Argument ellipsis and the licensing of covert nominals in Bangla, Hindi and Malayalam

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Abstract

This paper investigates the licensing of Argument Ellipsis/AE in three major languages of South Asia: Bangla, Malayalam and Hindi and a recent claim made in Şener and Takahashi (2009) and Takahashi (2011, in press) that the critical factor responsible for AE in null argument languages is the absence of verbal agreement. Observing and manipulating patterns of subject and object agreement in these languages, it is concluded that agreement does not appear to play a role in restricting AE. The paper then considers two other alternatives to the anti-agreement approach to AE (Hoji, 1998; Otaki, 2012), which instead relate the occurrence of AE to various interpretative and morphological properties of nominal elements, and emphasizes the important facilitating role that the use of anaphors frequently plays in the licensing of AE.
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1. Introduction

Since early important work on null subjects in Rizzi (1982) and Jaeggli and Safir (1989), many interesting investigations have been carried out exploring the identity of empty nominal elements, and a range of different empty category types have been hypothesized to occur in contexts of nominal ellipsis. Holmberg (2005, 2009), and the range of papers in the (2009:63:1) special issue of *Studia Linguistica* along with many other works assume the occurrence of a null pronominal *pro* in argument positions, and examine factors which may restrict the distribution of *pro* across different languages. Huang (1984, 1987) suggests that certain occurrences of empty nominals may be operator-bound variables resulting from covert A'-movement, while Otani and Whitman (1991) posit that other instances of null objects in languages such as Japanese may in fact arise as a result of VP ellipsis. More recently, work on Chinese has led Li (2007) and Aoun and Li (2008) to hypothesize the presence of a 'True Empty Category' in object positions in Chinese, and an examination of Japanese, Spanish and Turkish in Takahashi (2008a,b), and Şener and Takahashi (2009) has resulted in the claim that certain instances of null arguments are indeed null pronominals (*pro*) while others arise from a process of argument ellipsis and have different interpretational properties.

The goal of the present study is to investigate the derivation and interpretative status of empty nominals in three major South Asian languages, Hindi, Bangla, and Malayalam, in the light of a recent suggestion in Takahashi (2011, in press) that the identity of null arguments is revealed in the strict vs. sloppy interpretations they make available, which in turn are

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argued to depend on certain other morphosyntactic properties present in a language. Takahashi suggests that the potential ellipsis of a nominal category – 'argument ellipsis' henceforth AE – results in the availability of sloppy interpretations of pronouns/anaphors understood to be present within the elided/null nominal, whereas the occurrence of a null pronominal *pro* in an argument position permits only strict co-reference possibilities in relation to pronouns/anaphors within preceding (overt) NP antecedents. It is shown that Japanese is a language in which the use of both null subjects and null objects licenses sloppy interpretations, as illustrated in (1) and (2), while Spanish null subjects in similar contexts give rise to just strict interpretations (3). Japanese is therefore analyzed by Takahashi as a language licensing AE, whereas Spanish is restricted to the use of pro in subject position (and referential null objects do not occur).[1]

(1) a. John-wa   [zibun-no tegami-o] suteta.
         John-TOP self-gen   letter-ACC discarded
         'John$_i$ threw out his$_i$ own letters.'

     b. Mary-mo [*e*] suteta.
         Mary-too   discarded
         'Mary did too.'
         i. Mary also threw out John's letters (strict)
         ii. Mary also threw out her   own   letters (sloppy)

(2) a. Taroo-wa [zibun-no kodomo-ga eigo-o   hanasu to] omotteiru
         Taroo-TOP self-gen   child-NOM English-ACC speak C thinks
         'Taroo$_i$ thinks that his$_i$ child speaks English.'

     b. Ken-wa [*e* furansugo-o hanasu to] omotteiru
         Ken-TOP   French-ACC speak C thinks
         'Ken thinks that *e* speaks French.'
         i. Ken thinks that his   own son   speaks French. (sloppy)
         ii. Ken thinks that Taroo's son speaks French. (strict)

(3) a. Maria cree   que su propuesta sera   aceptada.
         Maria believes that her proposal   will.be accepted
         'Maria believes that her proposal will be accepted.

     b. Juan también cree   que *e* sera   aceptada.
         Juan also   believes that   will.be accepted
         'Juan also believes that it (= Maria's proposal) will be accepted.' (strict)

Takahashi also demonstrates that null quantificational subjects and objects allow strict and sloppy readings in Japanese, in which either the same set of elements or a different quantified set of elements is available as an interpretation of an empty subject/object, as shown in (4) – hence also instances of AE (see also Oku, 1998, chapter 5 for similar observations).

(4) a. Taroo-wa sannin-no sensei-o   sonkeishiteiru
         Taroo-TOP 3-gen   teacher-ACC respects
         'Taroo respects three teachers.'

     b. Hanako-mo *e* sonkeishiteiru
         Hanako-also respect
         'Hanako also respects *e*.'
         i. Hanako respects three teachers   too. (sloppy)
         ii. Hanako respects them too. (strict)

     c. Sannin-no mahootukai-ga Taroo-ni   ai-ni   kita.
         three-GEN wizard-NOM   Taroo-DAT see-to came
         'Three wizards came to see Taroo.'

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[1] The following abbreviations are made use of use in glosses in the paper: ERG = ergative; NOM = nominative; ACC = accusative; DAT = dative; UM = the Malayalam marker um; GEN = genitive; TOP = topic; P = plural; INF = infinitive; LOC = locative; NZL = nominalizer; COP = copula; C = complementizer; CL = classifier; DE = the Chinese linking element de; PRES = present; CONJ = conjunction; PST = past tense; PRF = perfect; CNT = continuous; FUT = future; HAB = habitual; DAT = dative; M = masculine; F = feminine; 3 = third person Sg = Singular.

d.   *e* Hanako-ni-mo   ai-ni   kita.
     Hanako-DAT-also see-to came
    '*e* came to see Hanako too.'
    i. Three wizards came to see Hanako too. (sloppy)
    ii. They came to see Hanako too. (strict)

Concerning what factors may lead to a language allowing the option of AE, Takahashi focuses on two prominent, competing theories of what may permit (or prohibit) AE, one which relates this to the occurrence of *scrambling* in a language, Oku (1998), and another approach which attributes the availability of AE to patterns of *verbal agreement* in a language, Saito (2007).

Developing the former approach to AE, Oku (1998) makes use of Bosković and Takahashi's (1998) analysis of scrambling in which languages such as Japanese are suggested to allow for the base-generation of nominals in scrambled positions because the phi-features which need to be checked by such elements are weak and can be licensed at LF by the movement of nominal phrases from higher scrambled positions to relevant lower positions. In addition to the lowering of scrambled elements to empty argument positions at LF, another way that such positions can be filled, Oku suggests, is via an LF copying mechanism, in which the properties of some other nominal element present in the discourse are copied into the empty theta position. Such a possibility is then argued to allow for the availability of interpretations associated with AE and the potential occurrence of sloppy readings, when the referential index of a nominal is not copied along with its other properties and instead supplied from other sources. The presence of scrambling in a language is consequently interpreted as showing that a language should in theory allow for LF copying mechanisms which will give rise to patterns of AE, whereas null argument languages which do not permit scrambling should not exhibit patterns of AE. Comparing Japanese with Spanish, the predictions of such a view are that Japanese as a scrambling language will license AE, while Spanish as a non-scrambling language will not, as indeed observed in (1–4).[2]

The second perspective on AE considered in Takahashi (2011, in press) is that it is the presence/absence of verbal agreement which critically determines whether a particular language permits AE or only pro in null argument positions. Takahashi refers to Saito's (2007) analysis of Japanese as a language without agreement between nominal arguments and other functional elements, following ideas initiated in Kuroda (1988). Such a lack of obligatory agreement in Japanese is suggested to allow for argument positions to remain empty until interpreted at LF, as there will be no failure in agreement-dependent phi-feature checking between *v*/T and objects/subjects during the course of the derivation. In English and Spanish, by way of contrast, languages with agreement, nominal arguments will need to enter into agreement relations with relevant probes at some point in the syntactic derivation. It is argued that if a nominal in such a language is potentially copied into an argument position at LF, for purposes of interpretation, this will fail to satisfy the agreement requirements of heads such as T and *v* as the relevant features on the copied nominals will have been deleted following agreement relations effected in the clauses they originated in and not be available for copying. Any attempted copying of the nominal *su propuesta* in Spanish (3a) into the empty subject position in (3b) will therefore result in a failure of agreement between this element and T, with the result that only a *pro* can occur in such a position. Null subject/object languages without agreement – such as Japanese - are therefore suggested to license AE, while languages with agreement – such as Spanish – are argued to only license pro, accounting for the differences in interpretation of null arguments in the two languages.

Comparing the two approaches to AE, Takahashi correctly points out that the predictions of the two theories are identical for the pair of languages Japanese and Spanish, and that patterns in other languages need to be examined to better test and distinguish the scrambling and agreement-based hypotheses of AE. Takahashi (in press) consequently examines Turkish, a language with both scrambling and agreement in certain clauses. The results of Takahashi's study seem to clearly support the agreement-based hypothesis of AE. In clauses where agreement occurs in Turkish, only strict interpretations are reported to be available for empty nominals, whereas in clauses where no agreement occurs, both strict and sloppy interpretations appear to be licensed, precisely as expected under the agreement-based approach. A scrambling-based view of AE, on the other hand, predicts uniformity of strict and sloppy interpretations in all clause types, which does not seem to be found, according to Takahashi.

While the study of Turkish reported in Şener and Takahashi (2009) and Takahashi (in press) provides interesting initial support for the agreement-based hypothesis of AE, it raises the question of whether further empirical confirmation of the hypothesis can be found in other languages with similar scrambling and agreement-type properties. The languages of

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[2] Note that while Spanish is not generally characterized as a scrambling language, a reviewer of the paper observes that Spanish has in fact been claimed to exhibit scrambling in VOS orders in Ordóñez (2000). We simply report the common view of Spanish, that it is not a scrambling language in the very free way that Japanese is.

South Asia are in many instances very natural candidates to test the agreement-based hypothesis, given the ready availability of scrambling in these languages, and variability of the presence of agreement. The present investigation considers Hindi, Bangla, and Malayalam. Hindi and Bangla are Indo-Aryan languages in which both subjects and objects can be omitted in finite and non-finite clauses. Bangla exhibits subject agreement but no object agreement, while Hindi allows for both subject and object agreement, depending on variable factors relating to tense and case-marking. Malayalam is a Dravidian language with null objects and restricted null subjects, and is distinctive among Dravidian languages for the full absence of agreement. The range of agreement patterns present in the three languages, and the ability to manipulate agreement relating to subjects and objects in many instances, allows for a useful comparative probing of the potential correlation between AE and (absence of) agreement.

The structure of the paper is as follows. Section 2 investigates and documents the distribution and interpretation of empty nominals in Bangla, Hindi and Malayalam in a comprehensive way, establishing that AE is indeed present in the three languages and ruling out alternative analyses of the patterns found. Section 3 then considers the potential interaction of agreement and AE in Bangla, Hindi and Malayalam, and through careful control of subject and object agreement demonstrates that AE does not in fact depend on the occurrence of agreement in these languages, hence agreement does not seem to be the key cross-linguistic factor determining the general presence/absence of AE. Section 4 then re-examines the cross-linguistic distribution and licensing of the phenomenon of AE, and suggests that the most likely predictor of the presence of AE in a language is neither agreement nor scrambling but either certain interpretative or morphological properties of nominal elements in a language, as discussed in Hoji (1998) and Otaki (2012). Following this, Section 5 shows that AE in Bangla, Hindi and Malayalam is critically dependent on the use of anaphoric elements in the overt antecedents for AE, and that such a licensing restriction on AE, which has previously gone unnoticed, may extend to various other languages as well. Section 5 also describes certain additional, complicating factors affecting the availability of sloppy interpretations with empty subjects in Bangla and Hindi and argues that these are instances of 'pseudo-sloppy' interpretations of null subjects and actually do not arise from AE but through a special contextual licensing of pro. A summary of the various conclusions of the paper, including differences observed in quantificational and non-quantificational AE in Bangla, Hindi and Malayalam and directions for future research on AE is given in section 5.

