

Extending partial *pro*-drop in Modern Hebrew: A comprehensive analysis

1 Introduction

The phenomenon of *pro*-drop whereby pronominal arguments may be omitted in particular contexts is well-known and well-studied. Moreover, the notion of the Null Subject Parameter, which presumably distinguishes between those languages which allow unexpressed pronominal subjects (i.e., *pro*-drop languages) and those which do not, is prevalent in the transformational syntax literature. Modern Hebrew (MH) poses a challenge to this bifurcation since it exhibits what is referred to as ‘partial *pro*-drop’, where *pro*-drop is only partially licensed in the language.

Traditionally, the distinction between cases where *pro*-drop is licensed in MH, and those in which it is prohibited, was based on the person and tense features of the verb. This generalization, however, was shown to be empirically false in several papers (Borer 1989, Ariel 1990, Vainikka & Levy 1999, and Gutman 2004), each discussing a subset of the data, from one particular aspect.

In this paper I take a broader perspective by first conducting a comprehensive corpus-based survey¹ of cases in which the traditional distinction fails, followed by a careful syntactic analysis of the data. This process, as I show, reveals broad generalizations which have not been made to date, as well as insights concerning the correlation between the control of unexpressed subjects of infinitival complements and the identification of dropped subjects in finite complement clauses. In addition, this research raises questions regarding the configurational structure of Modern Hebrew.

2 *Pro*-drop in Modern Hebrew

The licensing conditions of null pronominal subjects in MH is often attributed to the person and tense features. Thus, 1st and 2nd person pronominal subjects may be omitted in past and future tense (1). Overt pronouns in this context are used for emphasis or contrastively.

- (1) (ata) **axalta/toxal** tapuax
(you) ate/will-eat.2SM apple
“You ate/will eat an apple.”

Pro-drop is not possible with third person pronominals (2a) and in all cases of present tense, regardless of the agreement properties of the subject (2b).

- (2) a. *(hu) **axal** tapuax
(He) ate.1SM apple
“He ate an apple.”
b. *(ani) **oxel** tapuax
(I) eat.SM apple
“I eat an apple.”

The distinction between the two cases is often ascribed to the “richness” of the morphology. Past and future tense verbs in 1st and 2nd person are morphologically marked for person, number, and gender, while present tense verbs and third person verbs in past and future tense are marked for number and gender, but not for person. Thus, it is the person agreement feature which enables the identification of the dropped subject.

However, despite traditional observations, 3rd person *pro*-drop (3P-PD) is not completely banned from the language.² Sentence (3), taken from the Haaretz corpus, illustrates a number of contexts in which 3P-PD can occur.

¹The Haaretz Corpus, a daily newspaper in Hebrew, is obtainable from The Knowledge Center for Processing Hebrew (<http://mila.cs.technion.ac.il>).

²Note that I do not consider impersonal or non-referential uses of verbs in 3rd person as 3P-PD. A more extensive discussion is included in the full version of the paper.

(3) be-mixtav be-anglit ileget she-**hefits** bekerev kol ha-ovdim ha-zarim hoda
 in-letter in-English broken that-distributed.3SM among all the-workers the-foreigners thanked.3SM
 la-hem beit ha-malon al avodat-am ha-kasha ve-**hodi'a** she-**yirkosh**
 to-them house.M.CS the-hotel for work-POSS.3PM the-hard and-announced.3SM that-will-buy.3SM
 la-hem kartisei tisa le-artsotei-hem mi-kasp-am
 to-them tickets.CS flight to-countries-POSS.3PM from-money-POSS.3PM

“In a letter in broken English which it distributed among all the foreign workers, the hotel management thanked them for their hard work and announced that it will buy them plane tickets to their countries at their own expense.”

First, the verb *hefits* (‘distributed’) heads a non-subject relative clause in which the unexpressed pronominal subject refers to the matrix subject (‘the hotel’). Second, the verb *yirkosh* (‘will purchase’) heads a subordinate clause which functions as the complement of the verb *hodi'a* (‘announced’), which in itself appears to be subjectless.

3 Previous analyses of 3rd person *pro*-drop

The phenomenon of MH *pro*-drop has been discussed in numerous papers. However, as I came to realize, in many papers the existence of 3P-PD is not acknowledged (see, for example, Shlonsky (1997)). In what follows I briefly survey a number of analyses which do address 3P-PD.

