RECIPES IN MALAGASY AND OTHER LANGUAGES[*]

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This paper looks at null arguments in recipe contexts. While much of the literature has focused on English and the availability of null definite patients, this paper shows that null agents and null patients are possible in recipes in a range of languages, including Malagasy, Niuean and Tagalog. It is argued that null agents in recipes arise due to a variety of syntactic strategies, but null patients are licensed via a null topic in all the languages considered.

1.   Introduction

Null arguments are a common feature of recipes, as long noted in the literature. In (1) below, there is no overt agent for any of the verbs and the verbs *cut* and *add* are missing their patient argument.

(1)   ø$_{agent}$ Take 2 carrots. ø$_{agent}$ Cut ø$_{patient}$ finely, before ø$_{agent}$ adding ø$_{patient}$ to potato mixture.

The literature on recipes has typically focused on the phenomenon of null definite patients, perhaps because these are otherwise ungrammatical in English (e.g. Haegeman 1987a,b, Massam & Roberge 1989, Massam 1992, Cote 1996, Culy 1996, Bender 1999, Ruppenhofer & Michaelis 2010, Ruda 2014, Weir 2017). But as just noted, null agents are also found in recipe contexts. In this paper, we show that null agents and patients are a feature of recipes in a range of typologically and genetically diverse languages. The agent corresponds to the addressee or the person following the recipe. The patient is what we will call the object of manipulation (Massam et al. 2017), which is the entity being acted upon, that undergoes changes throughout the creative process. Although the literature tends to refer to null subjects and null objects, we will adopt the terms "agent" and "patient" for reasons that will soon be apparent. We focus here on recipes and will be using the term "recipe context". Whether our results extend to other instructional contexts, such as bottle labels (Sadock 1974), or to other reduced written registers such as diaries (Weir 2017, Haegeman 2017, 2019), remains a topic for future research, although we note that the creative aspect of recipes makes them distinct from these other contexts.

Our working hypothesis is that the recipe register does not encode particular syntactic properties but has pragmatic desiderata.[1] Languages can satisfy these desiderata in different ways. In other words, register does not dictate syntax directly and as a result there is no universal recipe syntax. Two questions arise: First, how do different languages meet these desiderata? Second, how

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[1] Following many others (see references), we use the term "register" rather than "genre". Nothing crucial hinges on this terminology, however. See Ferguson (1994) for a discussion of these terms.

is the relation between register and syntax mediated? In this paper, we address the first question, drawing on cross-linguistic data, with a focus on Malagasy and Niuean. In section 2, we examine null arguments in Malagasy recipes in detail. Section 3 then provides an overview of null agents and null patients in recipes from a range of languages. We look more carefully at null patients in section 4 and then conclude in section 5.

2.   Malagasy

Malagasy is an Austronesian language spoken in Madagascar (and in the diaspora) by over 25 million people. The basic word order is VOS. Important for this talk is what we will call the voice system, which serves to advance one argument to the clause-final position. This position has many different labels in the literature (e.g. subject, topic, trigger), but for the purposes of this talk, we follow Pearson (2005) and call this position the "topic". In the examples below, the topic is underlined.[2]

(2) a. Nividy   akoho   <u>i   Bao.</u>
         PST.AT.buy chicken   DET Bao
         'Bao bought a chicken.'

   b. Novidin' i   Bao   <u>ny akoho.</u>
       PST.TT.buy DET   Bao   DET chicken
       'The chicken was bought by Bao.'

   c. Nividianan' i   Bao   akoho   <u>i   Soa</u>.
       PST.CT.buy DET   Bao   chicken   DET Soa
       'Soa was bought a chicken by Bao.'   (Potsdam and Polinsky 2007:278)

In Actor Topic clauses, as in (2a), the agent (or highest argument) is the topic. In Theme Topic clauses, the topic is a patient, as illustrated in (2b). Finally, there is what is called Circumstantial Topic, where some other element is the topic. In (2c), the topic is a benefactive. We note that there are other voices, such as the "a-passive" or "intermediary" voice (Keenan 1976, Paul 2000), as shown in (3). The topic of these clauses is the patient of some ditransitive verbs or the location of verbs like *asiana* 'put'.