2. The interpretation of empty nominals in Bangla, Malayalam and Hindi

2.1. Patterns of sloppy identity

The objects of verbs in Bangla, Hindi and Malayalam can regularly be omitted and allow for interpretations of sloppy identity, as illustrated in (5–7) below. Note that as the focus here is on the investigation of AE, which critically requires patterns of sloppy identity, only the interpretations of sloppy identity are represented in the examples, and not the strict interpretations of the empty arguments, which are also commonly available.

(5) a. Abhik nijer sikkhak-ke   sroddha kOre.   *Bangla*
             Abhik self's teacher-ACC respect do-PRES.3
             'Abhik$_k$ respects his$_k$ teacher

      b. Mini-o   _ sroddha kOre
           Mini-also   respect do-PRES.3
           'Mini$_m$ also respects (her$_m$ teacher).'

(6) a. Amit apni   premika-ko   pyar karta   hai   *Hindi*
             Amit$_k$ self's$_{k.}$F girlfriend-ACC love do-PRES.M.Sg.3 COP-PRES.3
             'Amit$_k$ loves hisk/self's$_k$ girlfriend.'

      b. Ravi bhi _ pyar karta   hai.
           Ravi also   love do-PRES.M.Sg.3 COP-PRES.3
           'Ravi$_m$ also loves (his$_m$ girlfriend).'

(7) a. anil epozhum avante kuTTiye   vimarsikk-unnu.   *Malayalam*
             anil often   himself child-ACC criticize-PRES
           'Anil$_k$ often criticizes his child$_k$.'

      b. ravi-yum   _ epozhum vimarsikk-unnu
           ravi-CONJ   often   criticize-PRES
           'Bill$_m$ also often criticizes (his child$_m$).'

Quantificational phrases can also be elided in object position and result in interpretations of sloppy identity, where the reference of the QP in the first and second sentences is to a potentially different set of objects/people:

(8) a. Abhik tin-Te   khOborer-kagoj pORe.   *Bangla*
         Abhik three-CL newspapers   read-PRES.HAB.3
         'Abhik reads three newspapers.'

     b. Ravi-o   _ pORe.
         Ravi also   read-PRES.HAB.3
         'Ravi also reads (three newspapers).'

(9) a. Amit teen adhyapako-ki izzat   karta   hai.   *Hindi*
         Amit three teachers-gen respect do-PRES.M.Sg.3 COP-PRES.3
         'Amit respects three teachers.'

     b. Ravi bhi _ izzat   karta   hai.
         Ravi also   respects do-PRES.M.Sg.3 COP-PRES.3
         'Ravi also respects (three teachers).'

(10) a. madhavan maash epozhum raNTu kuTTikaL-e pukkartt-um.
         madhavan teacher often   two   child-ACC praise-UM
         'Professor Madhavan often praises two students.'   *Malayalam*

     b. ravi mash-um   epozhum _ pukkartt-um.
         ravi teacher-UM often   praise-UM
         'Professor Ravi also often praises (two students).'

As shown in (11–13), the omission of indirect objects and selected PP arguments also permits interpretations of sloppy identity.

(11) a. Abhik ar Gita Eke-Opor-ke   greeting card dilo.   *Bangla*
         Abhik and Gita each other-DAT greeting card give-PST.3
         '[Abhik and Gita]$_m$ gave each other$_m$ greeting cards.'

     b. Ravi ar   Romila _ upohar dilo
         Ravi and Romila   present give-PST.3
         '[Ravi and Romila]$_k$ gave (each other$_k$) presents.'

(12) a. Amit-ne   apni mez-par   ek kitaab rakhi.   *Hindi*
         Amit-ERG self's table-LOC a book   put-PST.F.Sg.3
         'Amit$_k$ put a book on his$_k$ desk.'

     b. Ravi-ne   bhi _ ek kitaab rakhi.
         Ravi-ERG also   a book   put-PST.F.Sg.3
         'Ravi$_m$ also put a book (on his$_m$ desk).'

(13) a. anil oru pustakam tante   meshapurattu vacc-u   *Malayalam*
         anil a   book   self-GEN table-on   top of place-PST
         'Anil$_k$ put a book on his$_k$ des$_k$.'

     b. ravi oru putiya laptop-um vacc-u
         ravi a   new   laptop-UM place-PST
         'Ravi$_m$ placed a new laptop (on his$_m$ desk).'

   Turning to consider subjects, in contrast to the patterning found with direct object, indirect objects and other selected PPs, subjects do not seem to allow for parallel patterns of ellipsis and sloppy interpretation.

In Malayalam, it is generally not possible to elide the subject of an embedded clause with any strict/sloppy interpretation. Main clause subjects can be null, but if a quantificational phrase subject is elided, it can only have a strict reading (referring to the same set as a QP in a preceding sentence), unlike the ellipsis of QPs in object position:

(14) a. muunu pujari-maar anilin-e kanu-waan vann-u   *Malayalam*
        three priest-P   anil-ACC see-INF   came-PST
        'Three priests came to see Anil.'

     b. raviy-e   kaanaan-um vann-u
        ravi-ACC see-UM   came-PST
        '(They) came to see Ravi too.'

In Bangla and Hindi, an elided QP subject also only has a strict interpretation:

(15) a. tin-jon   SonnyaSi Abhik-er   sathe dEkha korte   elo.   *Bangla*
        three-CL priests   Abhik-GEN with meet   do-INF come-PST.3
        'Three priests came to see Abhik.'

     b. Arun-er   sathe-o _ dEkha korte   elo
        Arun-GEN with also   meet   do-INF come-PST.3
        '(They) came to see Arun too.'

(16) a. bhasha   vigyan-ke teen pradhyapak Gita-ko   bahut pasand karte   hai.   *Hindi*
        linguistics-GEN   three professor Gita-ACC very like   do-PRES.P.3 COP-PRES.3
        'Three professors from the Linguistics Department like Gita very much.'

     b. Sunita-ko-bhi   pasand karte   hain
        Sunita-ACC-also like   do-PRES.Pl.3 COP-PRES.3
        '(They) like Sunita too.'

In embedded clauses, subjects in Bangla can be elided, but do not regularly appear to allow sloppy interpretations, even when non-quantificational, unlike elided objects and indirect objects:

(17) a. Mini bhabe je or chhele puraSkar-Ta pabe   *Bangla*
        Mini thinks C her son   prize-CL   win-FUT.3
        'Mini$_k$ believes that her$_{k/m}$ son will win the prize.'

     b. Rini-o   bhabe je _ pabe.
        Rini-also thinks C   win-FUT.3
        'Rini also believes that (he) will win the prize.' (strict only)

(18) a. Abhik bhabe je or chhele Italian Sikhchhe.   *Bangla*
        Abhik thinks C his son   Italian learn-PRES.CNT.3
        'Abhik$_k$ believes that his$_{k/m}$ child is learning Italian.

     b. Arun bhabe je _ Spanish Sikhche.
        Arun thinks C   Spanish learn-PRES.CNT.3
        'Arun believes that (he) is learning Spanish.' (strict only)

In Hindi, the subjects of embedded clauses can be elided. As in Bangla, the regular interpretation of such null subjects is strict rather than sloppy:

(19) a. Gita-ko   lagta hai   uske bete-ko   puraskar milega.   *Hindi*
        Gita-DAT feel COP-PRES.3 her son-DAT prize   get-FUT.M.Sg
        'Gita$_m$ feels her$_{m/k}$ son will win the prize.'

     b. Sunita$_h$-ko bhi lagta hai   _ milega.
        Sunita-DAT also feel COP-PRES.3   get-FUT.M.Sg
        'Sunita also feels (he) will.' (strict only)

Table 1
Summary of availability of sloppy interpretations of null subjects and objects from data in section 2.1.

	Non-QP subject	QP-subject	Non-QP internal argument	QP object
Malayalam	n/a	*	✔	✔
Bangla	*	*	✔	✔
Hindi	*	*	✔	✔

(20) a. Amit-ko   lagta hai   uska prastav maan liya jayega.   *Hindi*
Amit-ACC feel   COP-PRES.3 his   proposal accept take go-FUT.M.Sg
'Amit$_k$ believes that his$_k$ proposal will be accepted.'

b. Ravi-ko   bhi   lagta hai   _ maan liya jayega
Ravi-ACC also feel   COP-PRES.3   accept take go-FUT.M.Sg
'Ravi also believes that (it) will be accepted.' (only strict)

More will be said about the rather different and variable patterning of null subjects with regard to strict/sloppy interpretations in sections 3 and 4. The patterning described so far is summarized in Table 1.

2.2. How are the sloppy interpretations derived?

Where arguments are phonetically null and allow sloppy interpretations, it has commonly been assumed that such elements are not null pronouns (pro), as overt pronouns do not allow sloppy interpretations (Otani and Whitman, 1991; Şener and Takahashi, 2009). In those configurations in Bangla, Hindi and Malayalam where sloppy interpretations of null arguments are licensed, the insertion of an overt pronoun eliminates such interpretations and only strict readings become possible, as illustrated in (21). It can therefore be assumed that the empty nominals observed to permit sloppy interpretations in section 2.1 are not simple instances of pro/null pronominals.

(21) a. Abhik nijer sikkhak-ke   sroddha kOre.   *Bangla*
Abhik self's teacher-ACC respect do-PRES.3
'Abhik$_k$ respects his$_k$ teacher.'

b. Mini-o   take sroddha kOre.
Mini-also him respect does-PRES.3
'Mini also respects him (Abhik's teacher).'

In English, sloppy interpretations with objects arise as the result of VP ellipsis/VPE:

(22) a. John will invite his girlfriend to the party.
b. Bill will [$_{VP}$_] too. (strict or sloppy)
i. Bill$_k$ will invite his$_k$ girlfriend to the party. (sloppy)
ii. Bill will invite John's girlfriend to the party. (strict)

The fact that VPE may give rise to sloppy interpretations in languages such as English raises the question whether the similar interpretations of objects and other VP-internal arguments in Bangla, Hindi and Malayalam might also arise via VPE. In a range of other languages (e.g. Irish, Hebrew, Finnish, Portuguese), it has been suggested that verbs may raise out of VP prior to VPE, resulting in the surface appearance of simple object ellipsis (Goldberg, 2005; Rouveret, 2011), so-called 'verb-stranding VPE'. It is important to check whether Bangla, Hindi and Malayalam might be languages of this type, and permit empty VP-internal arguments with sloppy interpretations due to the ellipsis of a full VP, not simply ellipsis of individual arguments. This possibility is now considered and rejected in sections 2.3 and 2.4. It will be argued that while verb-stranding VPE does in fact occur in Bangla, Hindi and Malayalam, there are patterns indicating that null arguments can be produced by a different mechanism of ellipsis which does not involve the deletion of a larger VP constituent.

2.3. Adjuncts and ellipsis

In addition to the occurrence of null nominal arguments, it is found that adjuncts in Bangla, Hindi and Malayalam can also be omitted/null and still be interpreted as present in sentences with parallel preceding sentences, as shown

in (23–29). This may naturally be assumed to result from ellipsis of the full VP containing not only arguments but also adjuncts, following movement of the verb out of VP, i.e. the occurrence of verb-stranding VPE.[3] The examples below show a representative range of cases of adjuncts of different types which may be interpreted as being present in the second sentences in each example, though not given any overt pronunciation: location adjuncts, time adjuncts, frequency adverbials, duration adverbials, manner and means adverbials. The understood adjuncts and other accompanying null elements are represented in parentheses in the English translations.

