkela le- dan et ha- radyo
the girl spoiled to Dan ACC the radio
‘The girl broke Dan’s radio’ – transitive
(Borer and Grodzinsky 1986: page 181, 12a)

(4) ha- maftexot naflu li
the keys fell to me
‘my keys fell’ - unaccusative
(Borer and Grodzinsky 1986: page 184, 21a)

(5) * ha- poalim avdu li
the workers worked to me
(Intended meaning: ‘my workers worked’) – unergative
(Borer and Grodzinsky 1986: page 182, 14c)

Thus, B&G conclude that the PD construction is a reliable diagnostic for unaccusativity, and using it as such has become standard in the Hebrew generative grammar literature. In spite of 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. However, I propose the differences in grammaticality judgments in the data upon which B&G based their generalization can also be explained by the animacy account, without making reference to the unaccusativity of the verb. This is because B&G’s data has a confound in it, as all of their ungrammatical sentences (with unergative verbs) have animate possessees (as in (5)), whereas all of their grammatical sentences (with unaccusative verbs) have inanimate possessees (as in (4)). Therefore, for all of these sentences, the animacy account and the unaccusativity account make the same predictions. However, an examination of further data, such as (1)-(2), in which the verbs are consistently unaccusative but the possessor and possessee differ in animacy, lend support to the animacy account. Furthermore, the experimental results reported in this paper show no evidence of an effect of the unaccusativity of the verb on the acceptability of the PD construction. The target sentences in the experiment involved 22 different predicates

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3 Landau (1999), in which the PD construction is analyzed as an instance of raising, is an important exception. However, he too does not question its validity as a diagnostic for unaccusativity.
(transitives, unergatives and unaccusatives), and the unaccusativity of the verb did not have a statistically significant effect on the ratings.

The goal of this paper is thus twofold. The first is to question the empirical validity of using the PD construction as diagnostic for unaccusativity. The experimental results show that it does not stand up to systematic empirical testing. The second goal is to draw attention back to the PD construction itself, and the factors underlying its distribution. Although this study cannot present a full account of when the PD can occur, the factors identified – animacy and definiteness – show that various aspects of prominence play a crucial role.

The structure of this paper is as follows. In section 2, I provide an overview of the PD construction and the ways in which it has been analyzed in the prior literature, with emphasis on B&G’s unaccusativity account. I then propose the hypothesis that the acceptability of the PD construction is affected by the relative prominence of the possessor and the possessee. In section 3, I develop the prominence account in detail, and examine several aspects of prominence that may be relevant. In addition, I present data which the prominence account can explain whereas the unaccusativity account cannot. In section 4, I describe the acceptability judgment experiment I conducted, the results of which support the prominence based account.

2. The possessive dative in Hebrew

Hebrew has two ways of expressing possession. In the first, the possessor and the possessee form a single constituent, and the possessee is marked with the preposition šel (‘of’, often analyzed as the genitive case marker), as shown in (6a). The second construction, which is the focus of this paper, is a form of external possession (Payne and Barshi 1999), in which the possessor and the possessee do not form a constituent. In this construction, a dATIVE marked argument is interpreted as the possessor of another NP, as shown in (1b). Since the possessor is a dATIVE NP, Borer and Grodzinsky (1986) named this construction “the possessive dative construction”, and that is the term I will use in this paper.
2.1. Berman’s (1982) account of the ethical dative and the extended dative

The use of a dative-marked NP to express external possession in Hebrew is first described in Berman (1982). She discusses this construction in the context of an exploration of a wide range of non-argument dative marked NPs. Two of the types of datives discussed by Berman are relevant to this paper: the ethical dative and the extended dative.

The ethical dative, shown in (7), marks an affectee which does not participate in the event described.

(7) a. rak še hi lo taxle li šuv axšav
just that she not will.get.sick to.me again now
‘Just so she doesn’t go and get sick on me again’

b. ha- yeled tamid kam lanu mukdam davka be- šabat
the child always gets.up to.us early just on Saturday
‘The kid always wakes up early on us on the weekend’

(Berman 1982: page 38, 3)

4 Berman also introduces a third kind of dative, the reflexive dative, which affects the aspect of the verb. Since it always involves a dative-marked pronoun that is coreferential with the subject, it is easily distinguished from the other two, and is irrelevant to the discussion at hand.
As Berman notes, the dative-marked pronoun is not required by the verb; the activities in these sentences are carried out independently of the speaker, who is denoted by the dative pronoun. However, in (7a) and (7b), the speakers perceive themselves as being the victim of this activity or circumstance, and are describing the fact that they were affected by it.

A second type of dative that Berman discusses is a construction which, unlike the ethical dative, involves three-place predicates. One of the NPs is dative-marked and is affected – either adversely or favorably – by the event in question. Berman calls this “the extended dative”, and the examples in (8) demonstrate several meanings which this construction can have, among them, a possessive reading.

(8) a. **Possessor:**
   ha-tinok lilex li et ha-xulca
   the baby dirtied to.me ACC the shirt
   ‘the baby made my shirt dirty’

   b. **Benefactee:**
   dan hizmin lanu mekomot
   Dan ordered for.us seats
   ‘Dan ordered seats for us’

   c. **Deprivee:**
   hu ganav le-rina harbe raayonot
   he stole to Rina many ideas
   ‘He stole many ideas from Rina’

   (Berman 1982: page 48, 21)

Berman states that the extended dative and ethical dative share a semantic property: they represent several different relationships that have in common the sense of association or involvement of someone in an event for which she is not responsible, and of which she is not the actual patient, and yet she is affected by it. The difference between the extended and ethical dative is that in the extended datives, there is a tripartite relationship between the agent of the event, the thing to which something is done, and the individual affected by the event.

**2.2. The possessive dative (Borer and Grodzinsky (1986))**

Borer and Grodzinsky (1986) reconsider the various dative constructions described by Berman, and attempt to account for their distribution within a generative framework. In doing so, they define the PD as a distinct construction, unlike Berman (1982).
Following Berman, B&G emphasize that the ethical dative is not an argument, and does not bear any relationship to any argument in the sentence. It denotes a third party (often the speaker herself), which is affected by the event in some pragmatically determined way. When reviewing the remaining uses of the dative, B&G restrict their analysis to dative marked NPs not subcategorized by the verb. They claim that it is then possible to collapse the remainder of Berman’s extended datives into one class – the possessive dative. Specifically, they exclude Berman’s benefactive reading (such as example (8b)) from the discussion, and claim that the deprivee reading entails possession, and is therefore an instance of the possessive dative. B&G claim that unlike an ethical dative NP, a possessive dative NP is a full-fledged argument. The verb does not subcategorize for it, but rather, it receives the possessor θ-role directly from the dative marker le.

Although the term “possessive dative” has been adopted by many writers (and is used throughout this paper), the meaning of this construction is not the same as that expressed by the possessive preposition šel. While šel strictly expresses possession, the PD construction carries with it a strong adversity reading, in addition to the possessive reading. B&G make no note of this meaning (and it is not apparent from the translations of their examples); however, Landau (1999) acknowledges this fact, and states: “possessive datives always carry an ‘ethical’ (affected) implication beyond the possessive construal”. In some cases, the adversity reading may appear to arise from the semantics of the verb, as in example (3), repeated here as (9).

(9) ha- yalda kilkela le- dan et ha- radyo
the girl spoiled to Dan ACC the radio
‘The girl broke Dan’s radio’
(Borer and Grodzinsky 1986: page 181, 12a)

Nevertheless, sentences in which the adversity reading cannot be attributed to the meaning of the verb carry this implication as well. This is exemplified in (10) – while (10a) and (10b) both mean ‘Dina lived in my apartment’, (10a), which uses the PD construction, implies that the speaker was adversely affected by that; saying (10a) is felicitous if, for example, Dina had in some way overstayed her welcome.


Even when the sentence is compatible with an adversity reading, the PD construction and šel are not always interchangeable. In the next section I will explore data which shows that the PD is not always available, and propose a prominence-based generalization for this pattern.

2.3. Towards a prominence based account

Although the PD construction is a common form of expressing possession, it is not always acceptable. As shown below, while (11) is a perfectly acceptable sentence, (12) is not.

(11) 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”

(12) * ha-ganan nafal le- gadi ve- šavar et ha- regel
    the gardener fell to Gadi and broke ACC the leg
    (Intended meaning: ‘Gadi’s gardener fell and broke his leg’)

What underlies the difference between (11) and (12)? A useful concept, which has been shown to have great relevance cross-linguistically, is the animacy hierarchy (Silverstein 1976), cited here as formalized in Croft (2003):

(13) Animacy Hierarchy: Human > Animate > Inanimate

In both (11) and (12), the possessor is human; however, in sentence (11) the possessee (the subject) is inanimate, whereas in sentence (12) the possessee is human. Extrapolating from these examples, I propose that the PD construction is more acceptable when the possessor is higher on the animacy hierarchy than the possessee.

While this hypothesis can account for the difference between (11) and (12), animacy is but one of several scales of prominence, which have been shown to have an effect on various syntactic phenomena, and such scales often pattern together. The

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5 Examples (11) and (12) are actual stimuli from the experiment described in section 4. While example (11) got an average rating of 4.6 (out of 6, with 6 being the most acceptable), example (12) received an average rating of 1.9, one of the lowest ratings overall.
notion of prominence is interpreted in different ways by different authors. In this work I adopt the approach suggested by Aissen (2003). She discusses differential case marking on direct objects, and 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 animacy and definiteness. However, she does not merge the two scales together into a single scale of prominence; rather, she claims that they tend to pattern in such a way such that higher values on one scale more easily combine with higher values on the other scale.