Borer (1989), working in the transformational framework, distinguishes between 1st and 2nd *pro*-drop, where she posits that a phonologically empty *pro* occupies the subject position, and 3rd person *pro*-drop, which she claims is realized as an anaphoric AGR. 3P-PD is licensed when the embedded AGR is bound by an NP in a higher clause which assigns reference to the empty subject. Borer supports her claim by drawing parallels between “regular” anaphoric elements and 3P-PD. According to her, both anaphors and anaphoric AGRs cannot be bound by split antecedents. As evidence, she presents the following ungrammatical example, in which the agreement properties marked on the subjectless verb do not match those of either one of the matrix arguments.

(4) *Rina amra le-Ran she-**hiclixu** ba-bxina
 Rina.F said.3SF to-Ran.M that-succeeded.3P in-the-test

“Rina told Ran that they succeeded in the test.” (Borer 1989 ex. 55a)

Vainikka & Levy (1999) draw on the parallel behavior of Hebrew and Finnish with respect to *pro*-drop and propose a unified analysis for the two languages. They distinguish between the referential nature of 1st and 2nd person, on the one hand, and 3rd person on the other, and claim that the distinction has syntactic reflexes. *Pro*-drop is licensed whenever a referent is available. In 1st and 2nd person the referent is in the immediate conversational context; in embedded clauses with 3rd person *pro*-drop the referent is in the matrix clause. While the technical syntactic details proposed by Vainikka & Levy differ from those of Borer’s, as far as I can tell, their empirical coverage is similar. Both analyses predict that 3P-PD is possible in complement clauses, as long as there is a matrix-argument antecedent.

Ariel (1990) takes a different perspective by considering 3P-PD in the context of her Accessibility Theory. Ariel proposes a type of an accessibility hierarchy for each of the factors involved in *pro*-drop. The anaphoric element, which is the verb, may have different degrees of “richness” of agreement marking. Antecedents have different levels of salience, or prominence. Finally, there are varying degrees of cohesion between units in which anaphor and antecedent may appear.

To illustrate the difference between her approach and Borer’s (1989), she provides a counter-example to Borer’s claim regarding the unavailability of split antecedents.

(5) Noga_i bikra et Shimon_j al ma’amaro ha-shovinisti kshe-**nas'u**_{i+j} li-yrushalayim
 Noga.F criticized.3SF ACC Shimon.M on his-article the-chauvinistic when-went.3P to-Jerusalem

“Noga criticized Shimon on his chauvinistic article when they went to Jerusalem.”
 (Ariel 1990, chapter 6, ex. 5a)

Ariel attributes the difference in grammaticality to the type of verb used. Complements of *amar* ('said'), she claims, do not share the same degree of cohesion to the matrix verb than other sentential complements. Ariel, however, overlooks the fact that while sentence (5) does show a grammatical occurrence of split antecedents, its syntactic structure is not identical to (4), since the dropped subject in this case is the subject of an adverbial clause, not a complement clause. This, as I will subsequently show, makes a difference.

Gutman (2004) continues Ariel's line of inquiry by comparing the distribution of null subjects in Hebrew, Finnish, and Rumanian, a typical *pro*-drop language, and testing various salience and cohesion factors. She considers the effect of saliency in terms of grammatical functions, agents vs. non-agents, and animates vs. inanimates, and concludes that MH is less restrictive in the distribution of 3P-PD than Finnish, in that it allows non-subjects, non-agents, and inanimates to act as antecedents to dropped 3rd person subjects. In terms of cohesion, she claims that when the meaning is kept constant there is not observable contrast in MH between subordination and conjunction.

4 Analysis

The starting point of the current analysis is identifying the syntactic constructions which license 3P-PD. A survey of examples cited in the literature as well as "naturalistic" corpus examples reveals four syntactic environments where 3P-PD is licensed: (i) adverbial clauses, (ii) non-subject relative clauses, (iii) complement clauses, and (iv) coordinated constructions. In what follows I will discuss each one in turn.

Adverbial Clauses

Judging from the corpus data, *pro*-drop is the unmarked choice for 3rd person pronominal subjects of adverbial clauses in past or future tense. No 3P-PD was found in present tense. In the majority of the cases the antecedent is the matrix subject, yet antecedents with other grammatical functions were found as well. Sentence (6) is a corpus example of an oblique antecedent. In sentence (5), the antecedent is split between the subject and direct object.