Location adjuncts

(23) Abhik Chomsky-r   notun lekha-Ta library-te   poRlo.   Arun-o   _ poRlo.   *Bangla*
      Abhik Chomsky-GEN new   paper-CL library-LOC read-PST.3 Arun-also   read-PST.3
      'Abhik read Chomsky's new paper in the library Arun also read (Chomsky's new paper in the library).'

(24) anil vanTi-yil urang-i.   ravi-yum _ urangi.   *Malayalam*
      john car-LOC sleep-PST ravi-UM   sleep-PST
      'Anil slept in the car. Ravi also slept (in the car).'

Time adjuncts

(25) Gita 12   baje   aayi. Sunita bhi aayi   *Hindi*
      Gita 12:00 come-PST.F.Sg.3 Sunita also   come-PST.F.Sg.3
      'Gita arrived at 12.00. Sunita also arrived (at 12.00).'

Frequency adverbials

(26) Ram Dilli du bar giyecche. Raj-o   _ giyecche.   *Bangla*
      Ram Dilli two time go-PST.3 Raj-also   go-PST.3
      'Ram has visited Delhi twice. Raj has also visited (Delhi twice).'

Duration adverbials

(27) a. anil   Chomsky-ute   putiya paper raNTu manikuur neram vayicc-u.   *Malayalam*
          anil   Chomsky-GEN new   paper two   hours   time   read-PST
          'Ram read the new paper by Chomsky for two hours.'

      b. ravi-yum _ vayicc-u
          ravi-UM   read-PST
          'Ravi also read (the new paper by Chomsky for two hours).'

VP adverbs

(28) Amit-ne   dheere-dheere ek vritt banaya.   Gita-ne   bhi _ banaya   *Hindi*
      Amit-ERG slowly   one circle draw-PRES.M.Sg Gita-ERG also   draw-PRES.M.Sg
      'Amit drew a circle slowly. Gita also drew (a circle slowly).'

Means adverbials

(29) Abhik taxi kore elo.   Arun-o   _ elo   *Bangla*
      Abhik taxi by   come-PST.3. Arun also   come-PST.3
      'Abhik came by taxi. Arun also came (by taxi).'

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[3] Note that it has elsewhere been argued that there is overt movement of verbs out of VP in Hindi, Bangla and Malayalam. See Kumar (2006) and Bhatt and Dayal (2007) for Hindi, Simpson and Syed (2010) for Bangla, and Mathew (2011) for Malayalam.

2.4. Against a VPE analysis of null arguments in Bangla, Malayalam and Hindi

While the above patterns do suggest that verb-stranding VPE occurs in Bangla, Hindi and Malayalam, there are arguments against analyzing the ellipsis of nominal arguments in these languages as necessarily resulting from VPE.

First, it has been argued at length (Goldberg, 2005; Rouveret, 2011) that VPE occurs in verb-stranding languages (e.g. Irish, Hebrew, etc.) only when the verb in the source sentence and the sentence with argument ellipsis is the same verb, and VPE is not possible when attempted with different verbs. Significantly, in Bangla, Hindi and Malayalam, the verb in the two otherwise parallel sentences can be different, and sloppy readings of the omitted arguments are still possible[4]:

(30) a. Ram nijer receptionist-ke boklo. *Bangla*
          Ram self's receptionist   scold.PST.3
          'Ram$_k$ scolded his$_k$ receptionist.'

      b. Kintu Raj _ proshongsha korlo.
          but   Raj praise   do-PST.3
          'Raj$_m$, however, praised (his$_m$ receptionist).'

(31) Ram apni patni-ko   pyar karta   hai,   par Raj _ nafrat karta hai.
      Ram self's wife-ACC love do-PRES.M.Sg.3 COP-PRES.3, but Raj   hate do COP-PRES.3
      'Ram$_k$ loves his$_k$ wife, but Raj$_m$ hates (his$_m$ wife).'   *Hindi*

(32) a. anil epozhum tante makan-e pukarttum *Malayalam*
          anil often   self's son-ACC praise-UM
          'Anil$_k$ often praises his$_k$ son.'

      b. (pakshe) ravi epozhum ceetha parayum
          but   ravi often   scolds tell-UM
          '(But) Ravi$_m$ often scolds (his$_m$ son).'

Second, there is an important asymmetry in the ability for arguments and adjuncts to be elided and still be interpreted as present. Adjuncts can be 'elided' and interpreted as present only when other VP-internal material such as the direct object is also elided, as illustrated in (23, 26–28). However, VP-internal arguments can be elided when other VP-internal material is present, as seen in (33) where the direct object is elided in the overt presence of the indirect object, and (34) where the indirect object is elided in the overt presence of the direct object:

(33) Abhik nijer chakar-ke   Dakghor-e   pathalo. *Bangla*
      Abhik his   servant-ACC post office-to send-PST.3
      Arun-o   _ Dakghor-e   pathalo.
      Arun-also   post office-to send-PST.3
      'Abhik$_k$ sent his$_k$ servant to the post office. Arun$_m$ also sent (his$_m$ servant) to the post office.'

(34) a. Amit-ne   apni premika-ko   ek kitaab di. *Hindi*
          Amit-ERG self's girlfriend-ACC a book give-PST.F.Sg
          'Amit$_k$ gave a book to his$_k$ girlfriend.'

---

[4] Similar patterns are possible when the object is quantificational. The verb in sentences with omitted objects can be different from that in a preceding sentence and this will still permit 'sloppy' readings in which the set of elements that the omitted object is understood to refer to can be different from those referred to by an overt quantificational object in the preceding sentence:

(i) a. durghaTna-ke-baad Ram-ne   teen sarkari   afsaron-ko   phon kiya. *Hindi*
         incident-GEN-after Ram-ERG 3   government officials-DAT phone did

     b. Par, Raj-ne   _ email kiya
         But, Raj-ERG _ email did

         'After the incident, Ram called three government officials. Raj, however, just emailed (three [possibly different] government officials).'

b.   Ravi-ne-bhi   _ ek kitaab di.
     Ravi-ERG-also   a book give-PST.F.Sg
     'Ravi_m also gave a book (to his_m girlfriend).'[5]

Examples (35–38) below show that adjuncts can only be elided and understood as present if other VP-internal material is simultaneously elided, as in the 'b' examples. In the 'c' examples other VP-internal material (in addition to the verb) is overtly present and the adjuncts are no longer interpreted as being covertly present.

Duration adjunct ellipsis only possible if direct object also elided:

(35) a.   Ram du ghOnTa dhore Chomsky-r   notun lekha-Ta poRlo.   *Bangla*
           Ram two hour   taking Chomsky-GEN new   paper-CL read-PST.3
           'Ram read Chomsky's new paper for two hours.'

      b.   Raj-o   _ _ poRlo
           Raj-also   read-PST.3
           'Raj also read (the paper for two hours).'

      c.   Raj-o   _ lekha-Ta poRlo
           Raj-also   paper-CL read-PST.3
           'Raj also read the paper.' NOT communicated: 'for two hours'

Frequency adjunct ellipsis only possible if direct object also elided:

(36) a.   Ram-ne   Chomsky-ka   naya lekh   do baar paha.   *Hindi*
           Ram-ERG Chomsky-GEN new writing two time read-PST.M.Sg
           'Ram read the new paper by Chomsky twice.'

      b.   Raj-ne-bhi   _ _ parha.
           Raj-ERG-also   read-PST.M.Sg
           'Raj also read (the paper twice).'

      c.   Raj-ne-bhi   vo lekh   _ parha.
           Raj-ERG-also that writing   read-PST.M.Sg
           'Raj also read the paper.' NOT communicated: 'twice'

Location adjunct ellipsis only possible if direct object also elided:

(37) a.   anil   Chomsky-ute   putiya paper librari-(y)il   vayicc-u   *Malayalam*
           anil   Chomsky-GEN new   paper library-LOC read.
           'Anil read Chomsky's new paper in the library.'

      b.   radha-(y)um _ _ vayicc-u
           radha-UM   read-PST
           'Radha also read (Chomsky's new paper in the library).'

      c.   radha-(y)um Chomsky-ute   putiya paper vayicc-u
           radha-UM   Chomsky-GEN new   paper read-PST
           'Radha also read Chomsky's new paper.' NOT communicated 'in the library'

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[5] Again, similar patterns are possible with QP objects. An indirect object can be retained in the VP when a direct object is omitted, and the reference of the latter can be understood to be different to that of the QP in the preceding sentence. Hence in (i) below, the subject 'Raj' is understood to regularly send two different baskets of fruit to the Dakkhineshwar temple.

(1)   a.   Ram prayei Dakkhineshwar mandir-e du jhuri   phol pathaye.   *Bangla*
           Ram often   Dakkhineshwar temple-to 2 basket fruit send-PRES

      b.   Raj-o   Dakkhineshwar mandir-e_ pathaye.
           Raj-also Dakkhineshwar temple-to send-PRES
           'Ram often sends two baskets of fruit to the Dakkhineshwar temple. Raj also
           sends (two baskets of fruit) to the Dakkhineshwar temple.'

Time adjunct ellipsis only possible if direct object also elided:

(38) a.   Ram 1995-e Gita-r   sathe dEkha korechilo.   *Bangla*
        Ram 1995-in Gita-GEN with   meet do-PST.3
        'Ram met Gita in 1995.'

     b.   Raj-o   _ _ dEkha korechilo.
        Raj-also   meet do-PST.3
        'Raj also met (Gita in 1995).'

     c.   Raj-o   _ Gita-r   sathe dEkha korechilo
        Raj-also   Gita-GEN with meet do-PST.3
        'Raj also met Gita.' NOT communicated: 'in 1995'

While (35–38) represent the general pattern of 'adjunct ellipsis', it needs to be noted that there is an interesting, complicating effect caused by *contrastive focus* which interacts with the potential ellipsis of adjuncts but not the ellipsis of arguments, again suggesting that these are licensed differently. While adjuncts may commonly not be elided and interpreted if the direct object is not also elided, interestingly this does become possible if the direct object is contrastively focused in Bangla and Hindi. If the identity of the object in the source sentence and that in the following sentence is different and in contrast, ellipsis and the interpretation of an adjunct in the second sentence/clause is possible despite the presence of the overt, focused object, as seen below.

Duration adjunct in presence of overt contrasting object:

(39) a.   Ram du ghOnTa dhore Chomsky-r   notun lekha-Ta poRlo.   *Bangla*
        Ram two hour   for   Chomsky-GEN new paper-CL read-PST.3
        'Ram read the paper by Chomsky for two hours.'

     b.   Raj _ Kayne-er   lekha-Ta poRlo.
        Raj   Kayne-GEN paper-CL read-PST.3
        'Raj read the paper by Kayne (for two hours).'

Locative adjunct in presence of overt contrasting object:

(40) a.   Ram-ko   uske daftar me ek bomb mila   *Hindi*
        Ram-DAT his   office in a bomb find-PST.M.Sg
        'Ram found a bomb in his office.'

     b.   Raj-ko   _ ek dhamki-bhara-khat mila.
        Raj-DAT   a threatening-letter   find-PST.M.Sg
        'Raj found a threatening letter (in his office).'

Frequency adjunct in presence of overt contrasting object:

(41) a.   Ram Chomsky-r   notun lekha-Ta du bar poRlo.   *Bangla*
        Ram Chomsky-GEN new   paper-CL two time read-PST.3
        'Ram read the new paper by Chomsky twice.'

     b.   Raj Kayne-er   _ poRlo
        Raj Kayne-GEN   read-PST.3
        'Raj read Kayne's (twice).'