(3)   Asiana   voninkazo <u>ny latabatra   fiasako</u>.
         APASS.put flower   DET table   NMLZ.make.1SG
         'The flowers are placed on my worktable.'

Note that the agent of non-Actor Topic verbs appears either as a genitive phrase, right adjacent to the predicate, as in (2b, c) or is omitted, as in (3). All of these aspects of the voice system will be important in what follows.

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[2] Unless otherwise indicated, data come from our own fieldnotes. Glossing follows the Leipzig Glossing Conventions (https://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf), with the following additions: APASS, a-passive; AT, actor topic; C, common; CON, conclusive; CT, circumstantial topic; EMPH, emphatic; GT, goal topic; TT, theme topic; PERF, perfect.

2.1. Malagasy Recipes

Like English, Malagasy has null agents and null patients in recipes. We see in (4) below that neither verb has an overt agent and that the verb *arotsaka* 'pour' is missing its patient.

(4) a. Sasana ∅_{agent}   <u>ny vary</u>…
    TT.wash   DET rice
    'Wash the rice ...'

   b. … ary   arotsaka ∅_{agent} ao   anaty vilany ∅_{patient}
       and   APASS.pour   there in   pot
       '… and pour into pot.'   (Boissard 1983:31)

We note here that Malagasy recipes do not use the imperative (unlike English). Malagasy has overt imperative morphology: the imperative forms would be *sasao* 'be washed!' and *arotsahy* 'be poured!', respectively. Moreover, Malagasy lacks a dedicated infinitive form, so we assume these verbs are not infinitives. Instead, what is striking about the verbal morphology in recipes is that it is typically non-Actor Topic, whether Theme Topic, or a-passive (see Keenan and Manorohanta 2001 for a discussion of the prevalence of non-Actor Topic forms in Malagasy texts). The question that now arises is how null agents and null patients are licensed in recipe contexts in Malagasy.

2.2. Null Agents

As noted above (see example (3)), null agents are always possible with non-Actor Topic verbs (much like agents in English passive). We can see a null agent in the example below, where the verb *hosorana* 'smear' is Theme Topic.

(5)   Hosorana ∅_{agent}   lakomadina   <u>ny volo</u>.
       FUT.TT.smear   pomade   DET hair
       'The hair will be smeared with pomade.'   (Rajemisa-Raolison 1971:105)

Much like null agents in English passives, the null agent here is interpreted as indefinite (someone smeared pomade on the hair). Given that most verbs in Malagasy recipes are in the non-Actor Topic form, null agents will always be possible. No special licensing conditions are required.

2.3. Null Patients

As just noted, most verbs in recipes are in non-Actor Topic forms, and mainly Theme Topic. Recall that when the verb is Theme Topic, the patient is in the topic position. We illustrate with the example in (4), repeated here as (6). In (6a), the verb *sasana* is Theme Topic and the patient, *ny vary* 'the rice' is the topic. In the subsequent clause (6b), the verb is in the a-passive form, so the topic corresponds to the patient, which is null.

(6) a. Sasana ∅_{agent}   <u>ny vary</u>…
    TT.wash   DET rice
    'Wash the rice ...'

b.   …   ary   arotsaka ø~agent~ ao   anaty   vilany ø~patient~
        and   APASS.pour   there   in   pot
     '… and pour into pot.'   (Boissard 1983:31)

We argue here that null patients arise due to topic-drop, an independently available phenomenon in the language.

   Topic-drop has been widely discussed in the Malagasy literature (Keenan 1976, Randriamasimanana 1986, Potsdam and Polinsky 2007). We provide an example in (7).

(7)   Manantena   <u>Rabe</u>~i~ fa   hividy   fiara ø~i~
      AT.hope   Rabe COMP   FUT.AT.buy   car
      'Rabe hopes to buy a car.'   (Potsdam and Polinsky 2007:277)

Potsdam and Polinsky (2007) argue that the null argument in (7) is *pro* rather than PRO. They propose that *pro* is licensed in Spec, TopP by Top° and that *pro* is identified via coindexation with the current discourse topic (*Rabe* in (7)). Topic-drop can be found in written texts, such as folk tales. In (8), for example, there is a null topic and the antecedent is in the main clause, *peratra ity* 'this ring'. Note here that *tehirizo* 'keep' is in the Theme Topic form and therefore the topic is the missing patient.