Following this approach, I suggest that PD is more acceptable when the possessor is more prominent than the possessee, on various scales of prominence, with the animacy hierarchy being one of those scales. In section 3, I will describe in further detail the hypothesis that the animacy hierarchy, as well as other scales of prominence, influence the availability of the PD construction. However, first I shall address B&G’s influential account of the distribution of the PD construction, which is based on the unaccusativity of the verb.

2.4. The PD construction as a diagnostic for unaccusativity

To my knowledge, a connection between animacy (or prominence of any sort) and the acceptability of the PD construction has never been noted in the literature. However, B&G (1986) do note one restriction on the distribution of the PD construction, which involves the syntactic configuration of the possessor and the possessee.

B&G observe that in examples like (13)-(15), the (a) sentences, in which the subject (the external argument) is the only available possessee, are ungrammatical. However, the (b) sentences, in which some other VP-internal NP is a possible possessee, are grammatical.

(13) a.* ha- kelev šaxav li
the dog lay to.me
(Intended meaning: ‘my dog lay’)

b. ha- kelev šaxav li al ha- mita
the dog lay to.me on the bed
‘the dog lay on my bed’
Therefore, B&G state that possessed element may be an internal argument or an adjunct of the VP, but not an external argument. This generalization has important consequences in the case of unaccusative verbs. The Unaccusative Hypothesis (Perlmutter 1978) states that cross-linguistically, intransitive verbs are divided into two groups based on the behavior of their subjects: the subject of an unergative verb (such as ‘walk’ or ‘dance’) is an external argument, and equivalent to the subject of a transitive verb. On the other hand, the subject of an unaccusative verb (such as ‘fall’ or intransitive ‘break’), originates within the VP as an internal argument, like the object of a transitive verb, and subsequently moves to the subject position.

The verbs in (15) are all unergative, and hence their subject (an external argument), cannot occur in the PD construction. However, B&G claim that the subject of an unaccusative verb, which is underlyingly an internal argument, is allowed in this construction. They use (16) to demonstrate that that is indeed the case.

(16) a. * ha- maftexot naflu li the keys fell to.me ‘My keys fell’

b. ha- xalon nišbar li the window broke to.me ‘My window broke’

(B&G 1986: page 184, 21a-b)

In all of these examples, B&G emphasize that by non-grammatical they mean “non-grammatical with a possessive reading”.

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(14) a * ha- yalda yašva li the girl sat to.me

(15) a. * ha- poalim avdu li the workers worked to.me

b. ha- yalda yašva li al ha- kise the girl sat to.me on the chair

‘the girl sat on my chair’

‘the girl sat to.me’

‘the workers worked to.me in.the yard’

‘the workers worked in my yard’

(B&G 1986: page 182, 14) 6

6
In a similar fashion, B&G claim that the subject of passive verb can be the possessed element in a PD construction, since like the subject of an unaccusative verb, it is underlyingly an internal argument.

(17) a. ha- pgiša hukdema li the meeting was advanced to.me ‘My meeting was advanced’

b. ha- uga neexla li the cake was eaten to.me ‘My cake was eaten’

(B&G 1986: page 184, 21c-d)

B&G conclude that since the PD construction is available only for internal arguments (whether or not they subsequently move to subject position), they now have a “foolproof test of argument structure for Hebrew intransitive verbs”. In order to find out whether a certain intransitive verb is unergative or unaccusative, one need only check if its subject can be understood as the possessed element in the possessive dative construction.

A reliable syntactic diagnostic that neatly separates unaccusative and unergative verbs would be an invaluable tool, since the semantic classification of verbs as unaccusative or unergative is not always clear and often the subject of debate (Levin and Rappaport Hovav 1995, Kuno & Takami 2004). Indeed, the PD construction has been widely adopted in Hebrew generative linguistics as a test for unaccusativity, and has become the standard when investigating argument structure (e.g. in Arad 1998, Landau 1999, Reinhart & Siloni 2004, Friedman 2007). In light of the widespread use of this diagnostic, it seems appropriate to carefully reconsider its empirical validity. In section 3.2, I show that the data on which B&G’s generalization is based can be explained by the proposed prominence account, which raises doubt whether unaccusativity is indeed what underlies the difference in the grammaticality judgments. Furthermore, I show that there is additional data which the prominence account can explain, whereas the unaccusativity account cannot.

3. A prominence based account of the possessive dative

In section 2.3, I proposed that PD is more acceptable when the possessor is more prominent than the possessee. I now elaborate this hypothesis and explore the different
aspects of prominence that may have an effect: the animacy of the possessee and the possessor, definiteness, and the syntactic role of the possessor.

3.1. The animacy of the possessee

Animacy is an important variable from a typological point of view, since distinctions in nouns, pronouns and other grammatical categories are often restricted to either human or animate referents (Croft 2003). Therefore, the first prominence scale I shall address is the animacy hierarchy. To reiterate my previous hypothesis, I suggest that the PD construction is more acceptable when the possessor is higher on the animacy hierarchy than the possessee. This can explain the difference in judgments between (11) and (12), repeated here as (18) and (19). In both cases the possessor is human, but in (18) the possessee is inanimate, whereas in (19) the possessee is animate.

(18) 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”

(19) * ha-ganan nafal le-gadi ve-savar et ha-regel
the gardener fell to Gadi and broke ACC the leg
(Intended meaning: ‘Gadi’s gardener fell and broke his leg’)

The problem with (19) is not a semantic one; as (20) shows, rephrasing it with the possessive preposition šel results in a perfectly grammatical sentence.

(20) ha-ganan šel gadi nafal ve-savar et ha-regel
the gardener of Gadi fell and broke ACC the leg
‘Dan’s gardener fell and broke his leg’

The difference between (18) and (19) shows that a possible effect of animacy cannot be easily dismissed, and thus warrants robust empirical investigation. Therefore, section 4 describes an acceptability judgment experiment I conducted, designed to test the effect of animacy on the PD construction. However, before moving on to the empirical results, I should first clarify the precise predictions I am making. I have already suggested before that the PD construction is more acceptable when the possessor is higher on the animacy scale than the possessee. Therefore, animate possessee are dispreferred. However, I am not claiming that animate nouns are categorically disallowed as the possessee PD construction. That is clearly not the case, as I will shortly show.
As stated before, possession in Hebrew can be expressed with the PD construction as well as with the preposition šel. As a preliminary investigation of my hypothesis, that animate possessees are dispreferred in the PD construction, I checked whether animacy affects the number of Google hits of the PD construction and of possession using the preposition šel. In order to do this, I chose the verb hitmotet⁷ ‘collapse’, which can be used with either animates or inanimates, and searched for the phrases in (20).

(20) a. hitmotet li
collapsed to.me
b. šeli hitmotet
my collapsed

The search in (20a) resulted in PD sentences such as ha olam hitmotet li, and the one in (20b) resulted in sentences such as ha olam šeli hitmotet. Both mean “my world collapsed”, but the former features a PD construction, and the latter uses the possessive preposition šel, as shown in the examples in (21).

(21) a. Possessive Dative:
    ha- olam hitmotet li
the world collapsed to.me
    ‘My world collapsed’

b. Preposition šel
    ha- olam šeli hitmotet
the world my collapsed
    ‘My world collapsed’

In all of these hits the verb itself is the same, as is the animacy of the possessor (since it means “my”, it is always human), allowing me to check whether the animacy of the possessee (the subject) affected the choice of possessive construction. The results are given in Table 1.

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⁷ When Hebrew verbs are referred to, I use not the infinitive, but the 3rd person singular masculine past form, which is the standard citation form in Hebrew dictionaries.
The preposition el is overall the more common way of expressing possession in this data. However, when the possessee is inanimate, 41 out of 98 cases (41.8%) use the PD construction, whereas when the possessee in animate, only 2 out of 21 cases (9.5%) use the PD construction, suggesting that it is less compatible with animate possessees. Fisher’s exact test shows that this difference is statistically significant ($P<0.01$).

Of course, these results are from a small number of tokens, and for a verb that is more likely to be found with inanimate subjects to begin with. I therefore repeated this inquiry with a more frequent verb, which often occurs with animate subjects: met ‘die’. This verb is obviously more common with animate possessees (that is, subjects), due to its meaning. However, many cases did feature inanimate possessees, most of which involved the ‘death’ of objects such as cell phones and computers. The results are summarized in table 2.

<table>
<thead>
<tr>
<th></th>
<th>PD</th>
<th>Possessive preposition ŝel</th>
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<tbody>
<tr>
<td>Inanimate possessee</td>
<td>41 / 98 (41.8%)</td>
<td>57 / 98 (58.2%)</td>
</tr>
<tr>
<td>Animate possessee</td>
<td>2 / 21 (9.5%)</td>
<td>19 / 21 (90.5%)</td>
</tr>
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Table 1: Google hits for hitmotet ‘collapse’

Once again, animacy appears to affect the choice of construction. When the possessee is inanimate, the PD construction is actually the more common form (101 out of 191 cases, 63.5%), whereas when the possessee is animate, it accounts for only 90 out of 256 cases (35.1%). Fisher’s exact test shows that this difference is highly significant ($P<0.0001$).