This focus-licensing effect is not necessary with argument ellipsis, and a direct object can be elided in the presence of an overt indirect object/adjunct without the latter needing to be contrastively focused (33–4). The analysis that can be given to the cases of successful adjunct ellipsis in (39–41) is the following. It can be argued that contrastively focused objects in Bangla and Hindi may be raised out of VP for focus-licensing, allowing for VPE to occur, deleting adjuncts remaining in the VP (but not deleting the verb, which can be assumed to undergo movement out of the VP as in Finnish, Hebrew, Irish, etc., or the object which is focus-raised out of VP). When VP-internal arguments are elided, by way of contrast, it is observed that other VP-internal material need not be understood to be in focus and so is not focus-raised out of VP. The ellipsis of argument nominals can consequently be concluded to apply to individual arguments in situ without any operation of VPE, and Bangla, Hindi and Malayalam are accordingly languages with 'genuine' AE.

3. The potential interaction of agreement and AE in Bangla, Hindi and Malayalam

Having established that AE is substantially present as a phenomenon in Bangla, Hindi and Malayalam, we are now in a position to consider the potential relation of agreement to AE. The predictions of the agreement-based analysis of AE are that AE may be licensed only in the absence of agreement, and otherwise blocked in the presence of agreement. Here we will examine how the agreement-based analysis fares when the varying patterns of agreement and null arguments are considered in Bangla, Hindi and Malayalam, beginning with the latter language.

3.1. Malayalam

Malayalam displays no verbal agreement with either subject or object. The agreement-based approach to AE consequently predicts that patterns of sloppy interpretation should be available with null arguments in both object and subject positions. The patterning found is as follows. For reasons which are still poorly-understood, the subjects of most embedded finite clauses cannot be omitted/null. However, in certain instances it is possible for embedded subject positions to be null, and when this occurs, it is found that sloppy interpretations of such null subject positions are permitted, as illustrated in (42), where the embedded subject of (42b) can be understood to refer to the teacher of the matrix subject of (42b) (and this teacher may be different in reference from the teacher referred to in (42a)):

(42) a. [tan-te   teacher vaLare nalla-van   aanə ennə] anil vicaaricc-u
          self-GEN teacher a lot   good-NZL COP C   anil think-PST
          'Anil$_k$ feels his$_k$ teacher is very nice.'

      b. [_ vaLare kaNisakkaran aanə ennə] ravi vicaarikk-unnu
          a lot   strict   COP C   ravi think-PRES
          'Ravi$_m$ feels (his$_m$ teacher) is too strict.'

When the objects of transitive verbs are null in Malayalam, sloppy interpretations are also licensed, as already seen in example (32). With regard to null arguments which refer to a quantificational phrase present in a preceding sentence/ clause, sloppy interpretations occur with null objects, as shown in example (10), but not with null subjects (14). Overall, then, patterns in Malayalam may seem to bear out the predictions of the agreement-based approach to AE in subject and object positions, with the exception of null subjects which refer back to quantificational phrases.

3.2. Bangla

In Bangla, verbs regularly agree with subjects, but not with objects. The agreement-based approach to AE therefore expects that sloppy interpretations should be licensed with objects but not with subjects. This prediction initially seems to be borne out. Sloppy readings are readily available with objects, as already illustrated in (5), but do not seem to be licensed with subjects, as seen in examples (17) and (18). However, the full patterning in Bangla is more complex. Bangla also has non-nominative subjects marked with genitive or dative case which do not agree with the verb.[6] The agreement-based approach prediction in these cases is that sloppy interpretations should become available, as agreement with the subject does not occur. The observation is that sloppy readings are regularly not possible, in the same way that they are commonly not possible with subjects that do trigger verb agreement:

(43) a. Ram bhabe   je or meye-Ti-ke   aiin poRa ucit   *Bangla*
          Ram think-PRES.3 C his daughter-CL-DAT law study should.
          'Ram$_k$ thinks that his$_k$ daughter should study law.'

      b. Raj-o   bhabe   je _ poRa ucit
          Raj-also think-PRES.3 C   study should
          'Raj$_m$ also thinks that (his$_{k/*m}$ daughter) should study (it/law).'

(44) a. Ram bhabe   je or meye-Ti-r   Abhik-ke   bhalo lage.   *Bangla*
          Ram think-PRES.3 C his daughter-CL-GEN Abhik-ACC like-PRES
          'Ram$_k$ thinks that his$_k$ daughter likes Abhik.'

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[6] For good description of non-nominative subjects in Bangla and other South Asian languages, see Subbārāo (2012, chapter 5).

b. Raj-o   bhabe   je _ Abhik-ke/ta-ke bhalo lage.
Raj-also think-PRES.3 C _ Abhik-ACC/him like-PRES
'Raj$_m$ also thinks that (his$_{k/*m}$ daughter) likes Abhik.'

(45) a. Ram bhabe   je or meye-Ti-r   Ek-Ta notun gaRi ache.
Ram think-PRES.3 C his daughter-CL-GEN one-CL new car COP-PRES
'Ram$_k$ thinks that his$_k$ daughter has a new car.'   *Bangla*

b. Raj-o   bhabe   je _ Ek-Ta notun gaRi ache.
Raj-also think-PRES.3 C one-CL new car COP-PRES
'Raj$_m$ also thinks that (his$_{k/*m}$ daughter) has a new car.'

Also, as will be illustrated in section 5, there are certain special configurations in which sloppy readings of subjects do appear to become possible in Bangla, but subject agreement still occurs on the verb, contra the expectations of the agreement-based approach to AE. Overall then, the predictions of the agreement-based analysis of AE are not borne out by patterns in Bangla, and the language appears to provide clear evidence against the linking of AE with the absence of agreement. Subjects which do not enter into agreement with the verb do not permit sloppy interpretations, and some subjects which do agree with the verb (section 5) do permit sloppy interpretations.

3.3. Hindi

In Hindi, the agreement which is present on verbs can be conveniently manipulated via changes in tense and the occurrence of case-marking on DPs. The core generalizations relating to verbal agreement are that verbs agree with nominative subjects in tenses other than simple past tense, and may agree with objects when (a) the verb is in past tense, the subject is marked with ergative case *–ne*, and the object is not overtly case-marked (with accusative *–ko*), (b) there is no nominative-case subject (in certain modal constructions) and the object is not overtly case-marked.[7]

Controlling for tense and case-marking allows one to test quite comprehensively for the availability of sloppy interpretations with both subjects and objects in the presence/absence of subject/object verb agreement, as illustrated in sections 3.3.1–3.3.3.

3.3.1. Object ellipsis + manipulation of verbal agreement with object

When the object of a transitive verb is null, sloppy interpretations of objects are regularly licensed, both in instances where the verb does not agree with the object – examples (46) and (47) (in which the objects 'car' and 'bicycle' are feminine), and, significantly, in cases where the verb does agree with the object – examples (48) and (49). The latter patterning clearly goes against the predictions of the agreement-based analysis of AE.

(46) a. Ram apni gaRi bechega.   b. Raj-bhi _ bechega.   *Hindi*
Ram self's.F car sell-FUT-M.Sg.3   Raj-also sell-FUT-M.Sg.3
'Ram$_k$ will sell his$_k$ car.'   'Raj$_m$ will also sell (his$_m$ car).'

(47) a. Ram apni saikel theek karega.   b. Raj-bhi _ theek karega.   *Hindi*
Ram self's.F cycle good do-FUT-M.Sg.3   Raj-also good do-FUT-M.Sg.3
'Ram$_k$ will repair his$_k$ bicycle.'   'Raj$_m$ will also repair (his$_m$ bicycle).'

(48) a. Ram-ne   apni   gaRi bechi.   b. Raj-ne-bhi   _ bechi.   *Hindi*
Ram-ERG self's.F car   sell-PST-F.Sg   Raj-ERG-also   sell-PST-F.Sg
'Ram$_k$ sold his$_k$ car.   'Raj$_m$ also sold (his$_m$ car).

(49) a. Ram-ne apni saikel theek ki.   b. Raj-ne-bhi _ theek ki.   *Hindi*
Ram-ERG self's.F cycle good do-PST-F.Sg   Raj-ERG-also good do-PST-F.Sg
'Ram$_k$ repaired his$_k$ bicycle.'   'Raj$_m$ also repaired (his$_m$ bicycle).'

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[7] See Bhatt (2005), Davison (2004) and Kachru (2006) for descriptions of verbal agreement and its interactions with case and tense in Hindi.

There is consequently no difference in the availability of sloppy interpretations of objects caused by presence/absence of agreement of the verb with the object.

3.3.2. Subject ellipsis + manipulation of verbal agreement with subject

When subjects of embedded finite clauses are null, and the verb agrees with the subject, sloppy interpretations of the null subjects are judged not to be easily available. This is illustrated in (50).

(50) a. Ram sochta   hai   uski beti   Italian paRh rahi   hai.   *Hindi*
          Ram think-PRES.M.Sg.3 COP-PRES.3 his daughter Italian study-PRES.F.Sg.3 COP-PRES.3
          'Ram$_i$ thinks his$_{i/k}$ daughter is studying Italian.'

      b. Raj-bhi   sochta   hai   _ Italian paRh rahi   hai
          Raj-also   think-PRES.M.Sg.3 COP-PRES.3   Italian study-PRES.F.Sg.3 COP-PRES.
          'Raj$_m$ also thinks (his$_{i/k/*m}$ daughter) is studying Italian.'

The same patterning is observed when the verb does not agree with subject (when the verb is in past tense and the subject is marked with ergative –*ne*):

(51) a. Ram sochta   hai   uski beti-ne   Italian paRha   hai.   *Hindi*
          Ram think-PRES.M.Sg.3 COP-PRES.3 his daughter-ERG Italian studied-PRF.M COP-PRES.3
          'Ram$_i$ thinks his$_{i/k}$ daughter studied Italian.'

      b. Raj-bhi sochta   hai   _ Italian paRha   hai
          Raj-also think-PRES.M.Sg.3 COP-PRES.3   Italian studied-PRF.M COP-PRES.3
          'Raj$_m$ also thinks (his$_{i/k/*m}$ daughter) studied Italian.'

In (51) a sloppy interpretation of the subject is not easily available, in the same way that it is not easily available when the verb does agree with the subject. The potential availability of a sloppy interpretation of the elided subject is therefore not affected by the presence/absence of verbal agreement with the verb, just as with objects.

3.3.3. Subject ellipsis (dative-marked subject) + verb does not agree with subject

Next we can consider subjects which occur in dative case, with which there is also no agreement with the verb. Such configurations are again expected to allow for sloppy interpretations according to the agreement-based approach to AE. The observation, however, is that sloppy interpretations of null subjects corresponding to dative-marked subjects are not available. This is illustrated in examples (52),

(52) a. Ram sochta   hai   [uski beti-ko   Raj pasand   hai].   *Hindi*
          Ram think-PRES.M.Sg.3 COP-PRES.3 his daughter-DAT Raj like-PRES COP-PRES.3
          'Ram$_k$ thinks his daughter$_{k/j}$ likes Raj.'

      b. Ram-ka-bhai   sochta   hai   [_ Pratap pasand   hai].
          Ram-GEN-brother   think-PRES.M.Sg.3 COP-PRES.3   Pratap like-PRES COP-PRES.3
          'Ram's brother$_m$ thinks (his$_{k/j//*m}$ daughter) likes Pratap.'

(53) a. Ram sochta   hai   [uski beti-ko   saikel cahiye].   *Hindi*
          Ram think- PRES.M.Sg.3 COP-PRES.3 his daughter-DAT bicycle want-PRES.Sg.3
          'Ram$_k$ thinks his$_{k/j}$ daughter needs a bicycle.'

      b. Ram-ka-bhai   sochta   hai   [_ computer cahiye].
          Ram-GEN-brother think-PRES.M.Sg.3 COP-PRES.3   computer wants-PRES.Sg.3
          'Ram's brother$_m$ thinks (his$_{k/j//*m}$ daughter) needs a computer.'