(8)   Dia   omeko   <u>peratra ity</u> ianao, ka   tehirizo   tsara ø …
      then   TT.give.1SG   ring   DEM 2SG   COMP TT.keep.IMP   good
      'I am giving you this ring, so keep (it) safe...'   (Ravololomanga 1996)

In other examples, the antecedent is not present in the immediate sentence, but can be retrieved from the discourse contexts. For example, in (9a) the antecedent is a carpet and in (9b) it is a man.

(9) a.   Mba nodinihiny ø   kely indray,   ka   gaga   izy
         EMPH PST.TT.observe.3   little again,   COMP   surprised   3
         'She examined (it = a carpet) again a little and was surprised.'   (Ravololomanga 1996)

   b.   Handeha   ianareo   vahoaka, mitondra   lefona,   dia   vonoy ø eo!
        FUT.AT.go 2PL   people   AT.carry.IMP   spear   COMP   TT.kill.IMP there
        'Go, my people, take spears and kill (him) there.'   (Ravololomanga 1996)

   Similar facts hold in recipes: the antecedent is always the current discourse topic, whether linguistically present or implicit. In (10a), for example, the antecedent to the null topic in the second clause is the topic of the first clause, *ny hena* 'the meat'. In (10b), there is a null topic in the first clause that corresponds to the location of the action of putting, as signalled by the a-passive morphology. The antecedent is the object of manipulation, the soup that the salt is being added to.

(10)   a.   Tetehina   mandinika <u>ny hena</u>   dia   sasana ø
            TT.chop   small   DET meat   COMP   TT.wash
            'Chop the meat and then wash.'   (Boissard 1983:33)

b. Asiana   sira ø dia   ahena   ny herin'   ny afo.
   APASS.put salt   COMP APASS.lessen   DET strength   DET fire
   'Add salt then lower the intensity of the fire.'   (Boissard 1983:35)

These are the only two options, however. The antecedent cannot be a non-topic (e.g. a possessor). In (11), the null topic is interpreted as the stems of the leafy vegetables and not as the leafy vegetables, despite the fact that this is the pragmatically dispreferred interpretation.

(11)   ??Esorina <u>ny tahon'anana</u>   ary arotsaka   ao anaty   vilany ø.
        TT.remove DET stem'vegetable   and APASS.pour   LOC in   pot
        'Remove the stems of the leafy vegetables and put in pot.'
        = put the stems in the pot (strange interpretation)
        ≠ put the vegetables in the pot

Finally, we note that the discourse topic (the object of manipulation) is always possible as an antecedent, such as the soup that the salt is being added to in the example in (12).

(12)   Ahena   <u>ny herin'   ny afo</u>   dia   asiana sira ø
        APASS.lessen   DET strength   DET fire   COMP   TT.put salt
        'Lower the intensity of the fire and then add salt.'

        Summing up, Malagasy recipes have null agents and null patients. Null agents are due to non-Actor Topic voice morphology, which independently licenses null agents. Null patients arise due to topic-drop, a widespread phenomenon in the language. We note in passing that both properties rely on non-Actor Topic voice, predicting that null arguments should not be possible with Actor Topic verbs. This issue is left to future research, but instances of Actor Topic in the recipe book were revealing. The verb is *mangotraka* 'boil', which is an unaccusative verb. An overt agent is therefore not possible and the topic corresponds to the highest argument (here the patient) and can therefore undergo topic drop.

(13)   … avela   mangotraka   15 minitra ø
        APASS.leave   AT.boil   15 minutes
        '… let boil 15 minutes.'   (Boissard 1983:33)

A more careful study of other voice forms in recipes is left to future research.

3.   Null Agents and Patients in Other Languages

We have just seen how Malagasy licenses null agents and null patients. We now turn to other languages to show that range of syntactic strategies are used.