Nevertheless, a substantial portion of the possessees were animate in the PD construction as well. While this may appear problematic for my hypothesis, I must
emphasize again that I do not suggest that animate possessees are ruled out in the PD construction, but that it favors inanimate possessees. It is possible that with a verb like met ‘die’, which generally prefers animates, this tendency is less strong. However, the crucial point is that it appears that animacy has an effect in the case of this verb as well.\(^8\)

3.2. Animacy or unaccusativity?

In section 2.4 I gave an overview of B&G’s influential claim that the subject of an unaccusative verb, but not that of an unergative verb, can occur as the possessed element in a PD construction. However, the proposed animacy-based generalization can account for the data on which B&G based their account, without making reference to the properties of the verbs involved. Recall that B&G based their generalization on the different distribution in (13)-(15) and (16)-(17) (repeated here as (22)-(23)).

\[(22)\]
\[ a. \] * ha- kelev šaxav li the dog lay to.me
(\text{Intended meaning: ‘My dog lay’})
\[ b. \] * ha- yalda yašva li the girl sat to.me
(\text{Intended meaning: ‘My girl sat’})
\[ c. \] * ha- poalim avdu li the workers worked to.me
(\text{Intended meaning: ‘My workers worked’})

\[(23)\]
\[ a. \] ha- mafetxot naflu li the keys fell to.me
‘My keys fell’
\[ b. \] ha- xalon nišbar li the window broke to.me
‘My window broke’
\[ c. \] ha- pgiša hukdema li the meeting was.advanced to.me
‘My meeting was advanced’
\[ d. \] ha- uga neexla li the cake was.eaten to.me
‘My cake was eaten’

\(^8\) A comparison between Table 1 and Table 2 suggests that even within the class of unaccusative verbs, there may be verb-specific biases as to whether the PD construction is used, even when other factors (like animacy) are controlled for. This issue will be addressed again in section 4.
In all the ungrammatical (unergative) sentences, the possessee (the subject) is animate, whereas in all the grammatical (unaccusative) sentences the possessee is inanimate. Thus, the unaccusativity account and the animacy account make the same predictions for B&G’s data, and it is impossible to differentiate between the two based on these data alone.

In fact, these accounts make similar predictions in many cases, since unergatives, unlike unaccusatives, often require animate subjects. However, the unaccusativity account predicts that the PD should be available with an unaccusative verb regardless of the properties of the possessor and the possessee, and that is not the case. The difference in judgments for (18) and (19), both of which feature the unaccusative verb *nafal* ‘fall’, can be explained by the animacy account, but not by the unaccusativity account. Furthermore, the results from the Google searches show that the PD construction is dispreferred with an animate subject with two unaccusative verbs, *met* ‘die’ and *hitmotet* ‘collapse’.

If indeed an effect of animacy can account for B&G’s data, without necessarily making reference to a difference between unaccusative and unergative verbs, a further prediction is made: we expect unergative verbs to allow the PD construction when their subject is inanimate. However, while expanding the unaccusative data to include animate subjects is straightforward, expanding the unergative data is less simple. By virtue of their meaning, most unergative are incompatible with inanimate subjects. In fact, if my hypothesis is true and the animacy of the subject plays a crucial role in the PD construction, it may very well be the case that the tendency of unergative verbs to require animate subjects is what makes the PD appear to be sensitive to verb class.

There is one class of unergative verbs, however, with which we can test inanimate subjects. According to the classification of verbs proposed by Levin and Rappaport Hovav (1995), verbs representing the emission of sound or light (e.g. *sparkle, bubble, flash, click, ring* etc.) are unergative. If we examine a verb like *cilcel* ‘ring’, we can indeed easily find real examples in which this verb is grammatical with the PD construction, contrary to B&G’s prediction. Consider example (24), with the
unergative verb *cilcel* ‘ring’ and an inanimate possessee (*‘the cell phone’*), which was found on-line and sounds perfectly grammatical according to my judgment.\(^9\)

(24) ba- pgiša ha-reviit cilcel le-xaim ha-pelefon, in.the date the fourth rang to Chayim the cell.phone
‘On the fourth date, Chayim’s cell phone rang’\(^10\)

An additional illustration of the point is provided by the fixed expression ‘his eyes sparkled’, which means ‘he showed great excitement’, and features an unergative verb (*nacac* ‘sparkle’) and an inanimate possessee (*‘eyes’*). This expression can be easily found on line with either the preposition *šel* or the PD construction, as shown in (25)

(25) a. pit’om ha-eynaim nacecu la
suddenly the eyes sparkled to.her
‘Suddenly, her eyes sparkled’\(^11\)

b. kše- siyamti lehasbir ha-eynaim šela nacecu
when I.finished to.explain the eyes hers sparkled
‘When I finished explaining, her eyes sparkled’\(^12\)

### 3.3. The animacy of the possessor

I have previously suggested the PD is more acceptable when the possessor is higher on the animacy hierarchy than the possessee. However, since in all the examples in the previous section the possessors were animate, they do not give evidence for an effect of a *relation* between the possessor and the possessee; rather, it may be the case that the PD construction simply disfavors animate possessees, regardless of the possessor. However, examining the animacy of the possessor shows that it too plays a role. Consider sentence (26a), with a PD, and (26b), its paraphrase with the possessive preposition *šel*.

---

\(^9\) These two classes of verbs are accepted as unergative by many writers (and specifically, by some who use the PD as a diagnostic for unaccusativity in Hebrew, e.g. as Reinhart & Siloni 2004). For writers who do not consider them unergative, there is no way to show that unergatives verbs can allow the PD with animate subjects. However, since for those writers there are no unergative verbs that allow non-agentive subjects, teasing apart unaccusativity and animacy is impossible to begin with.

\(^10\) www.tapuz.co.il/blog/ViewEntry.asp?EntryId=1154107&passok=yes

\(^11\) www.gogay.co.il/sipurim/Story.asp?id=6079

\(^12\) www.lead.org.il/blog.php?blogID=60&postID=112&act=addtalk&talkID=594
(26) a.* ha- mačber neheras la- oto
the carburetor got.ruined to.the car
(Intended meaning: ‘The car’s carburetor got ruined’)

b. ha- mačber šel ha- oto neheras
the carburetor of the car got.ruined
‘The car’s carburetor got ruined’

In these sentences, both the possessor and the possessee are inanimate. (26a), the version with a PD, is marginal at best. On the other hand, (26b), with šel, sounds perfect, showing that the issue with (26a) is not one of semantic plausibility. It therefore appears that in the case of the possessor, the effect is opposite than the one I have shown for the possessee – the PD construction favors animate possessors. However, that is exactly what we expect to find if the preference pertains not to the possessor or possessee themselves, but rather to having the possessor more animate than the possessee. Therefore, sentences with animate possessors and inanimate possessee sound the best, whereas those in which both are either animate or inanimate are less acceptable.

This hypothesis makes a further prediction – the situation in which the possessor is lower on the animacy scale than the possessee (that is, sentences with an inanimate possessor and an animate possessee) would be the least acceptable. Of course, such a state of affairs is less likely to begin with, since it is humans who tend to possess things, and not vice versa. However, if we consider the relation expressed in (27) as a form of possession, we can see this prediction is borne out: (27a), with a PD, is unacceptable according to my own judgment, while (27b), the version with šel, is not problematic.

(27) a.* ha- menahel met la- misrad
the director died to.the office
(Intended meaning: ‘The director of the office died’)

b. ha- menahel šel ha- misrad met
the director of the office died
‘The director of the office died’

Once again, whether or not the animacy of the possessor truly has an effect is an empirical question, and it will be investigated in the experiment described in section 4.

13 It is possible that “office” in a sentence like “the director of the office died” is not strictly speaking inanimate, but some sort of extended animate (referring to the people working in the office). Of course, as argued in section 3.2, the configuration in which both possessor and possessee are animate is also predicted to be ungrammatical by my account.
3.4. Definiteness and number

The previous sections have suggested considering the conditions on the use of the PD as an attempt to maximize the difference between possessor and possessee on the animacy scale. However, cross-linguistic 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, Aissen (2003) 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 animacy and definiteness, as shown in (28):

(28) a. Animacy scale: Human > Animate > Inanimate
    b. Definiteness scale: Personal pronoun > Proper name > Definite NP > Indefinite specific NP > Non-specific NP

Aissen does not attempt to collapse the two scales into a single scale of prominence; rather, she claims that the scales are harmonically aligned. That is, they tend to pattern in such a way that higher values on one scale more easily combine with higher values on the other scale.

Following this approach, I propose that in the Hebrew PD, the preference is not only for the possessor to be more animate than the possessee, but also more prominent in other respects. The prediction in the case of definiteness would be that the most favored configuration would be a definite (more prominent) possessor and an indefinite (less prominent) possessee. Once again, I am not predicting that definite possessees are impossible; in fact, the examples in (23), which are perfectly acceptable, all have definite possessees. However, it may be the case that a difference in prominence with respect to definiteness, can ameliorate sentences which would otherwise be unacceptaible. Consider example (29):

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

This sentence sounds perfectly grammatical, although it involves an animate possessee, which was hypothesized to be dispreferred. However, unlike the previous examples with animate possessees, the possessee is indefinite, and it may be this
difference in definiteness, which allows the possessee to be as prominent as the possessor on the animacy scale, and yet acceptable.

Furthermore, there may be another prominence related difference in (29) – the possessee is not only indefinite, but also plural. Although number is not one of the prominence hierarchies which Aissen considers, it may be the case that singular nouns are more prominent than plural nouns, since they are more uniquely identifiable. Therefore, it is possible that the PD construction also favors plural possessees. Whether one or both of definiteness and number play a role in the PD construction is, once again, an empirical question, and will be addressed in the experiment in section 4.