Such examples in which the subjects are marked with dative –*ko* can be usefully compared with indirect object arguments marked which are also marked with dative –*ko*. The latter cases do (easily) allow for sloppy interpretations of corresponding null arguments, as seen in (54):

(54) a. Ram-ne apni beti-ko   computer diya.   *Hindi*
          Ram-ERG self's daughter-DAT computer give-PST.M.Sg
          'Ram$_k$ gave his$_k$ daughter a computer.'

b.   Raj-ne   _ saikel dii.
     Raj-ERG   bicycle give-PST.F.Sg
     'Raj_m gave (his_m/k daughter) a bicycle.'

In sum, the patterns of argument ellipsis and agreement examined here in Hindi seem to provide extensive, straightforward evidence against the linking of AE and the availability of sloppy interpretations of null arguments to agreement. The presence/absence of agreement on Hindi verbs appears to play no role at all in whether sloppy interpretations are available. Such interpretations are readily and equally available with objects whether these elements trigger agreement on the verb or not. Sloppy interpretations of elided subjects are also not affected by the presence/absence of agreement of the verb with the subject, and are equally difficult to obtain both when the verb agrees with the subject and when the verb does not agree with the verb. These patterns are summarized in Tables 2 and 3. Table 2 documents the availability of sloppy interpretations of null arguments both when the verb potentially agrees with the argument and when it does not. The Table highlights the fact that the availability of sloppy readings and hence AE does not vary with the presence/ absence of agreement with a null argument. Table 3 notes the predictions of the anti-agreement hypothesis of sloppy interpretations and AE, with shading in the four critical cells where incorrect predictions are made.

Table 2
Summary of availability of sloppy interpretations of null subjects and objects matched against agreement, from data in sections 2.1 and 3.1–3.3.

	Subjects		Objects	
	Verb agrees with subject	Verb does not agree with subject	Verb agrees with object	Verb does not agree with object
Malayalam	n/a	Sloppy ok for non-QPs, not ok for QPs	n/a	Sloppy ok
Bangla	Sloppy not ok	Sloppy not ok	n/a	Sloppy ok
Hindi	Sloppy not ok	Sloppy not ok	Sloppy ok	Sloppy ok

Table 3
Predictions of the availability of sloppy interpretations made by the anti-agreement hypothesis of AE. Shaded cells show incorrect predictions.

	Subjects		Objects	
	Verb agrees with subject	Verb does not agree with subject	Verb agrees with object	Verb does not agree with object
Malayalam	n/a	Non-QPs: sloppy ok QPs: sloppy ok	n/a	Sloppy ok
Bangla	Sloppy not ok	Sloppy ok	n/a	Sloppy ok
Hindi	Sloppy not ok	Sloppy ok	Sloppy not ok	Sloppy ok

Quite generally, then, a consideration of AE patterns in particularly Bangla and Hindi (where agreement patterns can be manipulated) indicates that the anti-agreement-based approach to the licensing of AE is disconfirmed by these languages as a cross-linguistic, universal explanation for the occurrence of AE. The occurrence of agreement in South Asian languages clearly does not seem to be a significant factor restricting the availability of AE and sloppy interpretations, and the licensing of AE/sloppy interpretations regularly operates in a way that is independent of the presence/absence of agreement. In section 4, we now return to the general issue of identifying factors which will potentially predict the occurrence of AE in a language, and then in section 5 describe two further important issues which interact with the licensing of sloppy interpretations and AE in Bangla, Hindi and Malayalam.

4. Revisiting the cross-linguistic distribution and licensing of AE

As noted in the introduction, Takahashi (2011, in press) highlights and investigates two particular hypotheses of AE as possible explanations for the cross-linguistic spread of AE – the anti-agreement-based hypothesis, that AE occurs in (null argument) languages in instances where there is no agreement between an argument and the verb (Şener and Takahashi, 2009; Takahashi, 2008a,b, in press), and the scrambling hypothesis, that AE occurs in (null argument) languages with scrambling (Oku, 1998). The results of the current study of South Asian languages clearly seem to indicate that the availability of AE in a language is actually not a function of the presence/absence of agreement. The question

therefore remains whether the distribution of AE can still be predicted across languages, whether it is dependent on scrambling or some other linguistic property, and how to view the data which initially appeared to suggest that AE is agreement-dependent. In Takahashi (in press) this data came primarily from Turkish, and also from Spanish.

Considering the latter issue first, as part of the general investigation of AE carried out in the current study of South Asian languages, the Turkish patterns presented in Takahashi (in press) were briefly re-investigated with six speakers of Turkish, by means of the three core pieces of data from Takahashi (in press) below.[8] In (55), the embedded verb is finite and the anti-agreement view of AE predicts that sloppy readings of the null subject should not be possible, whereas in (56) and (57), the embedded verb is invariable and non-finite, and the agreement-based view of AE expects that sloppy readings of the null subject should be possible. In the re-examination of this data, it was found that there was actually considerable speaker variation in judgment of the data, and no clear and consistent correspondence between the presence/absence of agreement and the availability of AE/sloppy interpretations. Some speakers allowed sloppy interpretations uniformly in subject positions regardless of the presence/absence of agreement, others indicated that they accepted it sometimes but more regularly disallowed it (but not in a way that clearly followed the presence/absence of agreement).[9] The AE patterns in Turkish would therefore seem to still be rather murky and in need of further investigation and clarification.[10]

(55) a. Can [[*pro* oğl-u   İngilizce öğren-iyor   diye] bil-iyor.
John his   son-3S English learn-PRES C   know-PRES
'John knows that his son learns English.'

b. Filiz-se   [*e* Fransızca öğren-iyor   diye] bil-iyor.
Phylis-however   French   learn-PRES C   know   PRES
'Phyllis, however, knows that *e* learns French.'

(56) a. Can [*pro* oğl-u   İngilizce öğren-ince]   seven-di.
John his   son-3S English learn-because be.pleased-PRES.PRF
'John is pleased because his son has learned English.'

b. Filiz-se   [*e* Fransızca öğren-ince]   seven-di.
Phylis-however   French   learn-because be.pleased-PRES.PRF
'Phyllis, however, is pleased because *e* has learned French.'

(57) a. Pelin [[*pro* yeğen-i]-ni   lise-ye   başla-yacak] san-ıyor.
Pelin her   niece-3S-ACC high   school-DAT start-FUT   think-PRES
'Pelin thinks her niece will start high school.'

b. Suzan-sa   [*e* ilkokul-a   başla-yacak] san-ıyor.
Susan-however   grade school-DAT start-FUT   think-PRES
'Susan thinks *e* will start grade school.'

If it is concluded that agreement is not the key parameter which allows one to predict (and possibly explain) the occurrence of AE in a language, it is natural to ask whether the alternate scrambling hypothesis considered in Takahashi (in press) might be returned to as an account of the cross-linguistic distribution of AE. It has now been established that patterns of AE occur in Japanese, Bangla, Hindi, Malayalam, and Turkish, and these are indeed all languages which are regularly viewed as scrambling languages. However, there is also recent confirmation that the kinds of pattern which are referred to here as argument ellipsis occur in Chinese as well (Li, 2007; Aoun and Li, 2008), and Vietnamese (Binh Ngo, Giang Le, p.c.), and neither of these languages is commonly characterized as a language with scrambling. The presence of scrambling in a language may therefore not be the single shared cross-linguistic factor which allows AE to occur.

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[8] Many thanks to Jaklin Kornfilt, Asli Göksel and four other speakers of Turkish for assistance in this.

[9] For example, three of the six speakers consulted disallowed sloppy readings in examples (56) and (57) where the anti-agreement view expects it to be available, and three of the six speakers found sloppy readings to be possible in (55), where the presence of a finite verb should only allow for strict readings, according to the anti-agreement hypothesis. There was also no fully clear, patterning across individual speakers, and the sloppy reading of (56) (null subject of non-finite, invariable verb) was rejected by speakers who accepted a sloppy reading in (57) (also null subject of non-finite, invariable verb).

[10] With regards to Spanish, a similar, brief re-investigation of null subjects carried out with three speakers confirmed that AE/sloppy interpretations are not available in Spanish, supporting their classification as instances of pro not AE, as per Takahashi (in press).

In addition to the scrambling and the anti-agreement hypothesis of AE, there are two other interesting approaches to AE which have argued that its occurrence is specifically licensed by properties of the nominal elements that are present in a language, either certain interpretative properties of nominals, Hoji (1998), or the morphosyntactic patterning of such elements, Otaki (2012). We briefly describe these two approaches, and suggest that these now remain the strongest predictors of the cross-linguistic distribution of AE given the properties of the expanded set of languages known to exhibit AE. We also note what kinds of languages would need to be found to provide arguments supporting one of the two nominal-based approaches to AE over the other.

Hoji (1998), focusing on null objects in Japanese suggests that sloppy-like interpretations of null objects in Japanese may arise in virtue of the ability of *bare nouns* in Japanese to be interpreted as either definite or indefinite. For example, a bare noun such as *kuruma* may be interpreted as either indefinite 'a car' or definite 'the car', as illustrated in (58).

(58)   watashi-wa kinoo   kuruma-o kattan desu
       I-TOP   yesterday car-ACC   bought be
       'Yesterday I bought a/the car.'

Hoji suggests that the sloppy(-like) interpretations of null objects in Japanese may arise in two possible ways. First, a null object may be given the definite interpretation that is possible with bare nouns, so that the gap in examples such as (59b) is interpreted as definite 'the person', and then the identity of the definite NP is determined as that of some salient discourse entity. The strict reading of (59b) results from identifying 'the person' as 'John', and the sloppy reading from taking it to be 'Bill':

(59)   a.   John-ga   zibun-o   suisen-shita
            John-NOM   self-ACC recommended
            'John recommended himself.'

       b.   Bill-mo _ suisen-shita
            Bill-also recommended
            'Bill also recommended *ec*.' *ec* interpreted as a +definite N = person
            ➜ *ec* identified as either (a) John = strict (b) Bill = sloppy

A second possibility suggested to be available with null objects in Japanese is for the gap to be understood as a bare noun with an indefinite interpretation. In (60), it is proposed that the noun *kuruma* 'car' is copied into the null object position at LF, so that (60b) is attributed the meaning 'Bill also washed a car.' A process of enrichment then allows for the understanding that the car belongs to some individual, and this individual can be identified as being 'John' (strict reading) or 'Bill' (sloppy reading), both 'John' and 'Bill' being salient individuals present in the discourse.

(60)   a.   John-ga   zibun-no-kuruma-o aratta
            John-NOM   self's car-ACC   washed
            'John washed his car.'

       b.   Bill-mo _ aratta
            Bill-too _ washed
            'Bill washed *ec* too.' *ec* interpreted as indefinite N = a car
            ➜ possessor of *ec* identified as either (a) John = strict (b) Bill = sloppy

Considering the range of languages currently established as exhibiting AE, these significantly share the property that bare nouns can be interpreted as either definite or indefinite, like Japanese, while null subject languages which do not have AE do not allow bare nouns to occur with definite and indefinite interpretations, and instead require such interpretations to be facilitated by overt definite and indefinite determiners:

(61)   *AE; definite and indefinite interpretations of bare nouns possible*
       Japanese, Turkish, Chinese, Bangla, Hindi, Malayalam

(62)   *No AE; definite/indefinite interpretations of nouns facilitated with overt determiners*
       Spanish, Italian

Hoji's hypothesis of the connection between bare nouns and the resolution of nominal ellipsis developed for Japanese is therefore fully compatible with the current known distribution of AE across languages, and now serves as a better potential predictor of the occurrence of AE than the scrambling and anti-agreement approaches.