3.1.   Null Agents in Other Languages

As we saw at the start of the paper, English recipes use the imperative mood, where agents (subjects) are typically omitted.[3]

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[3] To simplify the examples, for the remainder of the paper we omit ø in the position of the null argument.

(14)   Sift the flour.

For this reason, null agents have not received much attention in the literature. In fact, Cotter (1997) considers the imperative to be the recipe's "most distinguishing feature" (see Fischer 2013, also Fisher 1983). Moreover, imperatives have been used in recipes since at least Middle English (Arendholz et al. 2013). Looking at other languages, both Niuean and Tagalog use imperatives in recipes, as show in (15)-(17).

(15)   NIUEAN
        Helehele ke   kai mafanafana   poke   hahau.
        slice   SBJV   eat warm   or   cold
        'Slice and serve warm or cold.'   (*Traditional Niuean Recipes*: 8)

While imperatives are not morphologically marked in Niuean, there is a special form of negation (*ua*) that is used for imperatives and also occurs in recipes (16a). This negation is distinct from the sentential negation *nākai,* seen in (16b). We take this distribution to show that recipes indeed use the imperative in Niuean.

(16)   NIUEAN
        a. Ua   halu e talo
            NEG.IMP peel ABS taro
            'Don't peel the taro.'

        b. Ne nākai   fano kehe a   ia
            PST NEG   go   away ABS 3SG
            'She did not go away.'

A similar situation obtains in Tagalog, as in (17).[4] While the imperative is not overtly marked (imperatives are aspectless), there is a special form of the negation (*huwag*) that only occurs with imperatives and is also used in recipes.

(17)   TAGALOG
        Lutuin   ang   sampalok   sa tubig   hanggang lumambot.
        GT-cook   TOP   tamarind.fruit in water   until   soft
        'Cook the tamarind fruit in water until soft.'   (Milambiling 2011)

        Not all languages use the imperative in recipes, however. We have seen that Malagasy does not, and French and German recipes appear in the infinitive, as illustrated in (18) and (19), respectively.

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[4] Milambiling (2011:fn 1) states that the verbs in recipes are not imperative. Henrison Hsieh (p.c.), however, points out that the negation facts suggest otherwise. He points out, however, that imperatives in Tagalog typically include an overt addressee/agent, unless this addressee is understood to be "generic", as is the case in recipes.

(18)   FRENCH
       Y   verser   la bière au   gingembre.   Couvrir   et   cuire.
       there   pour.INF   DET beer to.DET   ginger   cover.INF and cook.INF
       'Pour the ginger beer. Cover and cook.'

(19)   GERMAN
       Pfifferlinge putzen
       chanterelles clean.INF
       'Clean the chanterelles.'   (Bubel and Spitz 2013:168)

The infinitive is another syntactic structure that typically lacks an agent (subject).
       Null agents can also arise due to pro-drop, as in Japanese, where recipes do not use the imperative; instead the verb is marked with the conclusive form (Shimojo 2019).

(20)   JAPANESE
       Toriniku-wa   mawarini   tsuiteiru abura-o   teeneeni   torinozoku
       chicken-TOP   around   attached fat-ACC   thoroughly   remove.CON
       'Remove excess fat from the chicken thoroughly.'   (Shimojo 2019:515)

Agents are always null in Japanese recipes (Hinds 1976). Since null agents are licensed in general in Japanese via radical (also known as discourse) pro-drop, this mechanism is also available in recipes. Finally, Bulgarian recipes use middles (among other strategies; Vesela Simeonova, p.c.), as seen in (21).

(21)   BULGARIAN
       a. Lukat   se   narjazva   na sitno.
          onion.DEF   REFL   cut.PRS.3SG   at small
          'Dice the onion.'

       b. Zadushava   se   za 5 min.
          sauté.PRS.3SG REFL   for 5 min
          'Sauté for 5 minutes.'

       c. Posle se   dobavyat   morkovite.
          then   REFL   add.PRS.3PL   carrots.DEF
          'Then add the carrots.'