3.5. Transitive verbs

In the previous sections, I have focused on the PD construction with intransitive verbs, but the effects discussed are predicted to be relevant to transitive verbs as well. While according to B&G, the PD should always be available with transitive verbs, since the possessee is an internal argument, according to my hypothesis animate possessees are expected to be disfavored regardless of the transitivity of the verb. Nevertheless, perfect sounding examples of a transitive verb with an animate possessee can be easily found on the web, as shown in (30), with the verb ganav (‘to steal’).

(30) štey banot be- pinat ha- xenyon ravot be- craxot. 
two girls in corner the parking.lot fighting in screaming
axat ganva la- šniya et ha- xaver 
one stole to.the other ACC the boyfriend
‘Two girls in the corner of the parking lot are fighting and screaming. One of them stole the other one’s boyfriend’\(^\text{14}\)

Examples like (30) seem to weaken the hypothesis regarding the effect of animacy. Furthermore, it may initially appear that any explanation pertaining to the properties of the possessor and the possessee, rather than the type of verb, will not be able to account for transitive verbs being more acceptable in the PD constructions. However, the hypothesis that the possessor needs to be more prominent than the possessee does, in fact, predict a different preference of transitives. Aissen (1999) discusses several universal scales of prominence, among them the relational scale, which refers to the

syntactic role. Specifically, she makes a distinction between subject and non-subject, with the subject being more prominent than all other syntactic roles.

(31) *Relational scale:* Subject > Non-subject

In intransitive sentences which feature the PD construction, the possessee is invariably in the subject position, and hence highly prominent on the relational scale – more so than the possessor, which is a dative NP. In transitive sentences, on the other hand, the possessee is the direct object, and therefore not necessarily more prominent in this respect. Therefore, if the PD prefers a more prominent possessor, intransitive verbs, in which the possessee is the subject, are at a disadvantage, and may thus be more sensitive to the effect of animacy. With transitive verbs, on the other hand, there is no initial imbalance in prominence between possessor and possessee, since the possessee is not the subject. This suggests two predictions. The first is that other things being equal, the PD construction should be preferred with transitive verbs more than with intransitives. The second is that a wider range of possessees would be acceptable with the PD construction in the case of transitive verbs – namely, animate ones (thus accounting for sentences like (30)). Once again, the possible difference between transitive and intransitive verbs will be empirically investigated in section 4.

3.6. Further factors

I have proposed several factors, which may determine the acceptability of the PD construction – animacy, definiteness, number, and the syntactic role involved, all of which will be taken up in the experimental section. However, there are further factors that may have an effect on the PD construction, which could not be addressed in this work. In this section, I address two such possible factors, which were controlled for in the experimental design, but not tested directly.

*Person*

When considering differences with regard to scales of prominence, another important scale is often referred to: the person scale. Aissen (1999) defines it as follows:

(32) *Person scale:* 1st, 2nd > 3rd
In fact, from a cross-linguistic point of view, the effects of animacy and person often pattern together. Some writers address this by positing a unified hierarchy of animacy of animacy and person (Silverstein 1976), cited here as stated in Dixon (1979):

(33) **Extended Animacy Hierarchy:**

1. 1st/2nd person pronoun > 3rd person pronoun > Proper name > Human Common noun > Non-human animate common noun > Inanimate common noun

If the hypothesis presented so far is true, it would not be surprising if person also has an effect on the PD constructions, with the more prominent first and second persons being preferred as possessors, and dispreferred as possessees. However, testing this hypothesis would have to involve the use of pronouns for second and first person, which would create a methodological problem.

Recall that Hebrew has another construction that uses the dative, the ethical dative (as described in section 2.1). B&G claim that unlike the PD construction, there are no restrictions on the type of verb that can be used with the ethical dative. Since the PD construction also has an adversity meaning, the two cannot be easily distinguished based on meaning alone. However, B&G propose that the ethical dative is a clitic, and therefore it can only be reduced pronoun, and not a lexical NP.

(34) a. hem kol ha- zman mitxatnim li
they all the time marry to.me
‘They are getting married on me all the time’

b. * hem mitxatnim le- rani kol ha- zman
they marry to Rani all the time
(Intended meaning: ‘They are getting married on Rani all the time’)

(B&G 1986: page 179-180, 9-10)

Thus, when discussing the PD, B&G claim that it is crucial to only use sentences which have full NPs (that is, not pronouns) as possessors, since those cannot be confused with the ethical dative. Therefore, the effect of person cannot be tested without further investigation into ways of distinguishing between the possessive dative and the ethical dative. It will hence not be examined in this paper, and the effect of person will remain an open question for further research. Thus, in the experiment

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15 Dixon’s actual formulation has a different notation, in which the “<” sign means “preceeding on the scale” and therefore points in the opposite direction that that used here. To avoid confusion, I have used the notation previously used in this paper.
described in section 4, person has been controlled for, and all possessors and possessees are full NPs in the third person.

**VS order**

In a Hebrew sentence with an intransitive verb, the basic word order is SV (subject-verb). However, the reverse order, VS (verb-subject) can sometimes be used as well, as shown in (35).

(35) a. *SV order:*

    ha- iparon nafal
    the keys fell
    ‘The pencil fell’

    b. *VS order:*

    nafal ha- iparon
    fell the pencil
    ‘The pencil fell’

Shlonsky (1987) suggests that VS order is available only with unaccusative verbs, and that it too may serve as a diagnostic for unaccusativity. Whether or not this claim is indeed categorically true, it seems that at least some unaccusative verbs do favor VS order more than unergatives do.

What is important for my investigation is that there may be an interaction between VS order and the PD construction. To my knowledge, this claim has not been made explicitly, but according to my own judgment, (36b), with VS order, is better than (36a), with SV order.

(36) a. *ha- maftexot naflu li*

    the keys fell to.me
    ‘My keys fell’

    b. *naflu li ha- maftexot*

    fell to.me the keys
    ‘My keys fell’

The label VS is actually something of a misnomer, since in this order the dative marked possessor appears between the verb and the subject (as shown in (36b)). Therefore, in the VS order the possessor precedes the possessee, as in transitive sentences, whereas in the SV order the possessee precedes the possessor. Such a difference may affect the possibility of using the PD construction, if it is indeed sensitive to the relation between possessor and possessee. However, as this is, strictly
speaking, not a prominence hierarchy effect, this point will not be pursued further in this paper. Rather, in the experiment described in section 4, word order has been controlled for, and only sentences in SV order are considered.

4. The experiment

In order to test the prominence based account outlined in section 3, I conducted an acceptability judgment experiment, designed to evaluate the effect of the relevant factors on acceptability.

4.1. Subjects

41 subjects participated in the experiment. The subjects were all native speakers of Hebrew, currently living in Israel.

4.2. Method

The experiment involved the elicitation of acceptability judgments. Participants received a questionnaire with 120 Hebrew sentences, and were asked to rate each one with respect to how acceptable it is, with 1 being “not something you could say” and 6 being “perfectly okay”. The wording of the instructions made it clear that they were to rate the sentences according to their own intuitions, not the rules of prescriptive grammar (see appendix 3 for a translation of the instructions). Each participant received one of 8 versions of the questionnaire, each of which had exactly the same sentences, but in different random orders.

4.3. Materials

The questionnaire contained 120 sentences, 39 of which were target sentences that contained the possessive dative construction, and the rest were fillers.

The fillers

81 of the sentences were fillers; a ratio of two fillers to one target sentence was chosen to hide the fact that the questionnaire is indeed about the PD construction. The fillers were of two kinds – half of them (40 sentences) featured the dative clitic le in contexts that are unambiguously not the possessive dative (i.e. the goal of a motion
event), and the other half (41 sentences) did not feature the dative clitic at all (though some of them featured possession with the preposition šel). The fillers included both acceptable and unacceptable sentences, as well as many sentences on which my own judgments were unclear – to match the target sentences (of which many, if not most, are neither clearly acceptable nor clearly unacceptable).

The target sentences

The target sentences all featured the dative clitic le in a construction that, if the sentence is acceptable at all, can be understood as a PD. Recall that previous research states that the PD always carries a malefactive reading (Landau 1999). Thus, in an attempt to create natural sounding stimuli, and in order to avoid short sentences with no context, each of the target sentences had two clauses – the first being the PD construction, and the second elaborating on why the first clause had unfortunate consequences. A sample stimulus is shown in (37), and the full list of stimuli appears in appendix I.

(37) ha maxšev met le- inbal ve- hi crixa
the computer died to Inbal and she needs
lešaxzer kama kvcaim
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 animacy of the possessor. In order to reduce the number of conditions, animacy was considered as a binary distinction between humans and inanimates; no non-human animates were included as either possessors or possessees. This resulted in three configurations: a human possessor with a human possessee, a human possessor with an inanimate possessee, and an inanimate possessee with an inanimate possessee. From a theoretical point of view, there could have also been stimuli with a fourth configuration, inanimate possessors and human possessees, but plausible sounding sentences of that kind were hard to find, and were therefore not included. Further factors in which the possessee varied were the number of the possessee (singular vs. plural) and the definiteness of the possessee (definite vs. indefinite).
In order to maintain a manageable number of factors, the definiteness and the number of the possessor were held constant – all possessors were singular and definite (in the case of human possessors, a common Israeli name). Person was also held constant, with all possessors and possessees being third person, and always a full NP (not pronouns), to avoid ambiguity with the ethical dative. An additional factor which was held constant was word order, which was always SV (and not VS, which in the intransitive case might have an effect). The length of the sentences was between 6 and 11 word long (based on Hebrew orthography)\textsuperscript{16}. The number of sentences in each of the conditions is given in appendix 4.

