

Superfluous *do* and Comparison of Spell-Outs

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1. Introduction

The “dummy” auxiliary *do* is obligatory in English in a number of environments when no other auxiliary is present, including clauses containing sentential negation, questions with subject-auxiliary inversion, clauses whose truth is being emphasized, and VP-ellipsis.

- (1) a. Mary does not like John.
- b. Does Mary like John?
- c. Mary DOES like John. Mary does TOO like John.
- d. Mary likes John, and Sue does too.

In the absence of one of these triggers, and in the presence of another auxiliary, dummy *do* is ungrammatical:

- (2) a. *Mary does like John. [no emphasis on *does*]
- b. *Mary does (not) be happy.

Children acquiring (standard) English sometimes produce utterances like (2a), a phenomenon I dub “superfluous *do*,” which constitute a rare case of a child error due not to omission but to production of an unnecessary element. The purpose of this paper is to document this phenomenon and propose an analysis of it. In particular, two familiar learning puzzles must be addressed. First, Why do children produce utterances that are ungrammatical in their target grammar? Second, How do these children eventually stop producing such utterances, given the usual assumption of no negative evidence? An additional wrinkle to be dealt with is the fact that children generally do not produce errors of the type (2b).

The analysis is based on the account of *do*-support presented in Schütze 2004. The central claim of that approach, assuming Late Insertion, is that *do* is an allomorph of an otherwise phonologically empty Mood head, whose selection is triggered by the presence of an

affix in need of a host word. The claim about acquisition is that children's grammars are adult-like except for the fact that lowering of T to V is not obligatory.

2. Child Data

2.1 Definition of Superfluous *Do*

I define **superfluous *do*** as any production of auxiliary *do* that would be ungrammatical in (modern standard) adult English solely because a main verb should have been inflected instead. The typical environment where this can occur is a nonemphatic positive declarative, as in (2a).¹ Children's superfluous *do* has often been discussed in the context of tense doubling errors, illustrated in (3).

- (3) a. He didn't sang.
b. Did he ate it?

However, such cases do not fit my definition of superfluous *do* because what is wrong with them is not the presence of *do* (these are obligatory *do* contexts), but the presence of a (second) inflection on the main verb. There are also (rarer) cases that seem to display both doubled inflection and *do* in a non-obligatory context, as in (4).

- (4) a. He does likes it.
b. I did made it.

These do not fit my definition of superfluous *do* either, because the presence of *do* is not the *sole* source of ungrammaticality, and I suggest that the underlying cause is plausibly different. Specifically, in (4) it is clear that T(ense) has been combined with the main V(erb), unlike in (2a); what has gone wrong is that T is being pronounced in both its pre- and post-movement positions (i.e., on a copy theory of movement, both copies are being pronounced). Errors like (3) and (4) will not be further discussed in this paper. To anticipate the analysis, what is unique to

¹ In principle there are two other environments that would fit this definition: nonemphatic matrix positive questions (i) and nonemphatic imperatives (ii):

- (i) Who does eat that?
(ii) Do eat that!

Since I am unaware of any data on children's use of superfluous *do* in these environments, my focus shall rest on nonemphatic positive declarative.

the superfluous *do* error in (2a) is that T has not combined with V at all, although it “could have” done so. The rest of this section presents evidence that superfluous *do* as just defined is a feature of the speech of (at least some) children acquiring English.

2.2 Monolingual English Data

2.2.1 Spontaneous production

Several researchers have documented for monolingual English children the spontaneous production of superfluous *do* (Davis 1987, Hollebrandse and Roeper 1996, Zukowski 1996). Examples from one child’s speech are given in (5); Roeper attests that these *dos* were not stressed and the contexts were not emphatic.

- (5) (*Tim 2;11–3;0, Roeper corpus*)
- a. A witch did look like it has slippers.
 - b. I did wear Bea’s helmet
 - c. I do have juice in my cup.
 - d. Who did take this off?
 - e. I did paint this one and I did paint this one...and I did paint this one.
 - f. You did make my bed a little fan.
 - g. And Daddy did say, “I want eat cereal”
 - h. I did paint yellow right here. I did put the brush in. I did paint it.
 - i. A doggie did walk with Dorothy and the doggie did hurt itself. The doggie did hurt on the street.
 - j. She Dorothy did get to Oz.
 - k. A witch did look like it has slippers.

Most researchers have concluded, sometimes on the basis of very dense longitudinal recordings, that the productive superfluous *do* phase is quite short-lived. For example, Zukowski (1996) analyzed Brian MacWhinney’s son Ross’s data in CHILDES and found out from MacWhinney that a stretch of apparently superfluous *dos* were indeed unstressed and noncontrastive; these were concentrated between 2;11.07–3;3.27.

Crucially, these errors are not part of a more general pattern in which *do* is widely overused; that is, examples like (6) are not attested (see also Stromswold 1990).

- (6) *Unattested error types*
- a. #He does ran.
 - b. #He did runs. (Roeper 1991)
 - c. #John doesn’t can play alto-sax. (Hollebrandse and Roeper 1996)
 - d. #He does is.
 - e. #He did was.

Two generalizations emerge here. First, we almost never find mismatches of tense between *do* and an inflected main verb, which indicates that children know how the forms of *do* relate to the underlying morphosyntactic features. Second, *do* does not occur in contexts where an auxiliary/modal should have been the finite verb, cf. (2b).

One potential exception to this pattern, noted by Roeper (1991), involves the infinitival form of *be*, as illustrated in (7).

- (7) a. It does be.
b. Do clowns be a boy or a girl

However, Roeper observes errors such as (8) in the same set of corpora.²

- (8) He bes here.

Thus, it is possible that children who are producing sentences like (7) are doing so because they have misanalyzed *be* as a main verb that does not undergo V-to-T raising and therefore shows the same distribution as, say, *walk*. This is not implausible, in light of the total lack of phonological overlap between the infinitival form *be* and its inflected counterparts—the child may not initially recognize that they are forms of the same verb, and *bes* for them could mean something slightly different from *is*. If this is so, then the aforementioned generalization can be maintained: children overextend *do* only in environments where a main verb should have been finite, not environments where an auxiliary should have been the finite verb.