Otaki (2012) links AE to differences in the morphological type of nominal phrases, in an interesting development of the analysis of radical pro-drop proposed in Neeleman and Szendrői (2007). Otaki suggests that the ability for languages to leave nominal arguments optionally unpronounced – in other words to elide them/show AE – is dependent on the occurrence of non-fusional morphology in the nominals of a language, in the same way that the occurrence of radical pro-drop and the ability to leave pronouns unpronounced is argued in Neeleman and Szendrői (2007) to be dependent on the occurrence of non-fusional, agglutinating morphology in the pronouns present in a language. Where agglutinating morphology occurs in pronouns, according to Neeleman and Szendrői (2007), the result is a situation in which overt spell-out rules, causing a pronoun and its accompanying case/plural markers to be pronounced, and the radical pro-drop rule, causing a pronominal structure not to be pronounced at all, critically target different levels of the internal structure of a pronominal KP. Such a difference in the levels targeted by the spell-out and pro-drop rules is argued by Neeleman and Szendrői to permit the optionality in pronunciation patterns which occurs in (radical) pro-drop languages – either a pronominal form is overtly pronounced, or it is left unpronounced. The former option causes the spell-out of more features than the latter, while the latter results in the spell-out of a higher level category than the former, a spell-out pattern which is favored by the Elsewhere Condition. The fundamentally different, and hence non-competing advantages of the overt spell-out and pro-drop rules are suggested to allow for either pronunciation strategy to be made use of, while in languages with fusional morphology, the spell-out and pro-drop rules target the same level of structure, causing direct competition between the rules, and the elimination of the pro-drop rule as an option (as overt pronunciation causes more features to be spelt-out and also results in the spell-out of the same high level category that pro-drop would – see Neeleman and Szendrői). Otaki (2012) applies the same approach Neeleman and Szendrői use in analyzing (radical) pro-drop in his analysis of AE, suggesting that the occurrence of non-fusional, agglutinating morphology in nominal arguments may allow for the phenomenon of AE to occur, whereas fusional morphology will result in AE being blocked. Otaki then notes that such a view of the licensing of AE is borne out by Japanese and Chinese, which have non-fusional, agglutinating morphology in nominal arguments and do show AE, and by Serbo-Croatian, Afrikaans and Swedish, which have fusional case morphology in nominals and do not permit AE. Considering the extended set of languages where AE is now known to occur in some form – Japanese, Chinese, Turkish, Hindi, Bangla and Malayalam – these all have the property of having non-fusional, agglutinating morphology in nominal expressions. In contrast to this, other languages such as Spanish and Italian where null arguments pattern like pro rather than AE significantly exhibit fusional morphology in their nominal expressions (for example, the fusion of number and gender within determiners). The distribution of AE and non-AE languages as currently observed therefore (also) seems to be well-captured in Otaki's proposals.

Considering and comparing Hoji (1998) and Otaki (2012), both such approaches are supported by the morphosyntactic and interpretative properties of nominals in the range of languages thus far found to show AE, and both approaches make correct predictions concerning the occurrence of AE in Hindi, Bangla, Malayalam, Japanese, Turkish and Chinese, and the non-occurrence of AE in Spanish and Italian. This consequently makes both these approaches more successful as predictors of the occurrence of AE than the scrambling and anti-agreement hypotheses of AE, and we believe that one of these approaches may be assumed to be the correct analysis of AE cross-linguistically. Currently, as both are equally-well supported by the set of null argument languages investigated to date, what will be needed in future in order to potentially distinguish the two approaches is the identification of languages manifesting AE which either (a) have non-fusional morphology in nominals but do *not* have the property of allowing bare nouns to have definite and indefinite interpretations, or (b) have the property of allowing bare nouns to have definite and indefinite interpretations, and have fusional morphology in nominal expressions. The existence of the former type of language would clearly favor Otaki (2012), while the latter would support an extension of ideas in Hoji (1998) as a more global model of AE. These would now seem to be the critical parameters of variation for future studies of AE to investigate, as agreement and scrambling are eliminated as key cross-linguistic determinants of AE, and we hope that new progress in the study of AE can now be made in this direction.

In addition to helping resolve what may be the relevant underlying factors causing AE across languages in its focus on agreement and AE, the present study of Bangla, Hindi and Malayalam has also uncovered two further complicating factors which interact with the licensing of interpretations of sloppy identity AE which are significant, revealing, and need to be taken into consideration in future investigations. These are now discussed in section 5.

5. More on the licensing of sloppy readings and AE

5.1. Pseudo-sloppy readings of subjects and the role of context

The data reviewed in sections 2 and 3 indicated that sloppy interpretations of null direct objects, indirect objects and selected PP arguments in Hindi, Bangla and Malayalam are readily available and result from argument ellipsis, but similar interpretations of subjects in Hindi and Bangla are not found to regularly be available. This characterization of null subjects and sloppy identity now requires further explanation and qualification. The investigation of Hindi and Bangla showed two exceptions to the generalization that empty subjects cannot be interpreted in a sloppy way. The first of these concerns the

use of heavily enriched context. It was found that when a particularly rich context is supplied to hearers to judge the availability of sloppy interpretations of elided subjects, such interpretations are in fact reported to become available, in both languages, as illustrated below.

CONTEXT GIVEN: Ram and Raj are brothers, and both have daughters in high school. Both daughters are studying foreign languages.

(63) a. Ram sochta   hai   uski beti   Italian paRh rahi   hai.   *Hindi*
          Ram think-PRES.M.SG.3 COP-PRES.3 his   daughter Italian study CNT.F.Sg COP-PRES.3
          'Ram$_k$ thinks his$_k$ daughter is studying Italian.'

      b. Raj sochta   hai   _ French paRh rahi   hai
          Raj think-PRES.M.Sg.3 COP-PRES.3   French study CNT.F.Sg COP-PRES.3
          'Raj$_m$ thinks (his$_m$ daughter) is studying French.' (sloppy possible)

(64) a. Ram bhabe   [je or meye   Italian poRcche].   *Bangla*
          Ram think-PRES.3 C his daughter Italian study-PRES.CNT.3
          'Ram$_k$ thinks his$_k$ daughter is studying Italian.'

      b. Raj bhabe   [je _ French poRcche]
          Raj think-PRES.3 C   French studying-PRES.CNT.3
          'Raj$_m$ thinks (his$_m$ daughter) is studying French.' (sloppy possible)

CONTEXT GIVEN: Raj and Pratap come to meet Ram's daughter and Ram's brother's daughter for purposes of matrimony. Ram's daughter and Ram's brother's daughter both select one prospective groom. Ram and Ram's brother observe the interactions.

(65) a. Ram sochta   hai   [uski beti-ko   Raj pasand hai].   *Hindi*
          Ram think-PRES.M.Sg.3 COP-PRES.3 his   daughter-DAT raj like   COP-PRES.3
          'Ram$_k$ thinks his$_k$ daughter likes Raj.'

      b. Ram-ka-bhai   sochta   hai   [_Pratap pasand hai].
          Ram-GEN-brother   think-PRES.M.Sg.3 COP-PRES.3   Pratap like   COP-PRES.3
          'Ram's brother$_m$ thinks (his$_m$ daughter) likes Pratap.' (sloppy possible)

(66) a. Ram bhabe   [je or meye-er   Raj-ke   bhalo lage].   *Bangla*
          Ram think-PRES.3 C his daughter-GEN Raj-ACC like-PRES
          'Ram$_k$ thinks his$_k$ daughter likes Raj.'

      b. Ram-er   bhai   bhabe   [je _ Pratap-ke   bhalo lage].
          Ram-GEN brother think-PRES.3 C   Pratap-ACC like-PRES
          'Ram's brother$_m$ thinks (his$_m$ daughter) likes Pratap.' (sloppy possible)

Hence the generalization is that with the use of much contextual priming, sloppy readings do in fact appear to be possible with elided subjects in Hindi and Bangla, and this is not restricted to subjects which do not agree with the verb. In fact, the sloppy reading of the elided nominative subject in (63b, 64b), where there is subject-verb agreement, is easier for speakers to access than (65b, 66b), where there is a dative-marked subject in Hindi and a genitive-marked subject in Bangla and no subject-verb agreement.

It is important to emphasize that there is a clear difference in the context-licensed availability of sloppy readings with subjects and direct and indirect objects. Whereas sloppy readings of elided subjects regularly seem to require heavy contextual licensing, this is not necessary for objects and indirect objects, which allow for sloppy readings without any similar, special contextual priming, as for example in (67).

(67) a. Ram-ne   apni   beti-ko   computer diya.   *Hindi*
          Ram-ERG self's.F daughter-DAT computer give-PST.M.Sg
          'Ram$_k$ gave a computer to his$_k$ daughter.

      b. Raj-ne   saikel diya
          Raj-ERG bicycle give-PST.M.Sg
          'Raj$_m$ gave (his$_m$ daughter) a bicycle.'

We suggest that the correct interpretation of this rich-context licensing effect and the difference in easy availability of sloppy interpretations with subjects and objects is that the null subjects in Bangla and Hindi in examples such as (63–66) are in fact pros/null pronominals and do not in fact result from AE. We suggest that the occurrence of apparent 'sloppy' interpretations in such examples results from the contextual background provided to hearers which makes potential discourse referents available as antecedents for pro subjects, and the mere *appearance* of sloppy interpretations, what we now refer to as 'pseudo-sloppy' readings. For example, in the context provided for (65) and (66), both 'Ram's daughter' and Raj's daughter' are explicitly mentioned and added to the background context, allowing for the null subject in (65b/66b) to select 'Raj's daughter' as antecedent without any process of AE actually occurring – instead a pro subject simply refers back to one of the referents which is present and salient in the discourse. This occurrence of rich context-driven pseudo-sloppy readings is therefore a potentially confounding factor in investigations of AE and needs to be distinguished from the easy accessibility of genuine sloppy interpretations licensed by AE, which does not require the kind of specially enriched context discussed here.

5.2. A licensing condition on genuine sloppy readings of null subjects

A second interesting observation about sloppy readings of null subjects made in connection with Bangla concerns an interesting, though initially puzzling, effect on the interpretative possibilities open to null subjects when the linear position of embedded clauses is manipulated. All previous relevant examples of Bangla in sections 2, 3 and 5.1 contained null subjects in embedded clauses which occur following the matrix clause verb in an ordering which is felt to be the more neutral position for finite clauses in Bangla, and in such configurations significant contextual priming is indeed necessary to license sloppy interpretations of omitted subjects. A second position of finite complement clauses is however possible in Bangla, and subordinate clauses may also occur (less frequently) in pre-verbal position, in a sequencing that is sometimes described as being due to focusing of the CP. The two possible positions for finite embedded clauses are schematized in (68). Hindi, it can be noted, only permits the post-verbal positioning of finite clauses, pattern (68a):

(68) a. [$_{CP1}$ Subject Verb [$_{CP2}$ . . .. . .]]
      b. [$_{CP1}$ Subject [$_{CP2}$ . . .. . .] Verb]

It is a matter of some debate how the two positions of complement clauses may be related to each other, and which should be assumed to be the base position of the clause (see Bayer, 1996; Simpson and Bhattacharya; 2003; Bhatt and Dayal, 2007 for related discussion). What is important to point out here is the fact that the positioning of the complement clause has an interesting effect on the interpretation of the null subject. While null subjects in post-verbal CP complements (pattern 68a) always require heavy contextual licensing in order to have (pseudo-)sloppy readings, when pattern (68b) occurs and the complement clause is pre-verbal, sloppy interpretations are regularly easy to obtain without contextual priming, and seem to be as readily accessible as in languages such as Japanese. Examples (69) and (71) below illustrate (again) that post-verbal CPs do not allow for sloppy readings of null subjects contained within them, while (70) and (72) show that parallel sentences with pre-verbal CPs do permit such interpretations.