In order to test whether these effects are truly general to the PD construction, and not particular to specific predicates, a large number of predicates were chosen, involving a range of unaccusative, unergative, and transitive verbs. The list of predicates is given in Table 3. Since testing the validity of the PD construction as a diagnostic for unaccusativity is one of the goals of the experiment, it could not, of course, be used for classifying these verbs as unaccusative or unergative. Rather, the predicates were classified into verb type based on the semantic criteria defined in Levin and Rappaport Hovav (1995).

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|}
\hline
Unaccusative & Unergative & Transitive \\
\hline
nafal ‘fall’ & pihek ‘yawn’ & ganav ‘steal’ \\
met ‘die’ & hitrocep ‘run around’ & racax ‘murder’ \\
hitlaxlex ‘get dirty’ & rakad ‘dance’ & daxaf ‘push’ \\
hištana ‘change’ & hištael ‘cough’ & haras ‘destroy’ \\
hitakev ‘get delayed’ & cilcel ‘ring’ & kilkel ‘ruin’ \\
hitkalkel ‘get ruined’ & xarak ‘squeak’ & šavar ‘break’ \\
neheras ‘get destroyed’ & & ibed ‘lose’ \\
hitalef ‘faint’ & & sana ‘hate’ \\
\hline
\end{tabular}
\caption{List of predicates used in the stimuli}
\end{table}

\textsuperscript{16} The stimuli in the appendix may give an impression of greater variance in length. This is because counting was based on Hebrew orthography, which attaches clitics to the word without a space. Thus me-ha-bait (‘from the house’) was counted as one word, as is the norm in Israel.
When possible, the same predicate was used for both animate and inanimate possessees (for example, with \textit{met} ‘die’, and \textit{nafal} ‘fall’). However, some predicates, such as \textit{pihek} ‘yawn’ were possible with only one or the other. This was a particular issue with the unergative verbs, which usually take agents as subjects. In order to allow for non-animate subjects in the unergative case, two unergatives from the sound-emission class of verbs (Levin and Rappaport Hovav 1995) were used: \textit{xarak} (‘squeak’) and \textit{cilcel} (‘ring’).

\textit{Plausibility and Badness rating}

In order to make sure that the subjects were not distracted by the fact that some sentences are more plausible than others, plausibility ratings were also collected for the target sentences. Since native Hebrew speakers were not available in the preparatory stage, the target sentences were all translated into English, with the Israeli names changed to common American names\textsuperscript{17}. The plausibility ratings were gathered via Mechanical Turk, with 30 responses per sentence. Controlling for plausibility across conditions would have been impractical, since it would have constrained the choice of sentences too much (as sentences with human possessors sound more plausible than those with inanimate possessors). Therefore, the plausibility ratings were used as a control in the statistical model.

In addition, adversity ratings were also collected in the preliminary stage. Once again, these were gathered via Mechanical Turk for the English translations of the stimuli, but unlike the plausibility ratings, the subjects were asked to rate how unfortunate the consequences of the event described in the stimulus is. As previously mentioned, PD constructions involve a malefactive reading. Therefore, 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. Once again, controlling for the degree of malefactiveness would have greatly limited the choice of stimuli, since arguably, sentences with a verb like \textit{die} would entail different adversity ratings than sentences with a verb like \textit{fall}. Therefore, the adversity ratings were also used as a control in the statistical model.

\textsuperscript{17} The names were all taken from the top 50 most common names in the US, according to the list in http://names.mongabay.com/male_names.htm and http://names.mongabay.com/female_names.htm
4.4. Predictions

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

(38) Sentence with the PD construction will receive higher ratings when the possessor is more prominent than the possessee

This prediction makes several more specific predictions which can be tested based on the factors which are manipulated in this experiment: the animacy of the possessor and the possessee, the definiteness of the possessee, the number of the possessee and the syntactic role of the possessee.

(39) a. Inanimate possessees will receive higher ratings than animate possessees.
    b. Animate possessors will receive higher ratings than inanimate possessors.
       → The most acceptable configuration is an animate possessor and an inanimate possessee.
    c. Indefinite possessees will receive higher ratings than definite possessees.
    d. Plural possessees will receive higher ratings than singular possessees.
    e. Non-subject possessees will receive higher ratings than subject possessees
       → Transitive verbs are predicted to receive higher ratings than intransitive verbs
          (both unaccusative and unergative)

4.5. Results

B&G’s analysis would predict that all unaccusative and transitive sentences should come out as “good” and all unergative sentences to come out as “bad”. That means that if we were to average over all the ratings for each sentence, we would expect to see the unergatives clustering on the ungrammatical side and the rest clustering on the grammatical side. The results show that that is clearly not the case, and there is a full gradient range in the rankings\(^\text{18}\). As shown in Figure 1, when the sentences are arranged in the order of their average ratings, from the lowest to the highest, the different verb types do not cluster together, and the sentences with unergatives are not consistently lowest, but rather, they outrank many unaccusatives. In fact, if anything, it would

\(^{18}\) The full list of average ratings per sentence appears in appendix 2.
appear that unergative sentences tend to cluster in the “middle”, with unaccusatives exhibiting a wider range of rankings.

![Figure 1: Stimuli sentences ordered by average rating, marked for verb type](image)

On the other hand, if we were to arrange the sentences again from the lowest ranked to highest ranked, but this time mark them for the animacy of the possessor and the possessee, a clearer picture appears, as shown in Figure 2. The sentences with an animate possessor and an inanimate possessee tend to outrank the sentences in which both possessor and possessee are either animate or inanimate.
Due the large number of factors, the experiment could not be designed as a straightforward 2x2 design, and not all combinations of animacy, number, and definiteness occur with each predicate. Therefore, in order to assess the impact of individual factors, I ran a mixed-effects model – a linear regression with random effects – using R’s (R Development Core Team, 2007) `lmer()` function.

**Model 1: All sentences**

As an initial step, all ratings were normalized per subject – that is, for each subject the mean and standard deviation of all 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, unergative or transitive), the animacy of the possessor, the animacy of the possessee, the number of the possessee, the definiteness of the possessee, the badness ratings, the plausibility rating and the length of the sentence. 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 the
effects are not artifacts of specific sentences getting particularly high or low ratings, due to factors which may not have been controlled for. The subject ID and the version of questionnaire given were also originally included as random variables, but since they did not have a statistically significant effect, they were removed from the final model. The model is summarized in Table 4:

<table>
<thead>
<tr>
<th>Fixed variables</th>
<th>Values</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb type</td>
<td>Transitive, unaccusative, unergative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possessee animate</td>
<td>No, yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possessor animate</td>
<td>No, yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possessee number</td>
<td>Plural, singular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possessee definite</td>
<td>No, yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adversity</td>
<td>1-6 (1 is least adverse, 6 is the most adverse)</td>
<td>3.37</td>
<td>1.02</td>
</tr>
<tr>
<td>Plausibility</td>
<td>1-6 (1 is least plausible, 6 is most plausible)</td>
<td>4.14</td>
<td>0.55</td>
</tr>
<tr>
<td>Sentence Length</td>
<td>6-11 words</td>
<td>8.4</td>
<td>1.44</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Random Variables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicate (see Table 3 for list)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item Id (see Appendix 1 for list)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Factors considered for linear regression

The data for the first model includes all the stimuli sentences; the results are shown in Table 5. For each of the non-numeric variables, the \texttt{lmer()} function chooses one

\footnote{The Subject Id did not have a significant effect due the normalization per subject, and was therefore excluded from the final model. (A model without normalizing per subject, but with the subject Id as a random effect, did show the variation between subjects to be significant).}
value as its baseline, based on alphabetical order (the first value given in Table 4 for each variable). Therefore, when considering a variable like ‘verb type’, the baseline was ‘transitive’ (and hence it does not appear in the results table), and the estimate given in the table for each value (that is, ‘unaccusative’ or ‘unergative’) is in comparison with that given baseline. A negative estimate for a specific value means this combination makes for a lower rating than the chosen baseline, and a positive value means that it makes the rating go higher. The statistically significant effects ($P<0.05$) are marked in bold italics.

| Factor          | Value     | Estimate | Std. Error | t value | Pr(>|t|) |
|-----------------|-----------|----------|------------|---------|---------|
| (Intercept)     |           | -1.0262  | 1.253724   | -0.819  | 0.4132  |
| Verb type       | unaccusative | -0.3153  | 0.297306   | -1.061  | 0.2891  |
|                 | unergative | -0.177   | 0.355841   | -0.498  | 0.6189  |
| Possessee animate | yes     | -0.8056  | 0.192415   | -4.187  | 0.000   |
| Possessor animate | yes    | 0.7649   | 0.23218    | 3.294   | 0.001   |
| Possessee number | singular | -0.189   | 0.203296   | -0.93   | 0.3526  |
| Possessee definite | yes   | -0.4277  | 0.359374   | -1.19   | 0.2342  |
| Badness         |           | 0.1784   | 0.10339    | 1.726   | 0.0846  |
| Plausibility    |           | 0.1944   | 0.145564   | 1.335   | 0.1819  |
| Sentence length |           | -0.0034  | 0.082159   | -0.041  | 0.967   |

Table 5: Statistical analysis of all stimuli

As can be observed, two factors came out as significant – the animacy of the possessor and the animacy of the possessee. In both cases, the baseline chosen for the statistical analysis was “no”. Thus, since the value “yes” for the animacy of the possessee has a negative estimate, it means that sentences with animate possesseees had lower ratings. Since the value “yes” for the animacy of the possessor has a positive estimate, it means that sentences with animate possessors had higher ratings. Therefore, the effect of animacy goes in opposite directions in the case of the possessor and the possessee, suggesting that that the best configuration is that of an animate possessor and an inanimate possessee, which maximizes their difference on the animacy hierarchy, as predicted in (39a-b). Furthermore, running an additional linear regression model in which the animacy of the possessor and the possessee are collapsed into one variable (with 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 that in which both are animate \((P<0.001)\).