2.2.2 Experimental elicitation

Researchers have also reported superfluous *do* in elicitation studies. Foley et al. (in prep) reported the examples in (9) from an elicited repetition study.

- (9) a. Model: Barney moves his penny and Ernie does too.
Child: Grober does move his penny and and and Ernie does too. (3;04)
- b. Model: Kermit washes his face and Oscar does too.
Child: Kermit does wash his face and Ostar does too. (3;04)
- c. Model: Ernie touches the ground and Grover does too.
Child: Ernie touch the ground and Grover does touch the ground. (3;08)

² Roeper explicitly predicts, but does not verify, that sentences like (7) and (8) are produced by the same children at the same age. I assume this would turn out to be so.

A potential worry in interpreting these data is that the occurrence of *do* in the model sentence might be priming the child's production of it. Still, we might hope that priming would not be able to induce children to systematically produce structures that are ungrammatical for them.

Thornton (2010) conducted an elicited production study whose goal was to encourage use of VP ellipsis. One of the three children studied, Georgia (2;3.16), produced superfluous *do* just in environments where VP ellipsis would be grammatical for adults; these pre-dated her first actual elisions of VP. Examples are given in (10) and (11).

(10) *Context: Discussion of which family members like goldfish-shaped crackers*

Experimenter: Does your daddy eat goldfish?
 Georgia: No. Only Georgia does eat goldfish.

(11) *Context: Feeding the dog and cat puppets toy food*

Experimenter: I like corn. What about you?
 Georgia: Hmm. Georgia likes corn.
 Experimenter: What about the dog?
 Georgia: He likes corn.
 Experimenter: And what about the cat?
 Georgia: Mmm! She likes corn!
 Experimenter: Everyone likes corn.
 Georgia: Mommy does like corn. And Georgia likes corn. Everybody likes corn.
 And daddy likes corn. Everybody likes corn!

Thornton suggests that Georgia is mastering the environment for licensing VP ellipsis before actually doing the elision.

2.3 Bilingual English Data

2.3.1 English/German

Knipschild (2007) reports data from a child named Joshua (ages 2;4.22–3;1.19), who has both English and German as L1s. Joshua appears to have obligatory V-to-T raising (across *not*) in his English through 2;9.4; in the second half of the recordings, the rate of V-raising declines to under 60%, and shortly before that he starts using superfluous *do* (almost exclusively the form *did*, almost no instances of *do* or *does*). Examples are given in (12).

- | | | | |
|------|----|--|-----------|
| (12) | a. | I did do it in nanny and granddad's garden | (2;9.27) |
| | b. | I did watch it. | (2;10.08) |
| | c. | I did see that. | (2;10.18) |
| | d. | Greedy did want all the food. | (2;11.0) |

His rate of superfluous *do* peaks at about 15%, then declines to 1% by the final session. I suggest that this represents a stage where he is unlearning V-raising, but has not yet mastered T-lowering; superfluous *do* allows him to do neither. See also Tracy (1995). (I cannot rule out the possibility that Joshua has been exposed to superfluous *tun* in German (see §2.4), which means examples like those in (12) could in principle be due to transfer.)

2.3.2 English/Norwegian

Jensvoll (2003) reports data from a child Emilie (age 3;8) who is acquiring both English and Norwegian as L1s. She reports that in elicited answers to questions containing *do*-support (e.g., *What did the boy do yesterday?*) the child frequently used *did* instead of past tense inflection (i.e. superfluous *do*), occasionally used *did* in combination with a past tense main verb (i.e. tense doubling), and almost never used a correct past tense main verb alone. Superfluous *do* responses constitute about 70% of Emilie's non-adultlike responses, while tense doubling errors constitute fewer than 5%. Jensvoll reports, "She did show signs of the fact that she was in the process of learning the *-ed* suffix ... However, it seemed as though she was applying her *did*-construction as a default, because this construction is simpler than marking past tense on the verb itself." (I do not know whether Norwegian ever displays superfluous *do*, so I cannot assess whether transfer might be involved here.)

2.3.3 English/Icelandic

Bohnacker (1999) reports data from the child Katla, who learned Icelandic as her L1 but received mostly English input starting at age 1;3, and eventually behaved as balanced bilingual. An important fact about Icelandic, in contrast to German, is that it has no auxiliary uses of *do* whatsoever (even for VP topicalization), so there are no issues of potential transfer. Unlike Joshua (§2.3.1), Katla shows no transfer of V-raising: her English main verbs always follow negation. From ages 2;4 to 3;0, she uses *do* in 80% of obligatory contexts with negation but in no obligatory contexts for emphasis, Yes/No questions, or (fronted) WH-questions.³ This is unlike her production of *be* and *have*, where omissions occur less than 50% of the time. At 3;0 a change

³ *Do* in negation environments emerging earlier than *do* in other environments may be generally true of (L1) English acquisition. In the past it was often claimed this is because *don't* is an unanalyzed negative marker, i.e. it is not seen as containing *do*; for extensive arguments against this claim see Schütze (2010). Bohnacker also argues against this unanalyzed *don't* approach, in part because Katla is also producing *doesn't* (but not *didn't*).

occurs:⁴ *do* in obligatory non-negative contexts rises to the level of *be* and *have*, and “oversupplied” *do* appears as well. However, Katla never combines *do* with modals, auxiliaries, or the copula, consistent with the generalization in §2.2.1. This progression is detailed in Table 1.

Table 1
Katla’s production of auxiliary *do* as a function of age and context

<i>Age</i>	<i>Instances of Oversupplied do</i>	<i>All instances of auxiliary do</i>	<i>Percentage of dos that are oversupplied</i>
2;0.25–2;9.14	3	?	< 1%
2;10.15–3;0.29	8	81	10%
3;1.10–3;3.11	115	254	45%
3;4.07–3;6.07	6	106	6%
3;7.01–4;7.04	0	?	0%

Bohnacker is aware of the possibility that *do* might be being primed by a preceding adult utterance (particularly if it was a question), but she asserts that “only 12% of Katla’s oversupplied *DO* might arguably [be] copied or repeated from the adult lead question” (p. 61). Oversupplied instances of *do* include all three forms of the verb, as shown in Table 2.