Agents are normally excluded from middles.
       Summing up, we claim that the recipe register dictates that the agent is the addressee, and that due to its pragmatically-given identity, the agent should be null. Syntax then operates on this directive via different means, depending on the language.

3.2.   Null Patients in Other Languages

Just as we saw for agents, null patients are allowed in recipe contexts in all the languages we looked at. The possibility of null definite patients has been a puzzle for English, where such null

arguments are typically not possible. Consider the contrast in (22), where (22a) is well-formed in the context of a recipe, but (22b) is not a recipe and the null arguments of *season* and *boil* sound distinctly ungrammatical.

(22)   a.   Add carrots and season. Boil for about 3 minutes.
       b.   *I will add carrots and season. Then I'll boil for about 3 minutes.

Many authors have addressed this issue (e.g. Haegeman 1987a,b, Massam & Roberge 1989, Massam 1992, Ruda 2014, Massam et al. 2017, Weir 2017) and while the details of the analyses differ, they all consider that the null element must be bound by some kind of null topic antecedent. The question then arises as to why this null topic is possible in recipe contexts like (22a), but not elsewhere (22b). We return to this question in the next section, but we now turn to null patients in other languages.

In some languages, as we saw for Malagasy, the null patient arises due to topic-drop. A similar phenomenon occurs in Tagalog. In (23), the verbs are in the goal topic voice, so the missing patient corresponds to the topic of this sentence.

(23)   TAGALOG
       Alisin   at   ligisin.
       GT.will.take.out   and GT-squeeze
       'Take out and squeeze.'   (Milambiling 2011)

Japanese is a radical pro-drop language, so we assume that the null patient ('the chicken') in (24b) arises via pro-drop.

(24)   JAPANESE
       a.   Toriniku-wa   mawarini tsuiteiru abura-o   teeneeni   torinozoku
            chicken-TOP   around   attached fat-ACC   thoroughly remove.CON
            'Remove excess fat from the chicken thoroughly.'

       b.   batto-ni   ire shio koshoo   kaku   shooshoo-o   furu
            tray-DAT   put salt pepper   each   little-ACC   sprinkle.CON
            'Put (the chicken) in a tray and sprinkle salt and pepper a little each (on them).'
                                                                   (Shimojo 2019:515)

Finally, in Niuean it is the pronominal paradigm that is responsible for null patients. In this language, there is no overt form for third person inanimate pronouns (and most, if not all, objects of manipulation are inanimate). Such pronouns are therefore obligatorily null. We can see this in the examples below. The example in (25a) illustrates that there is no overt correlate to the English pronoun *it*. The pronoun is syntactically present, we claim, as there is ergative case marking – a clear signal of transitivity. The recipe example in (25b) therefore simply has the same null inanimate pronoun (Massam et al. 2017).

(25) NIUEAN
    a. Moua tuai e au.
        find PERF ERG 1SG
        'I've found it.'   (*Haia*: 263)

    b. Helehele ke kai mafanafana poke hahau
        slice SBJV eat warm or cold
        'Slice to eat warm or cold.'   (*Traditional Niuean Recipes: 8*)

We note here, however, that Niuean is also a radical pro-drop language, much like Japanese. We return to this issue in the next section.

    Summing up, the register dictates that the patient is the object of manipulation and that the patient is preferably null. The syntax of individual languages operates on this directive in different ways, such as topic-drop, pro-drop, or the pronominal paradigm. Combined with the observations about null agents in the previous section, the following picture emerges.

Table 1. Syntactic strategies for null agents and null patients

LANGUAGE	NULL AGENTS	NULL PATIENTS
English	imperative	running topic
Niuean	imperative	pronominal paradigm
French/German	infinitive	TBD
Malagasy/Tagalog	non-AT verbs	topic-drop
Bulgarian	middle (*se*)	pro-drop
Japanese	pro-drop	pro-drop

As seen in the table above, different languages have different syntactic strategies, which fits with our working hypothesis that there is no "recipe syntax", per se. In the next section, however, we look more closely at null patients and consider some cross-linguistic similarities.