For the type of verb, “transitive” was chosen as the baseline. Although both of the other values – “unaccusative” and “unergative” – have negative estimates, this is not a significant effect. However, the trend is in the direction predicted in (39e) – with transitives receiving higher rating than either class of intransitives. Therefore, in the next section I try to examine the results in more detail and see whether by examining a subset of the stimuli, a significant difference pertaining to verb type can be observed.

Model 2 – excluding the ‘hate’ predicate

Inspecting the scores of the individual items in the experiment shows that the two sentences with the predicate sana ‘hate’ received overwhelmingly lower ratings than the rest of the transitive stimuli. While the average rating for all the transitive sentences is 4.11, the two sentences featuring sana received 1.39 and 1.55 respectively, and there is a large gap between them and the next lowest transitive sentence (which has an average rating of 3.24). In fact, they are the two lowest ranked sentences in the entire set of stimuli (see appendix 2).

However, the predicate sana is unique in our transitive set not only with respect to its lower ratings; it is the only transitive verb used in the experiment which has an experiencer and not an agent as the thematic role of the subject. Landau (1999) states that the PD construction is impossible with experiencer verbs, which he exemplifies with the contrast in (40); (40a) with the verb raa ‘see’, has an experiencer as the subject and the PD construction is impossible, whereas (40b), with the verb histakel ‘look’, has an agent as the subject, and the PD is construction is acceptable.

\[
(40) \quad \begin{align*}
\text{a.} & \quad \text{*gil- raa le- rina et ha- bait} \\
& \quad \text{Gil saw to Rina ACC the house} \\
& \quad \text{(Intended meaning: ‘Gil saw Rina’s house’)} \\
\text{b.} & \quad \text{gil- histekal le- rina al ha- bait} \\
& \quad \text{Gil looked to Rina on the house} \\
& \quad \text{‘Gil looked at Rina’s house’} \\
& \quad \text{(Landau 1999: page 25, 49)}
\end{align*}
\]
Landau’s analysis of the PD construction treats it as an instance of raising, which is blocked in the case of experiencer verbs, since they lack the appropriate landing site. While the hypothesis in this paper does not link PD with raising, it appears from the results that at least as far as the predicate *sana* goes, his generalization is nevertheless empirically correct, at least in the sense that the PD is strongly dispreferred, if not categorically ruled out. Therefore, in model 2 I examine whether the type of verb has a significant effect, when these two sentences are excluded. The model, shown below, is the same as model 1, except that it does not include the sentences with *sana*.21

| Factor            | Value    | Estimate | Std. Error | t value | Pr(>|t|) |
|-------------------|----------|----------|------------|---------|---------|
| (Intercept)       |          | -0.0130506 | 0.9894228 | -0.013  | 0.9895  |
| *Verb type*       | unaccusative | -0.5827779 | 0.2046128 | -2.848  | 0.0045  |
|                   | unergative | -0.6334082 | 0.2676566 | -2.366  | 0.0181  |
| *Posessee animate*| yes      | -0.6791863 | 0.1635586 | -4.153  | 0.000   |
| *Posesor animate* | yes      | 0.7746815  | 0.1904783 | 4.067   | 0.0001  |
| Posessee number   | singular | 0.0004984  | 0.1613283 | 0.003   | 0.9975  |
| *Posessee definite* | yes      | -0.720766  | 0.2730704 | -2.639  | 0.0084  |
| Badness           |          | 0.0242012  | 0.0799525 | 0.303   | 0.7622  |
| Plausibility      |          | 0.1609157  | 0.1175632 | 1.369   | 0.1713  |
| Sentence length   |          | -0.0002535 | 0.0651069 | -0.004  | 0.9969  |

Table 6: Statistical analysis of all stimuli, excluding *sana* ‘hate’

As in model 1, the effects of both the animacy of the possessor and the animacy of the possessee are highly significant. Unlike model 1, however, we can see that verb type is now a significant factor as well. Both the unaccusative and the unergative sentences have a significant negative estimate – that is, both kinds of intransitive verb

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20 More specifically, Landau (1999) claims that the possessor in the PD construction is generated in the specifier of a DP which is headed by the possessee, and then raises to [spec, VP] – and therefore there is a difference between agentive verbs and experiencer verbs. In the case of experiencer verbs, Landau assumes that the PERCEIVER argument is born in [spec, VP], and hence the possessor cannot raise to it. However, Landau assumes that an external argument (AGENT or CAUSER) is introduced by a designated verbal head v, and therefore in the case of agentive verbs, [spec, VP] is an available landing site.

21 Since in a PD construction with a transitive verb the subject is neither the possessor nor the possessee, it might seem surprising that its semantic role should have an effect if, as I proposed, the acceptability of the construction depends on a relation between the possessor and the possessee. However, as Levin and Rappaport Hovav (2005) point out, the semantic role of the non-experiencer argument of a psych-verb is a topic of debate, and is arguably different than the theme role which the object of an agentive transitive verb has – this is captured in proposed labels such as stimulus (Talmy 1985). If that is the case, the behavior of experiencer verbs can be stated with respect to the semantic role of the possessee, which is compatible with the analysis proposed here (since semantic roles can also be considered as a prominence hierarchy). However, since *sana* was the only experiencer verb included in the experiment, this point will not be pursued further.
types receive lower ratings than the transitive verbs. This does not necessarily mean that the unaccusative and unergative verbs are significantly different from each other in this model. In fact, resetting the baseline of the model to be the unergative verbs, shows that they are not ($P=0.8$).

In addition, in this model, the definiteness of the possessee is a significant predictor, with definite possessees receiving lower ratings than indefinite possessees, as predicted in (39c).

**Model 3 – intransitives only**

Since model 2 showed that the intransitives verbs are significantly different from the transitive verbs, I ran a third model. It is identical to the previous two, except that it examines only the intransitive verbs, and hence allows further exploration of whether sentences with unergative and unaccusative verbs received different ratings.

| 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   |
| Possessee animate | yes       | -0.885408| 0.173154   | -5.113  | 0.0000   |
| Possessor animate | yes       | 0.92826  | 0.236555   | 3.924   | 0.0001   |
| Posessee number   | singular  | -0.190521| 0.185545   | -1.027  | 0.3047   |
| Possessee definite| yes       | -0.956367| 0.365264   | -2.618  | 0.009    |
| Badness           |           | 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   |

Table 7: Statistical analysis of intransitive sentences only

When we examine only the intransitive sentences, the picture appears to be similar to the one in model 2 – the animacy of the possessor and the animacy of the possessee both have significant effects. Once again, when running an additional linear regression model in which the two animacy variables are collapsed into one, sentences in which the possessor is animate and the possessee is inanimate receive significantly higher ratings than either those in which both are animate ($P<0.00001$) or both are animate ($P<0.0001$).

Furthermore, as in model 2, the definiteness of the possessee is a significant predictor as well – definite possessees received lower ratings. Finally, the type of verb
did not come up as a significant predictor – that is, the unergative verbs as a group are not significantly better than the unaccusative verbs.

4.6. Discussion

The results of the ratings experiment show that the availability of the PD construction is a gradient phenomenon, which is affected by several factors. The most important factor found was an effect of animacy, which is significant both in the case of the possessor and the possessee, and works in opposite directions for each of them. Sentences with animate possessors receive higher ratings, and sentences with animate possessees 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. This supports the hypothesis that the preferred PD construction is one in which the possessor in maximally more animate than the possessee.

Out of the other prominence scales considered, several effects were found. First, the results show that indefinite possessees are preferred over definite possessees. In section 3, I suggested that animacy may be only one manifestation of prominence, and that possessors need to be more prominent than possessees on several scales, such as definiteness. Providing evidence for this larger claim would require further study that would show an effect of definiteness for the possessor as well, as was shown for animacy, whereas the definiteness of the possessor was controlled for in this experiment. However, the fact the indefinite possessees are preferred does suggest that an hypothesis along these lines is on the right track. Second, the results show that transitive verbs are ranked higher than intransitive verbs. This also lends support to the hypothesis that less prominent possessees are preferred, since in the intransitive case the possessee is invariably in the subject position (i.e. more prominent on the relational scale) whereas in the transitive case it is not. The last prominence scale examined, number, showed no significant effect in the results.

Finally, the results of the experiments found no significant difference between unaccusative verbs and unergative verbs. This suggests that the data which led to B&G’s original observation can be better explained by the effect of animacy, with no need to assume that unaccusativity plays a role.
5. Conclusion

Much recent work in syntax teaches us 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. This paper adds to this line of research in showing that there are more factors involved in determining the acceptability the PD construction in Hebrew than has been traditionally assumed.