Table 2
Katla’s production of oversupplied *do* (2;10.15–3;6.07)
as a function of the form of *do*

<i>Form of do</i>	<i>Instances</i>	<i>Percentage</i>
<i>do</i> + main V	53	41%
<i>does</i> + main V	14	11%
<i>did</i> + main V	57	44%
Other	5	4%
TOTAL	129	100%

⁴ This is shortly after returning from a month-long trip to Iceland

Table 3 shows that most of the oversupplied *dos* count as superfluous *do* by my definition (the first row); tense-doubled uses are a small minority. She also observes no restriction on the type of verb or subject that occurs with oversupplied *do*.

Table 3
Katla's production of oversupplied *do* (2;10.15–3;6.07)
as a function of the form of the main verb

<i>Form of following verb</i>	<i>Instances</i>	<i>Percentage</i>
Uninflected Main V	115	89%
Irregular Past Main V	11	9%
Affixed Main V (-s, -ed)	3	2%
TOTAL	129	100%

2.4 Other Germanic languages

It has been observed that children acquiring Dutch, German, and Swiss German also overuse (the counterpart of) *do* relative to the prescriptive norms of the adult language. For Dutch, sources include De Haan 1987; Jordens 1990; van Kampen 1997; Wijnen & Verrips 1998; Zuckerman 2001; Hollebrandse & Roeper 1996; Blom & de Korte 2008. For German, see Boser et al. 1992. For Swiss German, see Penner (1992) on Bernese and Schönenberger (2001) on Lucernese. It is unclear to what extent these productions can be considered errors (i.e., non-targetlike), however: although this *tun/doen*-periphrasis is proscribed in the standard languages,⁵ it is widely used colloquially in spoken German (Erb 2001) and Swiss German (Glaser & Frey, Schönenberger & Penner 1995), and in Dutch it is used at least in speech to children and in some dialect regions (Bloom and de Kort 2008). It is therefore unclear whether there are any cases where we can say with certainty that a child produces *tun/doen*-periphrasis spontaneously in these languages, i.e. without ever having heard it in the input. Data from Zuckerman and colleagues (e.g., Bastiaanse et al. 2002) on differences between children in Groningen versus Limburg suggest that input may indeed be a crucial trigger. There are also important differences between adult *tun/doen* and English *do*: there are no environments (other than VP topicalization)

⁵ This situation contrasts with that for English: prescriptivists do not tell English speakers not to overuse *do*, because this is an error that adult native speakers of standard English do not make.

where *tun/doen* are obligatory, and they can never be stressed. Given how different the situation in English is, I will therefore refrain from making any claims about the potential extension of my account to these languages.

3. Background on Adult English

3.1 Early Modern English

Superfluous *do* is attested for English throughout the 16th century and persisted into the 18th (Visser 1969; Warner 1993). Its equivalence to inflected main verb counterparts is indicated by this contemporaneous grammarian's comment: "*I do* is a verbe moche comenly used in our tonge to be put before other verbes, as it is all one to say 'I do speake...' and suche lyke, and 'I speake...'" (Palsgrave 1530). Likewise, contemporary translators would put the periphrastic *do* construction in correspondence with a Latin sentence that gave no indication of emphasis. The point is emphasized by Ellegård (1953): "*do* + the infinitive was functionally synonymous with the finite full verb" (p. 151); he concludes that we can "dispose effectively of any hypothesis that the *do*-form at this time conveyed a special shade of meaning, differentiating it from the simple form. When *do* is practically always used, it cannot fill any such function and is absolutely nothing but a mark of tense" (p. 167). Importantly, the optionality is attested within the production of individual authors.

I conclude from this that there cannot be any "deep" principle of grammar that bars superfluous *do*; to the extent that it is impossible in modern English (on which see §3.2 below), this represents at most a parametric choice. Interestingly, the historical record reports no instances of periphrastic *do* used with *be* or auxiliary *have*. The fact that the same restriction holds for children who are producing superfluous *do* reinforces the idea that children are exercising an option provided by UG.

3.2 Modern English Dialects

The point is further made by work on contemporary regional dialects of English. Superfluous *do* is found currently in Southwestern English English (Klemola 1998), where it is not a habitual marker but is in apparent free variation with inflected main verbs and seems to be compatible with any verb other than *be*. For other modern dialects, there are claimed to be

particular shades of meaning associated with superfluous *do* (e.g. habituality) and/or restrictions on the verb types it can combine with (e.g. eventives but not statives); the situation looks much like what Erb (2001) reports for German dialects: the particulars vary considerably from one dialect to the next, suggesting that they are a response to the availability of alternative forms (*tun*-periphrasis and inflected main verbs) but do not represent inherent grammatical properties of those forms. In other words, a general dispreference for homophony makes it likely that some particular distributional or semantic restrictions will be imposed on one of the variants, but this does not reflect the intrinsic properties of that variant. If so, these modern dialects provide further evidence that superfluous *do* is a legitimate option in UG. And like in Early Modern English and child English, one distributional restriction that is consistent across dialects is that periphrastic *do* does not occur with modals, *be* and auxiliary *have*. That is, examples of the sort in (13) are unattested.

- (13) a. *Do you be feeling all right? (cf. Are you feeling all right?)
 b. *I don't have seen Jane. (cf. I haven't seen Jane.)
 c. *Do you be a singer? (cf. Are you a singer?)
 d. *What does he will buy? (cf. What will he buy?)