4.   More on Null Patients

As we saw in the previous section, it is clear that different languages use different syntactic resources to license null agents (imperative, infinitive, voice, etc.). For null patients, this also appears to be true at first glance. However, null topicalization turns up in both English and Malagasy. We therefore now ask whether null topicalization could also account for null patients in radical pro-drop languages, such as Japanese and Niuean.

4.1.   Null Patients and Topic-Drop

The connection between null patients and topic-drop is not new in the literature. Huang (1991), for example, argues that null objects in Mandarin Chinese are bound by a null topic in the left periphery. Thus, the null object of *renshi* 'know' in (26) is bound by TOP. He notes that what is special in this Mandarin sentence (in contrast to English, for example), is not that the object is null, but that the topic is null, which is allowed due to the discourse-oriented nature of Mandarin.

(26)   MANDARIN CHINESE
        TOP_i [Zhangsan shuo [Lisi bu   renshi t_i]].
                Zhangsan say   Lisi not   know
        'Zhangsan said that Lisi does not know him/her/them/you...'   (Huang 1991:57)

Adapting this proposal to recipe contexts is initially appealing as recipes have a clear discourse topic—the object of manipulation. In what follows, we pursue this connection. We start by noting that the proposed null topicalization is not the same as overt topicalization. For example, as Huang observed, in English, null topicalization is generally ungrammatical. Thus, in answer to the question in (27a), (27b) sounds distinctly odd.[5]

(27)   a. where is your ring?
        b. *~~my ring~~ I have sold.

This difference can also be seen in Japanese. Japanese recipes have overt topics: these are used to introduce new ingredients (e.g. *toriniku-wa* 'chicken' in (28a)). There are also null topics (e.g. 'the chicken' in (28b)), which bind the null patients, but in contrast to overt topics, null topics are used in series cohesion (similar to null anaphora in texts).

(28)   JAPANESE
        a. toriniku-wa   mawarini tsuiteiru abura-o teeneeni   torinozoku
            chicken-TOP   around   attached fat-ACC thoroughly remove
            'Remove excess fat from the chicken thoroughly.'

        b. tatehanbun-ni   kiri   sorezore-o gotoobun-ni   hoochoo-o
            vertical.half-DAT cut   each-ACC five.equal-DAT   knife-ACC
            nekasete   sogigirinisuru
            slant   make.cut.at.an.angle
            'Cut (the chicken) in half vertically, and by slanting the knife, cut each at a 45-degree angle into five equal pieces.'   (Shimojo 2019:515)

In other words, overt and null topics in Japanese play different roles in the discourse. We now turn to a discussion of null topics, looking in particular at their distribution and the different constraints imposed by different languages.

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[5] Weir (2017) claims that overt topicalization is not possible in recipes, due to the imperative. As noted in the literature, however, topicalization is possible in imperatives (Zhang 1990, Han 2000).

4.2. Constraints on Null Topics

As noted above, Japanese null topics differ from overt topics in that the former are used in cases of series cohesion (Shimojo 2019). In English, null topics are highly constrained and recovered through deixis or extra-grammatical inference directly from the context (Noailly 1997; Cummins and Roberge 2004, 2005; Perez-Leroux et al. 2017). The examples in (29) illustrate instances where the null object's reference is immediately salient in the context.

(29) a. The redhead had got up and now he sat down beside him on the bench and wiggled
          his fingers. Come on, hand over.   (Adapted from Cummins and Roberge 2005)
      b. [Parent pointing at veggies in front of child] Eat!

English also allows constructionally-licensed null objects, in which null objects are licensed in specific syntactic contexts, such as *tough*-constructions, which have, since Chomsky (1977), been argued to contain null operators binding a null object, as in (30).

(30) Recipes$_i$ are hard [Op$_i$ [to understand Ø$_i$]].

Niuean is typically seen as a radical pro-drop language, but Massam (2020) argues that null objects are in fact most often cross-clausal topics or are constructionally-licensed. Null objects are found across certain complementizers, with a matrix antecedent, as shown in (31). In (31a), the embedded verb *keli* 'kill' takes a null object complement (again, ergative case tells us that the verb is transitive) when embedded under the causal complementizer *he*, while (31b) illustrates a similar case with the consequential complementizer *mo e*. In both cases, the null object is coreferential with the matrix subject.