While B&G (1986) state that the grammaticality of the PD construction is determined by the unaccusativity of the verb, the experimental results reported in this paper do not provide any empirical support for that claim. Rather, the results demonstrate several prominence related effects, and in each instance there is a preference to a more prominent possessor, a less prominent possessee, or both. First, the place of both the possessor and the possessee on the animacy scale, was shown to play crucial role. Furthermore, the results show that the definiteness of the possessee and the syntactic role of the possessee have an effect as well.

Although the effects found can account for much of the variability in the acceptability of the PD construction, this work also leaves many open questions for future research. There are other factors, such as distinctions of person and word order, which may affect the acceptability of the PD construction. It is also possible that the verb itself does play a role, and that particular verbs are more likely to appear in this construction. What is clear, however, is that whatever these further effects may be, we are not likely to find any single binary distinction that neatly separates the grammatical instances of the PD from the ungrammatical ones; a convincing account of the PD construction will involve several interacting factors.

While the PD construction is widely used as a diagnostic tool in Hebrew linguistics, there has been little interest in the PD 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. While a specific construction may exhibit different behavior with clear cases of unaccusative and unergative verbs, the distinction may not necessarily depend only on unaccusativity, and the connection to unaccusativity must be thoroughly made for the
construction to be utilized as a diagnostic tool. This paper shows that this critique is equally applicable to the PD construction, and therefore, it cannot be reliably used as a diagnostic for unaccusativity. Nevertheless, this paper shows that there are many interesting factors beyond unaccusativity to explore in the PD construction. Therefore, I hope that this work will draw the spotlight back to the PD construction itself as a focus of research in its own right.
6. References


7. Appendices

7.1. Appendix I: Full list of stimuli

1) **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”

2) **bakbukey ha-** **yain naflu le-** **yosi ve-** **lixlexu et kol ha ricpa**
   bottles the wine fell to Yosi and got.dirty **ACC** all the floor
   “Yossi’s bottles of wine fell and made the floor all dirty”

3) **ha-** **ganan nafal le-** **gadi ve-** **šavar et ha regel**
   the gardener fell to Gadi and broke **ACC** the leg
   “Gadi’s gardener fell and broke his leg”

4) **aley ha-** **koteret-** **naflu la-** **perax**
   leaves the petal fell to.the flower
   az **daní carix liknot zer xadaš**
   so Dani needs to.buy bouquet new
   “The flower’s petals fell off so Dani needed to buy a new bouquet”

5) **ha maxšev met le-** **inbal ve-** **hi crixa lešaxzer kama kvacim**
   the computer died to Inabl and she needs to.recover some files
   “Inbal’s computer died and she needs to recover a few files”

6) **šney banim metu le-** **šula ba-** **milxama**
   two sons died to **Shula in.the war**
   ve- **hi lo hitošěša meaz**
   and she no recover since
   “Two of Shula’s sons died in the war and she hasn’t recovered since”

7) **ha šipucnik met le-** **dafna ve-** **axšav en mi še-** **yaxlif oto**
   the repairmen died to Dafna and now not who that will.replace him
   “Dafna’s repairman died and now no one can replace him”

8) **ha xulca hitlaxlexa le-** **noga**
   the shirt got.dirty to Noga
   ve **axšav hi lo yexola lilboš ota**
   and now she no can to.wear it
   “Noga’s shirt got dirty and now she can’t wear it”

9) **ha yeladim hitlaxlexu le-** **ronit**
   the children got.dirty to Ronit
   ve **axšav hi crixa laasot lahem ambatya**
   and now she needs to.do to.them bath
   “Ronit’s children got dirty and now she needs to give them a bath”

10) **ha cag hitlaxlex la pelefon ve-** **i efšar lenakot oto**
    the screen got.dirty to.the cell.phone and not possible to.clean it
    “The cell phone’s screen got dirty and it can’t be cleaned”

11) **ha luz hištana le-** **eran ve axšav hu asuk meod**
    the schedule changed to Eran and now he busy very
    “Eran’s schedule changed and he’s very busy now”

12) **ha more hištana le-** **xagit ve-** **hem lo mistadrnim yoter**
    the teacher changed to Hagit and they no get.along anymore
    “Hagit’s teacher changed and they don’t get along anymore”
25) Elad’s bed squeaked and he couldn’t fall asleep all night

26) Liat’s cell phone rang but she didn’t have time to answer it

27) Sharon’s student coughed all the time and she was afraid she would become sick

28) Hana’s neighbors danced all night and she couldn’t sleep

29) Michal’s children ran around and made her very tired

30) Dina’s psychologist yawned and she was very offended

31) Adi’s roommate suddenly fainted and Adi got very scared

32) The car’s carburetor got ruined and it will be very expensive to clean it

33) All of Anat’s plans were ruined because of the rain

34) Two of the plane’s engines malfunctioned and it was impossible to take off

35) Shlomit’s car broke down and she was late for work

36) Moran’s guests got delayed and when they arrived the food was cold

37) Eldad’s flight got delayed and he missed an important meeting

38) “Eldad’s flight got delayed and he missed an important meeting”
27) Lital ganva le- uri et ha- klasar ve- hu koes aleha meod
Lital stole to Uri ACC the binder and he mad on her very
“Lital stole Uri’s binder and he’s very mad at her”

28) Orit ganva le- dana et ha- xevar ve- axšav hen lo medabrot
Orit stole to Dana ACC the boyfriend and now they no talk
“Orit stole Dana’s boyfriend and they’re not talking anymore”

29) Lilach ganva le- moti kama etim
Lilach stole to Moti some pens
ve- axšav en lo im ma lixtov
and now not to him with what to write
“Lilach stole a few of Moti’s pens and now he has nothing to write with”

30) Ha- mafyoner racax le- xava et ha- yeled
the mobster murdered to Hava ACC the son
ve- hi lo mafšika livkot
and she no stop to cry
“The mobster murdered Hava’s son and she can’t stop crying”

31) Ha- avaryan daxaf le- dalya et ha- yeladim
the thug pushed to Dalya ACC the children
ve- meaz hi mafšaxedet lacet itam me- ha- bait
and since she scared to leave with them from the house
“The thug pushed Dalya’s children and since then she’s afraid to leave the house with them”

32) Ha- šipucnik haras le- xaim et ha- kir
the repairmen ruined to Haim ACC the wall
ve- yaale harbe kesef letaken oto
and will cost a lot of money to fix it
“The repairmen ruined Haim’s wall and it will cost a lot of money to repair it”

33) Ha- ixur haras le- mixael et ha- toxniot
the delay ruined to Michael ACC the plans
ve- hu carix levatel et ha- tiyul
and he needs to cancel ACC the trip
“The delay ruined Michael’s plans and he needs to cancel his trip”

34) Ha- yeladim kilkelu le- hadas et ha- maxšev
the children ruined to Hadas ACC the computer
ve- hi crixa liknot xadaš
and she needs to buy new
“The children ruined Hadas’s computer and she needs to buy a new one”

35) Ha- texnay kilkel la- maxšev et ha- konan ha- kašiax
the technician ruined to the computer ACC the drive the hard
ve nimxeku hamon kvacim
and were deleted many files
“The technician ruined the computer’s hard drive and many files were deleted”

36) Orli šavra le- oded et ha- pelefon
Orli broke to Oded acc the cell phone
ve- axšav hu carix liknot exad xadaš
and now he needs to buy one new
“Orli broke Oded’s phone and now he needs to buy a new one”

37) Hafila šavra la- pelefon et ha- masax
the fall broke to the cell phone ACC the screen
ve- i efšar letaken oto
and not possible to fix it
“The fall broke the cell phone’s screen and it can’t be fixed”

46
38) Daniela lost to Nadav ACC the book
ve- hu lo yašil la sfarim yoter
and he no will loan to her books anymore
“Daniela lost Nadav’s book and he’s not going to lend her books anymore”

39) Oren hated Meytal ACC the boyfriend
ve- biglal ze hem kimat lo nifgašim
and because this they almost no meet
“Oren hated Meytal’s boyfriend and that’s why they hardly ever meet”

40) Meyrav hated Sholomo ACC the car
ve- hitakša lakaxat et ha- mexonit šela
and insisted to take ACC the car her
“Meyrav hated Sholomo’s car and insisted on taking her own car”

7.2. Appendix II: Average rating per stimulus

The table shows the average raw and normalized rating for each item, arranged from the lowest ranked to the highest ranked (arranged by the non-normalized rating).