3.3 Standard English

In this section I consider whether standard (i.e. non-regional) varieties of English have superfluous *do*. One candidate for this is regularly found in British English in situations where American English would simply use VP ellipsis (cf. Quirk et al. 1985):

- (14) a. Q: Will you be attending the meeting this evening? A: I may **do**.
 b. Q: Has John already left? A: He might have **done**.
 c. Q: Why don't you sit quietly? A: I AM **doing**.⁶
 d. Bob says he is going to join the Labour Party. It will be interesting to see whether he **DOES do**.

The highlighted instances of *do* in (14) are not performing any of the “supportive” functions outlined in §1. However, I claim they do not constitute superfluous uses of *do* by my definition either. The reason is that, as most of the literature agrees, syntactically these are not auxiliary but rather main verb instances of *do*, given its nonfinite forms, its co-occurrence with modals and other auxiliaries, and the fact that it can co-occur with a tensed (auxiliary) *do*, as in (14d).

⁶ Apparently, not all British English speakers are comfortable with this participial use of *do*.

A second candidate for adult superfluous *do* has received much less attention in the literature. I encounter it most often in PA announcements on airline flights, as exemplified in (15):⁷

- (15) a. If you do have your cell phone with you, you may use it at this time.
b. While you're seated we'd like to request that you do keep your seatbelts fastened.
c. If you do have any questions about safety, please ask a flight attendant...
d. We do welcome you aboard.
e. Please do understand...

The *do* in these examples does not seem to receive any pitch accent,⁸ nor does it seem to presuppose that the asserted content is under dispute, which would seem to be a precondition for *verum focus*.⁹ I take it to fall under the description given by Quirk et al. (1985, §18.56) of uses of *do* that are not contrastive but express “emotive emphasis”; their examples are given in (16), where /ʔ/ denotes a fall-rise accent.

- (16) a. He did PRŌMise to go.
b. I did TĒLL you.

Regarding the semantic import of this use, they say that “the speaker (in a style that is sometimes felt to be rather gushing and extravagant) is conveying enthusiasm: a personal conviction about the truth of what is predicated.” (See also Nevalainen & Rissanen 1986.)

Assuming the above is on the right track, we can conclude that children acquiring standard English are not exposed to truly nonemphatic superfluous *do*, and therefore, unlike perhaps all such cases in the acquisition of Dutch, German, and Swiss-German, it represents an

⁷ Heard on two United Airlines flights, 22 June 2010. Thanks to Barbara Partee for originally drawing such cases to my attention.

⁸ In contrast, Banks (1994) claims that flight attendants' speech is characterized by unexpected stress on auxiliaries, including *do*.

⁹ For what it is worth, I have a strong intuition that this phenomenon does not occur in environments where another auxiliary is present that should have been finite, as in (2b). That is, I suspect you will not hear things like the following on your next airplane trip:

- (i) a. We do be here primarily for your safety.
b. We do have begun our final descent.
c. We do will be on the ground shortly.

innovation on their part, and there must be something in their grammars that differs from those of adults. I turn now to exploring what this difference could be.

4. Analysis

4.1 Overview

I propose that the grammar of children producing superfluous *do* is identical in relevant respects to that of Early Modern English speakers (cf. §3.1), i.e. it is a possible grammar under UG, and my analysis will apply to both systems. The essence of the proposal is that T lowering (to V) is optional in these systems, whereas it is obligatory (except when blocked) in adult modern English, and this is the only property that differentiates the languages. I therefore begin with the account of adult modern English. I defer to §4.4 the question of why English children exhibit this optionality, and how they come to be speakers of modern English.

4.2 Account of adult modern English

My account begins with the observation that, as far as inflectional suffixation is concerned, dummy *do* is completely regular. That is, the 3sg present form ends in the regular suffix /-z/ and the past tense form ends in the regular suffix /-d/. *Do* is “special” only inasmuch as it exhibits stem allomorphy: /du/ becomes /dʌ/ in 3sg present contexts (and before the perfect participial suffix /-n/) and /di/ in past tense contexts. Such allomorphy is familiar from other verbs, e.g. /se/ (*say*) becomes /sɛ/ and /hæv/ (*have*) becomes /hæ/ before 3sg /-z/, and many verbs show stem allomorphy in past tense and participle forms. What I conclude from this is that *do* is a stem unto itself, which combines with Tense and therefore cannot itself be a Tense head.

What kind of stem is *do*? I claim in its auxiliary uses it is the same kind of stem as the English modals. These too cannot themselves be realizations of Tense: for one thing, they contribute meanings that are not temporal, but just as importantly we can see that in some cases they combine with Tense just as *do* does. Specifically, *could*, *would*, and *might* can be used as the past tense forms of *can*, *will*, and *may*, respectively, e.g. in sequence of tense contexts; they also end in the past tense suffixes /-d/ and /-t/.

- (17) a. He said he would come, so why isn't he here?
 b. Mary can run a 6-minute mile. When she was younger she could run a 5-minute mile.
 c. He said he might come, but he doesn't seem to be here.

I conclude that the INFL complex must include a head that hosts the stem *do* and the modal stems, all of which can combine with T by suffixation.¹⁰ Following various authors (e.g. Pollock 1997, Roberts 1993, Culicover 1999, Erb 2001) I call this head M, intending to invoke Mood and/or Modality. This unification directly captures the observation that dummy *do* is excluded from all the environments where modals are excluded: VP small clauses, *to*-infinitivals, mandative subjunctives, Mad Magazine sentences, and gerunds.

- (18) a. *I made Mary can walk again.
 b. *I want Mary to can walk again.
 c. *It is vital that Mary can walk again.¹¹
 d. *What?? Mary can walk again??¹² Impossible!!
 e. *Mary canning walk is surprising.

- (19) a. *I made Mary do (not) walk.
 b. *I want Mary to do (not) walk.
 c. *It is vital that Mary do (not) walk.
 d. *What?? Mary do (not) walk?? Impossible!
 e. *Mary doing (not) walk is surprising.

Note that *be* and auxiliary *have* differ from *do* in that they are possible in all of the aforementioned environments. From this we can conclude that they are not M heads. This conclusion is independently desirable because they can co-occur with modals, and although *do* generally does not co-occur with *be* and auxiliary *have*, in imperatives they can be found together.