(69) a. Abhik bhabe   [$_{CP}$ je or chhele Italian sikhchhe].   *Bangla*
          Abhik think-PRES.3   C his son   Italian learn-PRES.CNT.3
          'Abhik$_k$ believes that his$_k$ son is learning Italian.'

      b. Arun bhabe   [$_{CP}$ je _ Spanish sikhche].
          Arun think-PRES.3   C   Spanish learn-PRES.CNT.3
          'Arun$_m$ believes that (his$_k$ son) is learning Spanish. (post-V CP, strict only)

(70) a. Abhik [$_{CP}$ nijer chele Italian sikhche   bole] bhabe.   *Bangla*
          Abhik   self's son Italian learn-PRES.CNT.3 C   think-PRES.3
          'Abhik$_k$ believes that his$_k$ son is learning Italian.'

      b. Arun [$_{CP}$ _ Spanish sikhche   bole] bhabe.
          Arun   Spanish learn-PRES.CNT.3 C   think-PRES.3
          'Arun$_m$ believes that (his$_m$ son) is learning Spanish. (pre-V CP, sloppy possible)

(71) a. Abhik bhabe   [$_{CP}$ je or meye   Sam-ke   pOchhondo kOre].   *Bangla*
          Abhik think-PRES.3   C his daughter Sam-ACC like   do-PRES.3
          'Abhik$_k$ believes that his$_k$ daughter likes Sam.'

b. Arun bhabe [CP je _ Steven-ke pOchhondo kOre].
Arun think-PRES.3 C Steven-ACC like do-PRES.3
'Arun_m believes that (his_k daughter) likes Steven.' (post-V CP, strict only)

(72) a. Abhik [CP nijer meye-r Sam-ke pOchhondo bole] bhabe. *Bangla*
Abhik self's daughter-GEN Sam-ACC likes C think-PRES.3
'Abhik_k believes that his_k daughter likes Sam.'

b. Arun [CP _ Steven-ke pOchhondo bole] bhabe.
Arun Steven-ACC like C think-PRES.3
'Arun_m believes that (his_m daughter) likes Steven.' (pre-V CP, sloppy possible)

Further investigation has found that the key factor at play in this distribution is the way that the possessor of the subject in the subordinate clause can be overtly instantiated in the (a) sentences. In pattern (68b) when the complement clause is pre-verbal, the possessor critically can occur as the anaphoric element *njier* 'self's', whereas when the complement clause follows the embedding verb, the only option available is for the possessor to be realized as *tar* or *or* which are non-anaphoric pronominal forms equivalent to 'his/her'. This difference in the potential instantiation of the possessor form proves to be crucial for the interpretation of null subjects in a genuinely sloppy way, without the need for special contextual licensing. In the preverbal patterning (68b), if the anaphoric element *njier* is legitimately replaced with the pronominal possessor *tar* or *or* as in (73) and (74), the easily accessible sloppy interpretation of the null subject is no longer available, and only pseudo-sloppy interpretations are possible when rich contextual licensing is supplied. It is therefore not the position of the embedded clause per se which matters for the occurrence of genuine sloppy interpretations, but rather the possibility of an anaphoric possessor which it makes available, apparently a special requirement on the licensing of a genuine, easy sloppy reading

(73) a. Abhik [CP tar chele Italian sikhche bole] bhabe. *Bangla*
Abhik his son Italian learn-PRES.CNT.3 C think-PRES.3
'Abhik_k believes that his_{k/l} son is learning Italian.'

b. Arun [CP _ Spanish sikhche bole] bhabe.
Arun Spanish learn-PRES.CNT.3 C think-PRES.3
'Arun_m believes that (his_{k/l/#m} son) is learning Spanish.'
(strict or pseudo-sloppy only, represented as #m)

(74) a. Abhik [CP tar meye-r Sam-ke pOchhondo bole] bhabe.
Abhik self's daughter-GEN Sam-ACC like C think-PRES.3
'Abhik_k believes that his_{k/l} daughter likes Sam.'

b. Arun [CP _ Steven-ke pOchhondo bole] bhabe.
Arun Steven-ACC like C think-PRES.3
'Arun_m believes that (his_{k/l/#m} daughter) likes Steven.'
(strict or pseudo-sloppy only, represented as #m)

As noted above, it is not possible for finite clauses to be pre-verbal in Hindi, and hence it cannot be tested whether a similar manipulation of the CP would have parallel effects in Hindi. However, the more restricted patterning found with post-verbal finite clauses in Hindi is consistent with Hindi being like Bangla in also requiring the presence of an anaphoric possessor for the licensing of a genuine sloppy interpretation of a null subject – in the post-verbal position, only a pronominal possessor may be used to modify subjects and not anaphoric subject-oriented *apni* 'self's', and only rich context pseudo-sloppy interpretations of null subjects here are available (in addition to strict interpretations).

As for Malayalam, where complement clauses are regularly and neutrally pre-verbal (pattern 68b, not 68a), a re-investigation of the availability of sloppy interpretations of null subjects shows that this is also dependent on the selection of the NP possessor in the overt source sentence, as in Bangla (and putatively Hindi). Where genuine sloppy interpretations arise, this requires the use of anaphoric *tante* 'self's', and the alternate use of pronominal *avante* 'his/her' results in either strict or pseudo-sloppy readings requiring heavy contextual licensing.

This necessary occurrence/involvement of the use of anaphors to license sloppy readings of omitted arguments has not been observed in previous descriptions of AE and suggests that anaphors and pronominal possessors in Bangla, Malayalam and Hindi are significantly distinguished with regard to the LF copying and transfer of referential indices in instances of ellipsis resolution, in the following way. Making use of the terminology and approach in Fiengo and May

(1994), it can be suggested that when pronominal possessors occur within the subjects of embedded clauses, these are not interpreted as being directly dependent on another NP within the sentence for the resolution of their reference and receive an independent α superscript. They also receive a referential index, which may coincide with that of another NP within the same sentence, or refer to an individual outside the sentence. In the former case, the pronominal possessor of an embedded clause subject may be understood as referring to the same individual as a higher clause subject, as in (73a/74a) above with the k-index construal. When examples such as (73a) and (74a) are followed by sentences such as (73b) and (74b) where the subject of the embedded clause is null, we suggest that there are two mechanisms available to interpret the reference of the null subject. One option is for the subject gap in the embedded clause to be understood as arising from argument ellipsis, which we take to be the projection of an empty argument position, interpreted via LF copying of material from an accessible NP antecedent present in the sentence/discourse. Critically in the case of pronominal possessors, we suggest that the LF copying procedure enforces identity preservation and the maintenance and obligatory copying of any referential index assigned to the pronominal in the source sentence. Hence if the pronominal possessor in (73a) and (74a) is understood to refer to the main clause subject in (73a) and (74a), this referential identity must be carried over in copying the NP into the site of argument ellipsis in (73b) and (74b), resulting in the strict interpretation and the absence of a genuine sloppy interpretation.[11] A second option, we suggest, is for the subject gap in (73b) and (74b) to be filled with a pro element, which will be interpreted as referring to a prominent discourse entity. With a sufficiently rich discourse provided to hearers, this will allow for a pseudo-sloppy reading of the null subject.

In other pairs of sentences in which an anaphoric possessor occurs in the subject of an embedded clause, as in Bangla (70a) and (72a) and Malayalam (42a), a different possibility of interpretation arises. As in Fiengo and May (1994), we assume that anaphors, unlike pronouns, are interpreted as being directly dependent on some other NP within the sentence for the resolution of their reference and receive a β superscript. A referential index will also be assigned to the anaphoric possessor in the interpretation of sentences such as (70a), (72a) and (42a). This will naturally be the index of the main clause subject, as this is the only antecedent NP available for the anaphor in the sentence – the β superscript forces the anaphor to depend on some other NP within the same sentence for its interpretation. What we suggest is critically important in the LF resolution of the subject gap in the (b) sentences in (70), (72) and (42), is that the copying of material from the antecedent NP into the AE site does *not* involve copying of the referential index assigned to the anaphor in the (a) sentences, unlike in cases involving the copying of pronouns, and all that is copied is the β superscript requiring that the anaphor be construed as referring to some other NP in the same sentence. This consequently results in the genuine sloppy interpretation.

The contrasts noted above in the critical use of anaphors vs. pronouns for the licensing of interpretations of sloppy identity in subject positions extend further within Bangla, Hindi and Malayalam to other argument positions where AE occurs, and may also show signs of being significant in other AE languages. For example, when pronominal possessors are substituted for anaphoric possessors in other sentence pairs in Bangla, Malayalam and Hindi which give rise to genuine sloppy interpretations with null direct and indirect objects, such as (11a/b), (32a/b) and (34a/b), the use of a pronominal possessor results in a loss of the genuine sloppy interpretation and a switch to either a strict interpretation of the null direct/indirect objects or a pseudo-sloppy interpretation which requires heavy contextual priming. (75), (76) and (77) illustrate this and correspond to (11a/b), (32a/b) and (34a/b), with pronoun possessors substituted for the original anaphors.

(75)   a.   Abhik khObor-Ta or principal-ke   fax korlo.   *Bangla*
            Abhik news-CL   his principal-ACC fax do-PST.3
            'Abhik$_k$ faxed the information to his$_{k/l}$ principal.'

       b.   Kintu, Arun khObor-Ta _ email korlo.
            but   Arun news-CL   email do-PST.3
            'Arun$_m$, however, emailed the information (to his$_{k/l/\#m}$ principal).
            (strict ok, pseudo-sloppy possible with enriched context, genuine sloppy not ok)

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[11] Patterns suggesting that in some instances there is obligatory copying of a referential index in ellipsis resolution have been noted in certain cases in English. Consider example (i) below, from Oku (1998). Oku notes that where the pronoun 'him' in the first clause is interpreted as referring to some individual that is *not* the subject 'John', it has to be taken to refer to the same person in the second clause, and a sloppy interpretation is not possible. Such 'identity preservation' is suggested by Oku, as here, to result from the obligatory preservation of a referential index on the pronoun when LF copying of the VP occurs in the second clause:

(i)   John$_k$ said Mary hit him$_m$, and Bill$_h$ did _ too.
       only strict reference: 'Mary hit him$_m$'

(76) a.   anil epozhum avante makan-e pukarttum   *Malayalam*
           anil often   his   son-ACC praise-mod
           'Anil$_k$ often praises his$_{k/l}$ son.'

      b.   (pakshe) ravi epozhum ceetha parayum
           but   ravi often   scolds tell-UM
           '(But) Ravi$_m$ often scolds (his$_{k/l/\#m}$ son).'
           (strict ok, pseudo-sloppy possible with enriched context, genuine sloppy not ok)

(77) a.   Amit-ne   uski premika-ko   ek kitaab di.   *Hindi*
           Amit-ERG his girlfriend-ACC a book give-PST.F.Sg
           'Amit$_k$ gave a book to his$_{k/l}$ girlfriend.'

      b.   Ravi-ne-bhi   _ ek kitaab di.
           Ravi-ERG-also   a book give-PST.F.Sg
           'Ravi$_m$ also gave a book (to his$_{k/l/\#m}$ girlfriend).'
           (strict ok, pseudo-sloppy possible with enriched context, genuine sloppy not ok)

Briefly considering other languages such as Japanese and Chinese commonly reported to exhibit AE and the easy availability of sloppy interpretations of null arguments, it is striking to find that all Japanese examples of AE and sloppy identity with possessor-NPs in works such as Oku (1998), Takahashi (in press) and Otaki (2012) do indeed occur with an anaphoric possessor element *jibun-no* 'self's', and in Mandarin Chinese the use of the anaphoric possessor *ziji-de* results in the availability of sloppy readings in embedded subject positions which have sometimes (Cheng, 2011; Takahashi, in press) been suggested not to permit AE/sloppy interpretations, as illustrated in (78)[12]:

(78) a.   Zhangsan shuo ziji-de haizi kao-jin-le   Chiao-Tung Daxue.
           Zhangsan say   self's child test-enter-ASP Chiao-Tung university
           'Zhangssan$_k$ said his$_k$ child got into Chiao-Tung University.'

      b.   Lisi shuo _ kao-jin-le   Cheng Kung Daxue.
           Lisi say   test-enter-ASP Cheng Kung university
           'Lisi$_m$ said (his$_m$ child) got into Cheng Kung university.' (sloppy ok)

This raises the question of whether the presence of anaphors in the NP antecedents of argument ellipsis is perhaps both (a) a sufficient condition for successful AE to occur cross-linguistically, and (b) a necessary condition for all occurrences of AE within a single language? We believe that the answer here may be 'no'. Spanish and Italian, for example, are languages in which the sloppy interpretation of null subjects (hence AE) is not available. While examples in the literature illustrating this patterning are commonly not found to make use of anaphoric possessors in the relevant antecedent NPs (see (3) in section 1), when sentence pairs including the anaphoric modifier *proprio* 'self's/own' were tested with speakers of Spanish and Italian, this did not result in the licensing of sloppy interpretations in a different way from the use of a simple pronoun.[13] The use of anaphoric elements might therefore seem not to be a sufficient condition for AE to occur successfully in all null argument languages. Second, it was found

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[12] Thanks to Wei-Wen Roger Liao, Iris Wu and Xiu-Zhi Zoe Wu for discussion of the Chinese date.
[13] One of the examples tested with speakers was Spanish (i) below.

(i) a.   José cree   que su propria hija   va a ganar el   premio.
           Jose believes that his own   daughter goes to win   the prize
           'Jose$_k$ thinks his$_k$ daughter will win the prize.'

      b.   Juan también cree   que _ va a ganar el   premio.
           Juan also   believes that   goes to win   the prize
           'Juan$_m$ also believes that (his$_{k/*m}$ daughter) will win the prize.'

It might be that the use of anaphoric/logophoric *proprio* does not help license a sloppy interpretation in these instances because pronominal *su* 'his' is still present, hence the referential index of *su* may be obligatorily copied and block sloppy readings. In Bangla, Hindi, Malayalam and Chinese where anaphoric possessors occur licensing sloppy readings, they are not accompanied by pronouns, hence are rather different from the Spanish and Italian cases tested with *proprio*.

that there are some speakers of Chinese for whom sloppy interpretations of both subject and object AE are possible with both anaphoric and bare pronominal possessors.[14] Within Chinese, then, the use of anaphors might not appear to be a uniformly necessary condition for AE to occur. Despite such observations, the effect of anaphors nevertheless does appear to be crucial in various languages to license successful AE, having a major facilitating role in Bangla, Malayalam and Hindi, and therefore needs to be carefully controlled for in explorations of AE and recognized as a potentially important constraint on the LF interpretation of elided arguments.

Finally, the comparative study of subject and object ellipsis in Bangla, Hindi and Malayalam leads to a new conclusion concerning the type of AE which involves quantificational NPs as antecedents for elided arguments, such as in Japanese example (4). The present study has shown that non-quantificational AE (i.e. where the antecedent NP for an elided argument is not a quantificational phrase), is possible in object positions in Bangla, Hindi and Malayalam, and also in subject positions in Bangla and Malayalam once this is licensed by the use of anaphors (this not being possible in embedded CPs in Hindi due to impossibility of anaphors occurring in post-verbal clauses). Considering the occurrence of quantificational-AE, this was shown to be licensed in object position in all three languages (examples 8–10), but not possible in subject position in any of the three languages (examples 14–16). The phenomenon of quantificational AE has been much less widely investigated than non-quantificational AE, and the initial observation made in Takahashi (2008b, in press) that quantificational AE is licensed to occur in Japanese in the same argument positions that permit non-quantificational AE may lead to the expectation that cross-linguistically both types of AE would pattern uniformly together within a language. The study of AE in Bangla, Malayalam and Hindi has shown that this is not the case, and there is an asymmetry in the occurrence of quantificational and non-quantificational AE, the former being licensed in both subject and object position, subject to the availability of anaphors as a substitute for pronominal elements in antecedent NPs, while the latter is available in object but not subject positions. In the case of such quantificational AE, there are clearly no anaphors or pronouns present in the antecedent NP to either enable or inhibit copying of the NP into an ellipsis site without the referential index associated with the NP, thus licensing sloppy-like interpretations. In place of pronouns and anaphors there are simply numeral quantifiers establishing a set of elements whose reference may be interpreted as being either the same (strict reading) or different (sloppy-like reading) in the antecedent sentence and the sentence with AE. If such elements allow for sloppy-like readings in object positions, it is anticipated that in theory they should also permit sloppy-like readings in subject positions. This makes it difficult to attribute the absence of quantificational AE only in subject positions to stable, inherent properties of material copied from available antecedent NPs (i.e. the numeral quantifiers in these NPs). Descriptively, one way to account for the non-availability of quantificational AE in subject positions in Bangla, Hindi and Malayalam is to assume the existence of a filter in these languages (but not in Japanese) requiring that null subjects regularly be interpreted as definite in reference, whether arising from AE or the use of pro. This will successfully allow for non-quantificational instances of AE to occur, these all resulting in definite interpretations of the elided NPs, but disallow the occurrence of

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[14] For these speakers, use of either anaphoric *ziji* or pronominal *ta* in examples such as those below allowed for AE in subject position and the licensing of sloppy interpretations:

i.　a.　Zhangsan juede ziji-de/ta-de　　zhaiyao bu　cuo.
　　　　Zhangsan feel　　self-DE/he-DE abstract not　bad
　　　　'Zhangsan feels his abstract wasn't bad.'

　　b.　Lisi juede ＿ mei　xiwang.
　　　　Lisi feel　　　no　hope
　　　　'Lisi feels (his abstract) has no hope.'
　　　　(either strict or sloppy)

ii.　a.　Zhangsan juede ziji-de/ta-de　　haizi hui　　jia　　le.
　　　　Zhangsan feel　　self-DE/he-DE child return home ASP
　　　　'Zhangsan thinks his sone has returned home.

　　b.　Lisi yiwei ＿ hai mei hui　　jia.
　　　　Lisi think　　still not return home
　　　　'Lisi think that (his son) still hasn't returned home.' (either strict or sloppy)

iii.　a.　Zhangsan juede [ziji/ta hua　de　hua]　bu　cuo.
　　　　Zhangsan feel　　self/he paint DE　picture not　bad
　　　　'Zhangsan feels that the picture he painted is pretty good.'

　　b.　Lisi juede ＿ bu　tai hao.'
　　　　Lisi feel　　not too good
　　　　'Lisi feels that (the picture he painted) is not too good.' (either strict or sloppy)

the quantificational type of AE seen in (4d), which does give rise to indefinite interpretations of the elided null subject. Such an account would support a version of the approach to AE proposed in Sato (2012), which suggests that indefiniteness restrictions on subject positions may play an important role in restricting AE in subject positions in certain languages. Whether this kind of analysis turns out to be on the right track will depend in part on what can be discovered about quantificational AE in other languages and the degree to which it does or does not pattern uniformly with non-quantificational AE in the same language. We believe that this currently much understudied domain of AE will be a fruitful and revealing area for future cross-linguistic research into AE to explore.

6. Concluding remarks

This paper set out to achieve a number of goals. One primary objective was to probe and determine the potential identity of empty nominal arguments in Bangla, Hindi and Malayalam. Somewhat surprisingly, there has been rather little systematic investigation of null arguments in Indic languages, and instead just broad reference to such languages as bring pro-drop.[15] The paper has therefore attempted to provide more detail and analysis of null argument patterns in three major languages of South Asia. The study of Bangla, Hindi and Malayalam was also oriented toward a specific focus on the phenomenon of argument ellipsis, a syntactically mediated process of interpretation which allows for sloppy readings of empty nominals in a way similar to VP ellipsis, but without the necessary deletion of a full VP-level constituent. With this special attention to argument ellipsis, the study aimed to broaden the available description of languages exhibiting AE, and thereby assist in the wider goal of narrowing down what common denominating properties languages allowing AE may have, hence (ultimately) uncover what linguistic factors may be responsible for the licensing of AE. In the course of the investigation, it was argued that Bangla, Hindi and Malayalam are all languages in which the occurrence of phonetically empty arguments may indeed arise from AE with direct objects, indirect objects, selected PPs and also subjects. An investigation of the pre- and post-verbal positioning of complement clauses containing null subjects in Bangla, and a comparison with Hindi and Malayalam, led to the further discovery that an important licensing condition on successful AE in these (and possibly other) languages is the use of anaphors rather than pronouns in the antecedent NPs which are copied into ellipsis sites at LF. It was also argued that where such elements do not occur, a pro argument may be base-generated and give rise to pseudo-sloppy readings if a heavily enriched discourse is provided to hearers, resulting in the potential illusion of AE, but differing significantly from AE in the way that sloppy-type readings are contextually licensed.

An additional important goal of the paper was to make use of null argument patterns in Bangla, Hindi and Malayalam to examine the anti-agreement hypothesis of AE (Şener and Takahashi, 2009; Takahashi, 2011, in press), according to which it is critically the absence of agreement that is responsible for the occurrence of AE in a null subject/object language. Considering Bangla, Hindi and Malayalam and the range of agreement patterns that may occur with null subjects and objects, it was determined that the anti-agreement approach to AE is disconfirmed as a universal hypothesis of the licensing of AE by patterns in these South Asian languages. Cross-linguistically, it was noted that an alternative scrambling approach to the licensing of AE is also not a reliable cross-linguistic predictor of AE given languages such as Chinese and Vietnamese which exhibit patterns of AE but no typical scrambling. Comparing the properties of the set of languages presently confirmed as exhibiting AE, it was argued that this now supports two other approaches to the licensing of AE – one being a development of Hoji's (1998) analysis of null objects in Japanese which attributes the availability of AE to the definite and indefinite interpretations open to bare nouns in a language, and the other being Otaki's (2012) morphosyntactic account of AE which links the presence of AE to the absence of fusional morphology in nominal phrases. Future work testing these two hypotheses further by means of other languages will now hopefully be able to distinguish which of these approaches is the superior predictor and underlying cause of argument ellipsis. Finally, it was also remarked that quantificational AE shows signs of being different in its distribution from non-quantificational AE, and that in Bangla, Hindi and Malayalam this may be explained by the assumption of a filter on the interpretation of null subjects constraining them to be definite, as in Sato (2012). Such a method of explanation will benefit from further cross-linguistic studies of quantificational AE, which are now much needed and likely to be an important topic matter for future research.

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[15] Holmberg et al. (2009) include the Indo-Aryan language Marathi in a comparative study of Marathi, Brazilian Portuguese and Finnish, and characterize Marathi as a partial pro-drop language (a language allowing pro-drop under certain stricter conditions than other pro-drop languages). This article also mentions that Hindi and Bangla may be partial pro-drop languages, but without the full set of typically strict licensing conditions that occur in other partial pro-drop languages. Takahashi (2011), which the current authors became aware of in the course of the present study, considers null arguments in Malayalam, but reaches different conclusions from those in the current investigation, suggesting that Malayalam is a language with covert agreement, not allowing AE with subjects. The observation of cases such as (42), however, indicates that AE may in principle occur with subjects of embedded clauses, though other factors appear to constrain a fuller distribution of null subjects in embedded clauses in Malayalam.

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