(31) NIUEAN
      a. Ne mate   a Tepunua **he**   keli   he faoa
          PST die   ABS Tepunua when/because kill   ERG people
          'Tepunua died when/because people killed (him).'   (*Niue: A history*)

      b. Ne hohoko   a lautolu   **mo e** nākai   moua he kau   mai i Tuapa.
          PST arrive   ABS they   and C NEG   catch ERG crew from LOC Tuapa
          'They arrived and the crew from Tuapa did not catch (them).' (*Niue: A history*)

Niuean null objects are also possible in the so-called C-comp (Completion-complement) constructions (Hooper 1984), as illustrated in (32). In this structure, the event (of eating) is measured out as complete by a plural participant (all the children). Such constructions have been analyzed as similar to *tough*-constructions (Waite 1989), arguably containing a constructionally-licensed null operator binding the null object.

(32) NIUEAN
      Ati   hifo   kua   oti tuai e fanau   **he**   kai he ika.
      when go.down   PERF all PERF ABS children when/because eat ERG fish
      'When (she) went down all the children had been eaten up by the fish.' (Loeb 1926:197)
      (i.e. the group of children were completed with respect to the fish eating (them))

We thus see that null objects can be licensed via pragmatic context, or they can be bound by preceding (null) topics or operators within certain constructions. Based on this pattern, our claim here is that recipes are among the constructions that allow null topics to bind null objects, in part due to their pragmatic properties.

4.3.   Summary

We have suggested here that patient drop arises due to null topicalization, following the work of Huang (1991) and Erteschik-Shir et al. (2013) (among others). We have also seen that languages differ in terms of the constraints on licensing null topics. Moreover, we have claimed that the recipe context licenses null patients via topicalization cross-linguistically. That is, null patients in recipes arise due to null topicalization. We set aside here many remaining questions about null patients including the nature of the null element itself. Is it a small or special D, N or np, as argued by Ruda (2014), Weir (2017), Massam et al. (2017), Perez-Leroux et al. (2017)? Is it a variable, as suggested by Huang (1991)? Or, following Potsdam and Polinsky (2007), is it a *pro*?[6]

5.   Conclusion

Most of the research on recipe contexts tends to focus on one language and one issue, for example on how to explain null definite objects in English. By taking a cross-linguistic perspective, we see that instances of recipes in a range of languages share two key properties: null agents and null patients. We can understand this nullness functionally: the null agent corresponds to the reader, the person following the recipe. There is no need to make this argument overt. The null patient is the object of manipulation and as a result highly salient and can be null. But the functional account doesn't tell us how any given language will make these null arguments possible.

The languages explored in this paper show that different strategies are used by different languages. As can be seen in the table below, null agents arise due to a variety of syntactic means. We claim, however, that null patients are always the result of null topicalization.

Table 2. Syntactic strategies for null agents and null patients

LANGUAGE	NULL AGENTS	NULL PATIENTS
English	imperative	null topicalization
Niuean	imperative	null topicalization
French/German	infinitive	TBD
Malagasy/Tagalog	non-AT verbs	null topicalization
Bulgarian	middle (*se*)	null topicalization
Japanese	pro-drop	null topicalization

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[6] Similarly, we set aside the issue of the Person value of the null agent. In languages using imperatives, it is fairly clearly 2nd person, but in languages using other means to license null agents, the Person value might differ.

The emerging picture for agents conforms to our initial hypothesis that register does not dictate syntax. Instead, the syntax of each language plays a role in realizing the pragmatic desiderata of the register.

For null patients, though, several questions remain, including the precise relation between the register and syntax. Does the recipe register provide the null topic that licenses the null patient? If yes, what does it mean for a register to directly license a particular syntactic configuration? We note that Bender's (1999) analysis provides one approach along these lines. Alternatively, is it possible that the salience of the topic in recipe contexts is so strong that it fits into every language's allowable space for the licensing of null topics? If the answer to this second question yes, then we do not need a direct link between the recipe register and syntax. While we contend that the second approach is preferable, we leave it to future research to determine which approach to register and syntax is ultimately correct.

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