- (20) a. Do be careful!
 b. Don't be late!
 c. Do have showered before you go to that interview!

I therefore assume that *be* and *have* are always of category V.

¹⁰ 3sg T happens to have the allomorph $-\emptyset$ in the context of a modal, alongside its regular allomorph $/-z/$.

¹¹ Out on the intended reading 'It is vital that Mary be able to walk again.'

¹² Out on the intended irrealis reading 'Mary be able to walk again??'

Having motivated a functional head M that hosts modals and *do* and that is distinct from T, the next issue is where it fits in the overall clausal structure. I propose (21) for finite clauses.¹³

(21) [CP [MP [TP [Σ P [v/VP

The canonical subject position in this structure is Spec-MP; subjects may traverse Spec-TP to check case if there is no Agree. Σ P is the locus of sentential negation and emphatic positive polarity, following Laka (1990). I claim that *do* is the marked allomorph of the M feature complex whose unmarked allomorph is \emptyset , which occurs in nonemphatic, nonnegated declaratives and imperatives, as in the structures in (22). For the sake of concreteness, we can assume that the meaning associated with it is ‘indicative’.¹⁴

- (22) a. C_{-Q} Mary M_{indic} -s like John.
 b. C_{IMP} pro_{2sg} M_{indic} - \emptyset _T sit down!

What conditions this allomorphy? I assume a Late Insertion approach to the syntax–morphology interface, as in Distributed Morphology. I propose that *do* is the allomorph selected in the presence of a morphologically dependent element needing a host. The relevant elements include the INFL affixes (-s and -ed and their allomorphs and present tense non-3sg - \emptyset). Thus, the circumstances in which the *do* allomorph of M_{indic} will surface are those in which T does not get affixed to a main verb, auxiliary, or modal. In adult standard English the circumstances under which this will happen are those in which some element blocks the combination of T with a main verb. I follow Bobaljik (1996) in assuming that T combines with main verbs in English by a head lowering process that requires string adjacency.¹⁵ Elements that do this blocking are thus the class of marked Σ heads (sentential negation, verum focus, and the emphatic positive polarity morphemes *too* and *so*) as well as an overt DP (in the case of a question with subject-auxiliary inversion).

¹³ The M head is either absent or radically empty in nonfinite clauses, which cannot contain modals or *do*, as seen in (18) and (19).

¹⁴ This might seem to be at odds with the claim that this element occurs in questions and imperatives. At least two remedies are possible. First, ‘imperative’ and ‘interrogative’ may be Force heads (in contrast with ‘declarative’) that are compatible with declarative mood. Second, this may simply be the Elsewhere Mood head, underspecified for whatever differentiates these clause types.

¹⁵ In order to account for sentences like *John often sings*, Bobaljik assumes that adverbs are not visible at the point in the derivation when T-lowering applies.

Thus, in adult modern English M_{indic} will be pronounced as \emptyset in the examples in (22), because the T affixes will have lowered onto the following main verb. By contrast, M_{indic} will be pronounced as *do* in the examples in (23), because T lowering to V is blocked.

- (23) a. C_{-Q} Mary M_{indic} -s {not/too/so} like John. *Mary does not/too/so like John.*
 b. $M_{\text{indic}+s+C+Q}$ Mary $t_M t_s$ like John? *Does Mary like John?*

The third scenario to consider is one in which a contentful modal is present: this will be an M head distinct from M_{indic} , therefore *do* cannot be inserted.¹⁶

4.3 Child English (and Early Modern English)

All that we need to add to this system to derive child English and Early Modern English is the possibility that T need not combine with a main verb to its right even when nothing blocks this combination; in other words, T lowering to V is optional. In a clause with no auxiliaries (e.g. (22a)), failure to lower T will leave T as an affix without a host, and *do* will be chosen as the allomorph of M_{indic} automatically.

How do we derive the impossibility, in both child and adult Englishes, of sentences like (13) above? What has gone wrong in these examples is that V has failed to raise to T when it should have. As long as we ensure that V raising to T is obligatory (when possible),¹⁷ such examples will not be generated because T will not lack a host, and there is no problem ensuring this, since by hypothesis V raising to T and T lowering to V are distinct operations. An example is given in (24).

- (24) C_{-Q} Mary M_{indic} be⁺-s (not) t_V sick. *Mary is (not) sick.*

¹⁶ The T affix will have the modal M as a host to its left.

¹⁷ To my knowledge there are no satisfactory proposals for why *be* and auxiliary *have* must raise to T just in case there is no modal present in the clause, but empirically it is clear that this requirement is enforced somehow. Under accounts (such as mine) in which modals are of a category distinct from T, it must be required that T adjoin to M when M is a modal. When that adjunction occurs, T will no longer be available to host V because it has formed a word with M.

4.4 The source of optionality

I now return to the question of why English-acquiring children have the option of not lowering T to V. I claim this is because the obligatoriness of T-lowering can only be enforced by a comparison of derivations, something children have repeatedly been proposed to have difficulties with. This is so because the derivation yielding superfluous *do* converges. In particular, if (22a) is sent to SpellOut in its given form, without T having lowered to V, M_{indic} will be spelled out as *do*, there will be no stranded affixes, and the result will be *Mary does like John*. In other words, I am claiming that whatever drives T lowering to V, it cannot be a requirement for convergence (e.g. a strong feature). This is because the very same T affixes are perfectly happy not lowering in the derivations in (23). Hence, superfluous *do* must be ruled out by the fact that another derivation based on the same numeration blocks it, in other words, a sort of economy constraint. Specifically, I propose a constraint that says that if two convergent derivations based on the same numeration differ in the number of overt morphemes (a.k.a. vocabulary items) needed to spell them out, the derivation using fewer morphemes blocks the one using more morphemes.¹⁸ Analogous principles (without implementational details) have been proposed in this domain before, e.g. Pollock (1989) suggests “Perhaps there is an ‘Avoid Do’ principle in the grammar of Modern English falling under some version of Chomsky’s (1981) ‘Avoid Pronoun’ principle, itself conceivably the by-product of some more general ‘least effort’ principle” (p.420, fn. 49); Emonds (1994) proposes that “The most economic realization of a given deep structure minimizes insertions of free morphemes. (‘Use as few words as possible.’)” (p. 168); see also Zuckerman (2001) and Arnold (1995a, b).