- (6) hu haya yoshev leyad-am_i kol ha-layla kshe-**naflu**_i le-mishkav...
 he was.3SM sit.present.SM next-to-them.3PM all the-night when-fell.3PM to-bed
 "He would sit next to them all night when they were ill..."

The fact that adverbial clauses, which are adjoined to the main clause, constitute an appropriate context for 3P-PD is not surprising in light of Ariel's (1990) prediction regarding the level of cohesion that is required between the unit which hosts the dropped pronoun and that in which the antecedent occurs.³

Relative Clauses

Non-subject relative clauses, too, are able to host 3P-PD. While this construction is not explicitly mentioned in the literature on MH *pro*-drop, a number of examples of it were found in the corpus. One such example is given in (3) and is repeated in abbreviated form in (7).

- (7) be-mixtav she-**hefits**_i bekerev ha-ovdim hoda la-hem beit ha-malon_i...
 in-letter that-distributed.3SM among the-workers thanked.3SM to-them house.M.CS the-hotel...
 "In a letter which it distributed among the workers, the hotel management thanked them..."

Relative clauses, too, function as adjuncts, and thus form cohesive units with the matrix clause. This cohesion is the enabling condition for the antecedent-dropped subject relationship.

Complement Clauses

The case of complement clauses is not as straightforward as the previous ones. This was already hinted at in the discussion of Ariel's analysis, where she singles out a particular lexical item, *amar* ('said'), whose complement clauses form less cohesive units with their matrix clauses. It appears that not all complement clauses are created equal in terms of 3P-PD. A more extensive discussion of verb types and the licensing of 3P-PD in complement clauses is provided in the full version of the paper.

Moreover, although it has been shown that matrix arguments of different grammatical functions can antecede 3P-PD in complement clauses, I have not found a systematic account of antecedent-dropped subject patterns. In

³Note a parallel construction in English: *When asked to Join the party, Bill declined.*

this paper I show that there is a clear connection between control phenomena, which has been discussed extensively in relation to infinitival complements, and the identification of the antecedent of 3P-PD in finite complement clauses.

Many MH verbs which take infinitival VP complements can also take finite clauses as complements. When the subject of the finite clause is unexpressed, its referent is identified with the same matrix argument as in the infinitival case (8a). Furthermore, similarly to English control phenomena, this relationship carries over to denominal verbs as well (8b).

- (8) a. ha-va'ad darash me-ha-ma'asikim_i lashalem/she-**yeshalmu**_i maskerot
 the-union demanded from-the-employers.PM to-pay.INF/that-will-pay.3PM salaries
 "The union demanded from the employers to pay the salaries."
 b. drishat ha-va'ad me-ha-ma'asikim_i lashalem/she-**yeshalmu**_i maskerot
 demand.CS the-union from-the-employers.PM to-pay.INF/that-will-pay.3PM salaries
 "The union's demand from the employers to pay salaries"

Note that since finite verbs in Hebrew are morphologically marked in agreement with their subjects, the form of the verb indicates explicitly which is its antecedent (and can be manipulated to check alternatives). In the full version of the paper I show how Pollard & Sag's (1994) semantic analysis of complement control can be extended to account for the cases of finite complement control (or identification) in MH.

Coordination

Many corpus examples of 3P-PD, as well as constructed examples in the literature, are instances of coordination, where a subjectless verb appears in the second conjunct. Alongside straightforward VP-CONJ-VP strings, there are many cases in which the second conjunct is preceded by an adverbial. Sentences such as (9) are considered by Ariel (1990) and Gutman (2004) as "conjoined sentences" with 3P-PD in the second conjunct.

- (9) hayom noga_i hitxila im shimon u-le-da'ati maxar **tatxil**_i im david
 today Noga.F started.3SF with Shimon.M and-to-my-mind tomorrow will-start.3SF with David.M
 "Today Noga made a pass at Shimon and in my opinion tomorrow she will make a pass at David."
 (Ariel 1990, chapter 6, ex. 6a)

Note that this construction is not amenable to a simple VP-coordination analysis. The clause-initial adverbial *hayom* ('today') has scope only over the first conjunct, as it is contrasted with the adverbial *maxar* ('tomorrow') in the second conjunct. A purely syntactic VP-coordination analysis, then, would have to assume a discontinuous VP constituent.