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Sentence</th>
<th>Normalized Rating</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Oren hated Meytal’s boyfriend and that’s why they hardly ever meet</td>
<td>-1.272326419</td>
<td>1.390244</td>
</tr>
<tr>
<td>40</td>
<td>Meyrav hated Sholomo’s car and insisted on taking her own car</td>
<td>-1.16144698</td>
<td>1.55</td>
</tr>
<tr>
<td>12</td>
<td>Hagit’s teacher changed and they don’t get along anymore</td>
<td>-1.12079138</td>
<td>1.658537</td>
</tr>
<tr>
<td>3</td>
<td>Gadi’s gardener fell and broke his leg</td>
<td>-0.93595853</td>
<td>1.902439</td>
</tr>
<tr>
<td>18</td>
<td>The car’s carburetor got ruined and it will be very expensive to clean it</td>
<td>-0.828097942</td>
<td>2.170732</td>
</tr>
<tr>
<td>9</td>
<td>Ronit’s children got dirty and now she needs to give them a bath</td>
<td>-0.757484831</td>
<td>2.268293</td>
</tr>
<tr>
<td>23</td>
<td>Hana’s neighbors danced all night and she couldn’t sleep</td>
<td>-0.728365682</td>
<td>2.268293</td>
</tr>
<tr>
<td>14</td>
<td>Moran’s guests got delayed and when they arrived the food was cold</td>
<td>-0.704821018</td>
<td>2.317073</td>
</tr>
<tr>
<td>Serial Number</td>
<td>Sentence</td>
<td>Normalized Rating</td>
<td>Rating</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>---------</td>
</tr>
<tr>
<td>10</td>
<td>“The cell phone’s screen got dirty and it can’t be cleaned”</td>
<td>-0.66793217</td>
<td>2.487805</td>
</tr>
<tr>
<td>7</td>
<td>“Dafna’s repairman died and now no one can replace him”</td>
<td>-0.59615285</td>
<td>2.512195</td>
</tr>
<tr>
<td>22</td>
<td>“Michal’s children ran around and made her very tired”</td>
<td>-0.49233037</td>
<td>2.707317</td>
</tr>
<tr>
<td>21</td>
<td>“Dina’s psychologist yawned and she was very offended”</td>
<td>-0.307287142</td>
<td>3</td>
</tr>
<tr>
<td>26</td>
<td>“Elad’s bed squeaked and he couldn’t fall asleep all night”</td>
<td>-0.284639612</td>
<td>3.02439</td>
</tr>
<tr>
<td>24</td>
<td>“Sharon’s student coughed all the time and she was afraid she would become sick”</td>
<td>-0.276493472</td>
<td>3.1</td>
</tr>
<tr>
<td>20</td>
<td>“Adi’s roommate suddenly fainted and Adi got very scared”</td>
<td>-0.269110256</td>
<td>3.02439</td>
</tr>
<tr>
<td>31</td>
<td>“The thug pushed Dalya’s children and since then she’s afraid to leave the house with them”</td>
<td>-0.232366459</td>
<td>3.219512</td>
</tr>
<tr>
<td>4</td>
<td>“The flower’s petals fell off so Dani needed to buy a new bouquet”</td>
<td>-0.187423298</td>
<td>3.219512</td>
</tr>
<tr>
<td>35</td>
<td>“The technician ruined the computer’s hard drive and many files were deleted”</td>
<td>-0.159552979</td>
<td>3.268293</td>
</tr>
<tr>
<td>37</td>
<td>“The fall broke the cell phone’s screen and it can’t be fixed”</td>
<td>-0.067858739</td>
<td>3.439024</td>
</tr>
<tr>
<td>13</td>
<td>“Eldad’s flight got delayed and he missed an important meeting”</td>
<td>-0.026126701</td>
<td>3.512195</td>
</tr>
<tr>
<td>30</td>
<td>“The mobster murdered Hava’s son and she can’t stop crying”</td>
<td>-0.008756378</td>
<td>3.585366</td>
</tr>
<tr>
<td>25</td>
<td>“Liat’s cell phone rang but she didn’t have time to answer it”</td>
<td>0.035076998</td>
<td>3.609756</td>
</tr>
<tr>
<td>5</td>
<td>“Inbal’s computer died and she needs to recover a few files”</td>
<td>0.065984915</td>
<td>3.756098</td>
</tr>
<tr>
<td>Serial Number</td>
<td>Sentence</td>
<td>Normalized Rating</td>
<td>Rating</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>----------</td>
</tr>
<tr>
<td>11</td>
<td>ha luz hishana le- eran ve axšav hu asuk meod “Eran’s schedule changed and he’s very busy now”</td>
<td>0.121458922</td>
<td>3.756098</td>
</tr>
<tr>
<td>16</td>
<td>shney menomi hitkalkelu la- matos ve- i efšar haya lehamri “Two of the plane’s engines malfunctioned and it was impossible to take off”</td>
<td>0.213568108</td>
<td>3.902439</td>
</tr>
<tr>
<td>15</td>
<td>ha oto hitkalkel le- šlomit ve- hi exara la- avoda “Shlomit’s car broke down and she was late for work”</td>
<td>0.388736828</td>
<td>4.341463</td>
</tr>
<tr>
<td>2</td>
<td>bakbukey ha- yain naflu le- yosi ve- lixlexu et kol ha ricpa “Yossi’s bottles of wine fell and made the floor all dirty”</td>
<td>0.488284462</td>
<td>4.390244</td>
</tr>
<tr>
<td>8</td>
<td>xulca hitlaxlexa le- noga ve axšav hi lo yexola liboš ota “Noga’s shirt got dirty and now she can’t wear it”</td>
<td>0.510695296</td>
<td>4.439024</td>
</tr>
<tr>
<td>1</td>
<td>ha- arnak nafal le- dan ve- hu lo moce oto “Dan’s wallet fell and he can’t find it”</td>
<td>0.59309502</td>
<td>4.634146</td>
</tr>
<tr>
<td>38</td>
<td>daniela ibda le- nadav et ha- sefer ve- hu lo yašil la sfarim yoter “Daniela lost Nadav’s book and he’s not going to lend her books anymore”</td>
<td>0.615338057</td>
<td>4.634146</td>
</tr>
<tr>
<td>33</td>
<td>ha- ixur haras le- mixael et ha- toxniot ve- hu carix legitel et ha- tiyl “The delay ruined Michael’s plans and he needs to cancel his trip”</td>
<td>0.624071499</td>
<td>4.682927</td>
</tr>
<tr>
<td>32</td>
<td>ha- šipucnik haras le- xaim et ha- kir ve- yaale harbe kesef letaken oto “The repairmen ruined Haim’s wall and it will cost a lot of money to repair it”</td>
<td>0.656991225</td>
<td>4.731707</td>
</tr>
<tr>
<td>17</td>
<td>kol ha- toxniot nehersu le- anat biglal ha- gešem “All of Anat’s plans were ruined because of the rain”</td>
<td>0.707840884</td>
<td>4.878049</td>
</tr>
<tr>
<td>6</td>
<td>shney banim metu le- šula ba- milxama ve- hi lo hitošeša meaz “Two of Shula’s sons died in the war and she hasn’t recovered since”</td>
<td>0.770175691</td>
<td>4.95122</td>
</tr>
<tr>
<td>29</td>
<td>lilax ganva le- moti kama etim ve- axšav en lo im ma lixtov “Lilach stole a few of Moti’s pens and now he has nothing to write with”</td>
<td>0.9137489</td>
<td>5.195122</td>
</tr>
<tr>
<td>36</td>
<td>orli šavra le- oded et ha- pelefon ve- axšav hu carix liknot exad xadaš “Orli broke Oded’s phone and now he needs to buy a new one”</td>
<td>1.049845</td>
<td>5.414634</td>
</tr>
<tr>
<td>28</td>
<td>orit ganva le- dana et ha- xaver ve- axšav hen lo medabrot “Orit stole Dana’s boyfriend and they’re not talking anymore”</td>
<td>1.059918061</td>
<td>5.414634</td>
</tr>
<tr>
<td>34</td>
<td>ha- yeladim kilkelu le- hadas et ha- maxšev ve- hi crixa liknot xadaš “The children ruined Hadas’s computer and she needs to buy a new one”</td>
<td>1.091220665</td>
<td>5.487805</td>
</tr>
<tr>
<td>27</td>
<td>lital ganva le- uri et ha- klaser ve- hu koes aleha meod “Lital stole Uri’s binder and he’s very mad at her”</td>
<td>1.144202055</td>
<td>5.585366</td>
</tr>
</tbody>
</table>
7.3. Appendix III: The instructions for the questionnaire

The following is the English translation of the instructions given to the subjects taking the experiment:

In the following questionnaire there are several sentences – some are perfectly acceptable Hebrew sentences and others less so. Please rate each of them from 1 to 6 based on how natural it sounds (with respect to the wording, not to the content).

1 means: “This doesn’t sound at all like a sentence a Hebrew speaker might say”
6 means: “Perfectly okay, I could definitely say it”

Notice two important things:
1. There is no right answer – this is not a test. A sentence like “hu lo yaase et ze šuv paam” (“he will not do it again”\(^{22}\)) may sound okay to some speakers, and bad to other speakers. The question is whether you think you could say it.
2. The question is not how likely the contents of the sentence are. Most speakers of Hebrew would probably rate “xad ha-keren yašav mitaxat la-ec ve-axal glida” (“The unicorn sat under a tree and ate ice cream”) as a 6, although its contents are most likely never going to occur.

\(^{22}\) This sentence uses šuv paam as ‘again’ – a usage which is banned by prescriptive rules of Hebrew and is corrected in schools, although it is very common.
7.4. Appendix IV: Summary of stimuli

The following table summarizes the number of stimuli sentences in each of the conditions.

<table>
<thead>
<tr>
<th></th>
<th>Values</th>
<th>Number of stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb type</td>
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<td>transitive</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>unaccusative</td>
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<tr>
<td></td>
<td>unergative</td>
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<tr>
<td>Possessee animate</td>
<td>no</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>yes</td>
<td>15</td>
</tr>
<tr>
<td>Possessor animate</td>
<td>no</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>yes</td>
<td>33</td>
</tr>
<tr>
<td>Possessee number</td>
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<tr>
<td></td>
<td>singular</td>
<td>12</td>
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<tr>
<td>Possessee definite</td>
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<td>3</td>
</tr>
<tr>
<td></td>
<td>yes</td>
<td>36</td>
</tr>
</tbody>
</table>

Table 8: Summary of stimuli by condition