My claim for Early Modern English is that this economy condition is not part of the grammar. My claim for child English is that the condition may well be part of the grammar but it cannot be reliably enforced because comparisons among derivations tax the abilities of the child’s processing system. Such limitations have been proposed in several domains, e.g. in so-called delay of Principle B effects (e.g., Chien and Wexler 1990; Grodzinsky and Reinhart 1993), scalar implicatures (Chierchia, Crain, Guasti, Gualmini, and Meroni 2001; Gualmini, Crain, Meroni, Chierchia and Guasti 2001), and stress shift and focus sets (Reinhart 2004). Thus,

¹⁸ This is plausibly the same constraint whereby synthetic forms tend to block periphrastic ones, e.g. **more smart* is blocked by *smarter*, on the assumption that *more* consists of *mo+ər*, i.e. the comparative suffix plus a stem that constitutes a distinct vocabulary item. (Arnold 1995a also suggests this connection.)

I am proposing the child's grammar does not differ at all from that of the adult; only her ability to implement it does. In contrast, Warner (1993) suggests a learning account: "Children overgeneralize unaccented *do*, and it is surely one of the few cases where frequency makes absence salient, so that an additional restriction [blocking superfluous *do*] could be learned later" (p. 89). He thus appears to assume a sort of indirect negative evidence.

5. Comparison with previous approaches

There have been two notable proposals on how superfluous *do* arises in child English in the previous literature. I summarize them here in order to highlight where I differ from them.

5.1 Hollebrandse & Roeper

Hollebrandse & Roeper (1996) propose that in adult English and for the child, "do-support is a spell-out operation in the phonology and therefore is not [a] syntactic operation of insertion" (p. 265). More specifically, "do-insertion is the spell out of the tense morpheme in phonology and therefore we call it Tense-Spellout... a core feature of grammar, not an exceptional repair strategy." Spelling out Tense as *do* is taken to be easier for the child than a complex combination of head movement and node relabeling operations required by the adult grammar to inflect a main verb. Technically it is more economical, in that it requires fewer syntactic operations. "The *do* is simple because it is a direct spellout of tense. Therefore, the child can recognize it directly and no decomposition of a complex form like *painted* is necessary."¹⁹

Putting aside the technical details of their node relabeling operation, the gist seems to be that producing *do* is an alternative to the adult way of expressing INFL features (by affixation on a main verb), and the child produces *do* using a rule that adults also use. At that level of abstraction, I concur. However, I have argued that *do* and Tense must be separate elements that receive separate spell-outs, so in my system *do* facilitates the spell-out of Tense but does not constitute it. Also, it is left unstated in the proposal how the child comes to favor a less economical option over a more economical one in acquiring the adult system.

¹⁹ I am not certain what is meant by "decomposition" here; it seems to suggest that difficulties in analyzing the input are being invoked.

5.2 Van Kampen

Van Kampen (1997) makes the following proposal: “Let us assume that in child language *do*-insertion is free in all <+fin> tense positions...More precisely, let us assume that in English child language children insert finite auxiliaries directly in the I⁰ position...The learning task for the English children will now consist in narrowing down the superset of *do*-insertions to a subset.” The way this should happen is that they should discover that “any string adjacency of *do* and its dependent lexical verb...should result in a deletion of *do* at PF.” She proposes that what must be learned is a “restructuring rule” that combines I and V into a “compound” under string adjacency.²⁰ The rule is inspired by Ross’s (1972) “*do*-gobbling” rule. It is part of adult English grammars.²¹ The compounding rule is used in order to avoid the need for a lowering rule. Presumably there is a stage in acquisition when this rule is being applied optionally, and one may wonder whether this approach predicts a stage before the rule is acquired when use of *do* would be obligatory (such a stage has not been documented). One may also want to know how the child comes to posit free insertion of *do* in the first place.

Putting technicalities aside, the gist seems to be that children produce superfluous *do* because they are not combining INFL with main verbs the way the adult grammar requires: “I propose that *do* is used by the Language Acquisition Device [for Dutch and English] as a temporary ‘least effort’ solution in order to avoid movement” (p. 49). At this level of abstraction, I agree. However, I do not posit in the child’s grammar any properties of *do* that differ from those in the adult language, and I assume that the process by which INFL combines with a main verb is movement, not restructuring/compounding. I also do not rely on children to make any discovery in order to arrive at the adult system.

²⁰ Evers and van Kampen (1995), who describe the same proposal, note the apparent problem that adverbs can intervene between the positions of I and V, e.g. *John often sings*. They propose that this is consistent with their compounding approach because the adverbs in question are simple heads, and hence can form a complex head I+Adv+V. A second apparent problem they note is that if *do*-insertion is free, nothing seems to prevent generation of strings like *John does not be happy*, where negation presumably blocks the compounding rule. They suggest it is a selectional property of *do* that it cannot take auxiliaries as complements. (This would have to involve NEG being transparent to selection.) But that is not consistent with the behavior of *do* in imperatives, where we find *Do not be late!*

²¹ Evers & van Kampen (1995) make a further claim: “Suppose that the string adjacency of verbal-like elements in an extended projection *invariably* leads to a restructuring in a syntactic compound” (p. 34; emphasis added). It sounds as if they might intend this to be a universal principle.