In fact, discontinuous VPs are widespread in MH, especially in the written register. Consider, for example, the matrix clause of sentence (3), repeated here in abbreviated and slightly modified form as (10). The first conjunct in sentence (10) is an instance of "triggered inversion", where a non-subject dependent (a PP, in this case) appears clause-initially and triggers subject-verb inversion. The result is a VSO word order, where the subject comes between the verb and its complement, thus splitting the VP constituent.

- (10) ba-mixtav hoda/mode la-hem beit ha-malon_i al avodat-am
 in-the-letter thanked/thanks.3SM to-them house.M.CS the-hotel on work-POSS.3PM
 ve-**hodi'a/modi'a**_i she-yirkosh la-hem kartisei tisa
 and-announced/announces.3SM that-will-buy.3SM to-them tickets.CS flight

"In the letter the hotel management thanked/thanks them for their work and announced/announces that it will buy them plane tickets..."

A VP-coordination analysis of this construction entails abandoning the notion of configurationality in MH, a move which is not altogether unlikely considering the relatively free constituent order in the language. A sentential coordination analysis, on the other hand, would require an account of the existence of *pro*-drop with the present tense verb *modi'a* ('announces') in the second conjunct, a clear deviation from the uncontested generalization that *pro*-drop is never possible with present tense verbs. Thus, the evidence points in the direction of the former analysis, yet this requires an account of discontinuous VP-coordination, which is not in the scope of this paper.

A different case of interaction between 3P-PD and coordination is discussed by Ariel (1990).

(11) noga dibra im shimon_i yafe, ve-*(laxen) ya'azor_i la li-sxov et ha-mizvada
Noga.F spoke to Shimon.M nicely and-so will-help.3SM her to-carry ACC the-suitcase

“Noga spoke nicely to Shimon, and (so) he will help her carry the suitcase.” (Ariel 1990, exx. 6c & 6eii)

Unlike the previously mentioned coordinated construction, the dropped subject of the verb in the second conjunct is not identified with the subject of the first conjunct. Rather, it is the indirect object which antecedes the missing subject. Consequently, a VP-coordination analysis is irrelevant. Moreover, as Ariel notes, the adverbial preceding the second conjunct is obligatory. The role of the adverbial in licensing the 3P-PD in this case is creating cohesion between the two coordinated units by explicitly marking that the second clause is a consequence of the first. This is the type of construction referred to by Foley & Van Valin (1984) as ‘cosubordination’.

To summarize, I propose that of all the coordinated constructions only those in which the dropped subject in the second conjunct is identified with an argument other than the subject are true cases of 3P-PD. Moreover, those are the cases where the obligatory occurrence of an adverbial subordinates the second conjunct to the main clause. In contrast, coordinated constructions where the matrix subject antecedes the empty subject in the second conjunct are instances of (discontinuous) VP coordination.

5 Conclusion

Contrary to the traditional description of *pro*-drop in MH, *pro*-drop of 3rd person pronouns does occur. Its distribution, however, is more restricted than that of 1st and 2nd person pronouns. The observation presented here is that 3P-PD occurs freely in adjunct subordinate clauses (i.e., adverbial clauses, relative clauses, and ‘cosubordinated’ clauses) when it is anteceded by a matrix argument antecedent (single or split). Cases which were previously viewed as 3P-PD in conjoined sentences were analyzed here as cases of discontinuous VP-coordination and not *pro*-drop. Consequently, it is proposed that the licensing of this kind of 3P-PD is associated with types of *clausal constructions*. Furthermore, the clausal association confirms Ariel’s (1990) prediction regarding the necessity of cohesion between the units of the antecedent and dropped subject.

More restrictive licensing conditions were found to apply to embedded complement clauses, where the licensing of 3P-PD depends on lexical properties of the embedding verb. Moreover, the identification of the antecedent of the empty subject was found to be correlated with the identification of the controller of parallel constructions with an infinitival complement. Thus, it was proposed that Pollard & Sag’s (1994) analysis of control patterns in the English construction can be extended to provide a unified account of the finite and non-finite MH constructions. Consequently, the licensing of 3P-PD in complement clauses is determined at the lexical level.

Finally, the process of identifying the conditions where 3P-PD is licensed raised a question regarding coordinated construction and discontinuous VPs. This question will remain open for further investigation.

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