6. Concluding remarks

My proposal for children's production of superfluous *do* is that their grammar is identical to the adult grammar of (modern) English, but that the latter includes an economy condition requiring comparison of derivations, and children cannot reliably carry out this comparison. This economy condition is apparently not universal, inasmuch as it was not active in Early Modern English, which also allowed free use of finite *do* as an alternative to inflecting main verbs. However, I assume that the general form of the condition—a preference for fewer overt morphemes in spelling out the result of a given numeration—is made available by UG; perhaps its applicability to particular morphemes must be learned, and I have not addressed how this is accomplished. (In this respect my proposal seems no worse off than its predecessors.) The key to facilitating an analysis in terms of this economy condition has been the proposal that sentences with *do* and counterparts with inflection on the main verb do not differ in their numerations. This in turn has been made possible by an analysis on which *do* is the realization of a functional head (M) distinct from Tense and is in an allomorph relationship with a phonologically null version of that head.

References

- Arnold, Mark D. (1995a). *Case, Periphrastic do and the Loss of Verb Movement in English*. Ph.D. dissertation, University of Maryland.
- Arnold, Mark D. (1995b). Notions of economy in language change: The spread of periphrastic 'do'. In *Proceedings of the North East Linguistic Society 25, Volume two: Papers from the workshops on language acquisition and language change*, ed. Jill N. Beckman, 121–134. Amherst, MA: GLSA.
- Banks, Stephen P. (1994). Performing public announcements: The case of flight attendants' work discourse. *Text and Performance Quarterly* 14, 253–267.
- Bastiaanse, Roelien, Gerard Bol, Sofie van Mol & Shalom Zuckerman (2002). Verb movement and finiteness in language impairment and language development. In *Clinical linguistics: Theory and applications in speech pathology and therapy*, ed. Elisabetta Fava, pp. 119–130. Amsterdam: John Benjamins.
- Blom, Elma [W. B. T.] (2003). *From root infinitive to finite sentence: The acquisition of verbal inflections and auxiliaries*. Ph.D. dissertation, Universiteit Utrecht.
- Blom, Elma & Siebe de Korte (2008). De verwerving van het Nederlands: dummies en Verb Second. *Nederlandse Taalkunde* 13, 133–159.
- Bobaljik, Jonathan David, 1994. What does adjacency do? In: Heidi Harley and Colin Phillips (eds.), *The morphology-syntax connection, MIT Working Papers in Linguistics* 22, 1–31.
- Bohnacker, Ute (1999). Children, tense and auxiliary *do*. *Newcastle and Durham Working Papers in Linguistics* 5, 41–74.
- Boser, Katharina, Barbara Lust, Lynn Santelmann & John Whitman (1992). The syntax of CP and V-2 in Early Child German (ECG): The Strong Continuity Hypothesis. In Kimberly Broderick (ed.), *Proceedings of NELS* 22, 51–66. Amherst, MA: GLSA.
- Chien, Yu-Chin, and Wexler, Kenneth (1990). 'Children's Knowledge of Locality Conditions in Binding as Evidence for the Modularity of Syntax and Pragmatics', *Language Acquisition* 1: 225–295.
- Chierchia, Gennaro, Crain, Stephen, Guasti, Maria Teresa, Gualmini, Andrea, and Meroni, Luisa (2001). 'The Acquisition of Disjunction: Evidence for a Grammatical View of Scalar Implicatures', in Anna H.-J. Do, Laura Domínguez and Aimee Johansen (eds.), *The Proceedings of the 25th Annual Boston University Conference on Language Development*. Somerville, MA: Cascadilla Press, 157–168.
- Cornips, Leonie (1998). Habitual *doen* in Heerlen Dutch. In *DO in English, Dutch and German: History and present-day variation*, ed. Ingrid Tieken-Boon van Ostade, Marijke van der Wal & Arjan van Leuvensteijn, pp. 83–101. Münster: Nodus Publikationen.
- Culicover, Peter W. (1999). *Syntactic nuts: Hard cases, syntactic theory, and language acquisition*. Oxford: Oxford University Press.
- Davis, Henry Thomas (1987). *The acquisition of the English auxiliary system and its relation to linguistic theory*. Ph.D. dissertation, University of British Columbia.
- Ellegård, Alvar (1953). *The auxiliary 'do': The establishment and regulation of its use in English*. Stockholm: Almqvist & Wiksell.
- Emonds, Joseph (1970). *Root and structure-preserving transformations*. Unpublished Ph.D. dissertation, MIT.
- Emonds, Joseph E. (1994). Two principles of economy. In: G. Cinque, J. Koster, J.-Y. Pollock, L. Rizzi & R. Zanuttini (eds.), *Paths towards universal grammar*, 155–172. Washington, D.C.: Georgetown University Press.

- Erb, Marie Christine (1995). *Eine Theorie expletiver Verben: Die tun-Periphrase im Deutschen*. M.A. thesis, Universität Frankfurt am Main.
- Erb, Marie Christine (2001). *Finite auxiliaries in German*. Ph.D. dissertation, Katholieke Universiteit Brabant.
- Evers, Arnold & Jacqueline van Kampen (1995). *Do*-insertion and LF in child language. In *OTS Yearbook 1994*, ed. Jan Don, Bert Schouten & Wim Zonneveld, pp. 25–41. Utrecht: Research Institute for Language and Speech, Utrecht University.
- Foley, Claire, Julie Pactovis & Barbara Lust (in prep). Links between LF and PF: New evidence from first language acquisition of VP Ellipsis. Ms., Cornell.
- Glaser, Elvira & Natascha Frey (2006). Doubling phenomena in Swiss German dialects. Paper presented at Workshop on Syntactic Doubling, Amsterdam, March 2006. [Downloadable from <http://www.dialectsyntax.org/>]
- Grodzinsky, Yosef, and Reinhart, Tanya (1993). ‘The Innateness of Binding and Coreference’, *Linguistic Inquiry* 24: 69–101.
- Gualmini, Andrea, Crain, Stephen, Meroni, Luisa, Chierchia, Gennaro, and Guasti, Maria Teresa (2001). ‘At the Semantics/Pragmatics Interface in Child Language’, in Rachel Hastings, Brendan Jackson, and Zsófia Zvolenszky (eds.), *Proceedings of SALT XI*. Ithaca, NY: CLC Publications, 231–247.
- Haan, Ger J. de (1987). A theory-bound approach to the acquisition of verb placement in Dutch. In *Formal Parameters of Generative Grammar: OTS Yearbook III*, ed. Ger de Haan & Wim Zonneveld, pp. 15–30. University of Utrecht.
- Hollebrandse, Bart and Thomas Roeper (1996). The concept of *DO*-insertion and the theory of INFL in acquisition. In: Charlotte Koster and Frank Wijnen (eds.), *Proceedings of the Groningen Assembly on Language Acquisition held at the University of Groningen, 7–9 September 1995*, 261–271. Groningen, The Netherlands: Centre for Language and Cognition.
- Jensvoll, Maja (2003). The acquisition of past tense in English/Norwegian bilingual children: Single versus dual mechanisms. In *Proceedings of the 19th Scandinavian Conference of Linguistics: Acquisition*, ed. Anne Dahl, Peter Svenonius & Marit Richardsen Westergaard. *Nordlyd* 31, 545–557.
- Jordens, Peter (1990). The acquisition of verb placement in Dutch and German. *Linguistics* 28, 1407–1448.
- Kampen, Jacqueline van (1997). *First steps in Wh-movement*. Doctoral dissertation, Universiteit Utrecht.
- Klemola, Juhani (1998). Semantics of *DO* in South-Western dialects of English. In *DO in English, Dutch and German: History and present-day variation*, ed. Ingrid Tieken-Boon van Ostade, Marijke van der Wal & Arjan van Leuvensteijn, 25–51. Münster: Nodus Publikationen.
- Knipschild, Bettina (2007). *Verb placement, DO-insertion and object shift: A case study of a bilingual German/English child*. Ph.D. dissertation, University of Essex.
- Kortmann, Bernd (2004). *Do* as a tense and aspect marker in varieties of English. In *Dialectology meets typology: Dialect grammar from a cross-linguistic perspective*, ed. Bernd Kortmann, 245–275. Berlin: Mouton de Gruyter.
- Nevalainen, Terttu and Matti Rissanen (1986). Do you support the *do*-support? Emphatic and non-emphatic *do* in affirmative statements in present-day spoken English. In: Sven Jacobson (ed.), *Papers from the Third Scandinavian Symposium on Syntactic Variation*, 35–50. Stockholm: Almqvist and Wiksell.

- Palsgrave, John (1530). *L'esclaircissement de la langue françoise*. François P. Génin (ed.), Paris: Imprimerie Nationale, 1852.
- Penner, Zvi (1992). The ban on parameter resetting, default mechanisms, and the acquisition of V2 in Bernese Swiss German. In *The acquisition of verb placement: Functional categories and V2 phenomena in language acquisition*, ed. Jürgen M. Meisel, 245–281. Dordrecht: Kluwer.
- Pollock, Jean-Yves (1989). Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20, 365–424.
- Pollock, Jean-Yves (1997). Notes on clause structure. In *Elements of grammar: Handbook in generative syntax*, ed. Liliane Haegeman, pp. 237–279. Dordrecht: Kluwer.
- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech and Jan Svartvik (1985). *A comprehensive grammar of the English language*. London: Longman.
- Reinhart, Tanya (2004). 'The Processing Cost of Reference Set Computation: Acquisition of Stress Shift and Focus', *Language Acquisition* 12: 109–155.
- Roberts, Ian G. (1993). *Verbs and diachronic syntax: A comparative history of English and French*. Dordrecht: Kluwer.
- Roeper, Thomas (1991). How a marked parameter is chosen: Adverbs and do-insertion in the IP of child grammar. In *Papers in the acquisition of WH: Proceedings of the University of Massachusetts Roundtable, May 1990*, ed. Thomas L. Maxfield & Bernadette Plunkett, pp. 175–202. University of Massachusetts Occasional Papers Special Edition.
- Roeper, Thomas (1999). Universal bilingualism. *Bilingualism: Language and Cognition* 2, 169–186.
- Schönenberger, Manuela (2001). *Embedded V-to-C in child grammar: The acquisition of verb placement in Swiss German*. Dordrecht: Kluwer.
- Schönenberger, Manuela & Zvi Penner (1995). Probing Swiss-German clause structure by means of the placement of verbal expletives: *Tun* "do" insertion and verb doubling. In *Topics in Swiss German syntax*, ed. Zvi Penner, pp. 291–330. Bern: Peter Lang.
- Schütze, Carson T. (2004). Synchronic and diachronic microvariation in English *do*. *Lingua* 114, 495–516.
- Schütze, Carson T. (2010). The status of nonagreeing *don't* and theories of root infinitives. *Language Acquisition* 17, 235–271.
- Thornton, Rosalind (2010). Verb phrase ellipsis in children's answers to questions. *Language Learning and Development* 6, 1–31.
- Tracy, Rosemarie. (1995). *Child languages in contact: The simultaneous acquisition of two languages (English/German) in early childhood*. Habilitationsschrift, Universität Tübingen.
- Visser, Fredericus Theodorus (1969). *An historical syntax of the English language. Part three, first half: Syntactical units with two verbs*. Leiden: E.J. Brill.
- Warner, Anthony R. (1993). *English auxiliaries: Structure and history*. Cambridge: Cambridge University Press.
- Wijnen, Frank & Maaike Verrips (1998). The acquisition of Dutch syntax. In *The acquisition of Dutch*, ed. Steven Gillis & Annick de Houwer, pp. 223–299. Amsterdam: John Benjamins.
- Zuckerman, Shalom (2001). *The acquisition of "optional" movement*. Doctoral dissertation, Rijksuniversiteit Groningen.

- Zuckerman, Shalom, Roelien Bastiaanse & Ron van Zonneveld (2000). Auxiliary insertion in child Dutch. In *WCCFL 19: Proceedings of the 19th West Coast Conference on Formal Linguistics*, ed. Roger Billerey & Brook Danielle Lillehaugen, pp. 631–644. Somerville, MA: Cascadilla Press.
- Zukowski, Andrea (1996). Auxiliary auxiliaries: Spare parts in early speech. Ms., Boston University.