

Article

The Interpretation of Implicit Arguments in Paraguayan Guaraní

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Abstract: Paraguayan Guaraní allows for implicit arguments, that is, arguments that are neither cross-referenced on the verb nor realized by an independent noun phrase. Building on prior description of the distribution of implicit arguments in the language, this paper describes the interpretations such arguments can receive. Specifically, the paper shows that implicit arguments in Paraguayan Guaraní can receive elided and existential interpretations, in addition to the anaphoric interpretation described in prior work.

Keywords: implicit arguments; Paraguayan Guaraní; anaphoric; elided and existential interpretations; verb classes

1. Introduction

In Paraguayan Guaraní, arguments of verbs may be implicit, meaning that they are neither cross-referenced on the verb nor realized by an independent noun phrase. To illustrate implicit arguments, consider the example in (1),¹ which features the (bold-faced) transitive verb (*o*)*mbo-hováí* ‘answer’. Its first person singular theme argument is not implicit: it is cross-referenced on the verb with the first person set B cross-reference marker *che-* ‘B1sg’. Its third person singular agent argument, however, is implicit: it is neither cross-referenced on the verb nor realized by an independent noun phrase. As indicated by the English translation of (1), the implicit agent argument is understood to be the Little Prince. (Throughout the paper, arguments that are implicit in Paraguayan Guaraní are given in angle brackets in the English translations.)

- (1) Context: The pilot asks the Little Prince if he has plans for tomorrow.

Jepe na-**che-mbo-hováí**-ri.
but NEG-B1sg-CAUS-face-NEG

‘However, [the Little Prince/he] did not answer me.’ (de Saint-Exupéry 2005, p. XXV)

Due to the cross-referencing system of the language, not all arguments of Paraguayan Guaraní verbs can be implicit. As described in detail in Tonhauser (2017), implicit arguments are limited to arguments of (di)transitive verbs, to the exclusion of the single argument of intransitive verbs, and they cannot be first person agent arguments of (di)transitive verbs. The distribution of implicit arguments was described in Tonhauser (2017) on the basis of examples in which the implicit arguments received anaphoric interpretations, as in (1), where the implicit argument is anaphorically resolved to the Little Prince. Building on Tonhauser (2017), this paper shows that implicit arguments in Paraguayan Guaraní can receive not only anaphoric interpretations, but also elided and existential interpretations. The paper proceeds as follows: Section 2 introduces the basics of the Paraguayan Guaraní cross-referencing system, and summarizes the relevant findings from Tonhauser (2017) regarding the distribution of implicit arguments. Section 3 then introduces relevant aspects



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of the anaphoric interpretation of implicit arguments based on [Tonhauser \(2017\)](#). Section 4 describes the elided interpretation of implicit arguments, and Section 5 the existential interpretation. After a brief discussion and pointers to future research in Section 6, the paper concludes in Section 7.

Information about the Consultants and the Research Methods

The empirical generalizations presented in this paper are based on data that were elicited in collaboration with a total of eight consultants in three fieldwork trips between 2013 and 2016. The consultants (five women/three men), who at the time of elicitation were between 22 and (about) 65 years old, were living in San Lorenzo in the Central department of Paraguay, where the elicitation sessions took place (though some consultants had lived in other places during their lives). The consultants are bilingual in Paraguayan Guaraní and Spanish, and speak both languages on a regular basis.

I elicited data by asking for translations (from Spanish to Paraguayan Guaraní, or vice versa), or by asking for acceptability judgments of Paraguayan Guaraní expressions. When a context was presented to the consultants, it was presented in Paraguayan Guaraní (e.g., to specify prior Paraguayan Guaraní utterances) or in Spanish (e.g., to describe background information); see [AnderBois and Henderson \(2015\)](#) for discussion of which language to present a context in. Each piece of data was checked with at least three consultants; judgments were elicited from more consultants when there was disagreement between the consultants' judgments. Examples presented in this paper without a diacritic were judged to be acceptable by each consultant from whom a judgment was elicited; those marked with '#' were judged to be unacceptable by each consultant and are hypothesized to be syntactically well-formed but unacceptable for semantic/pragmatic reasons. Examples that provide evidence for a morphological (in)compatibility were judged out of context and are thus presented without a context. Such examples are presented with English present tense translations even though the Paraguayan Guaraní sentences are also compatible with other temporal references (see [Tonhauser 2011](#) for a discussion of temporal reference in the language).

2. The Distribution of Implicit Arguments

To understand the distribution of implicit arguments in Paraguayan Guaraní (regardless of their interpretation), one must consider the cross-referencing system of the language. This section introduces the basics of the cross-referencing system (Section 2.1) and then describes the distribution of implicit arguments (Section 2.2). Readers familiar with [Tonhauser \(2017\)](#) can skip this section.

2.1. The Cross-Referencing System of Paraguayan Guaraní

Paraguayan Guaraní verbs can only combine with one cross-reference marker, regardless of their valence. For intransitive verbs, this means that the single argument is always cross-referenced: some intransitive verbs, like *(o)guata* 'walk' in (2a), cross-reference their single argument with a set A marker, while other intransitive verbs, like *(che)kaigue* 'be lazy' in (2b), cross-reference their single argument with a set B marker; for the two sets of cross-reference markers, see Table 1. For details on the selectional restrictions of intransitive verbs, see [Gregores and Suárez \(1967\)](#) and [Velázquez-Castillo \(2002, 2004a\)](#).

- (2) a. **A**-guata.
A1sg-walk
'I walk.'
- b. **Che**-kaigue.
B1sg-lazy
'I am lazy.'

([Tonhauser 2017](#), p. 199)

Table 1. Paraguayan Guaraní cross-reference markers, with nasal allomorphs in parentheses, adapted from (Estigarribia 2020, pp. 127f., 134).

Person/Number	Set A	Set B
1sg	<i>a(i)-</i>	<i>che-</i>
2sg	<i>re(i)-</i>	<i>nde- (ne-)</i>
3	<i>o(i)-</i>	<i>i-, ij-, hi'- (iñ-)</i>
1pl.incl	<i>ja(i)- (ñaj(i)-)</i>	<i>ñande- (ñane-)</i>
1pl.excl	<i>ro(i)-</i>	<i>ore-</i>
2pl	<i>pe(i)-</i>	<i>pende- (pene-)</i>
1:2sg	<i>ro(i)-</i>	–
1:2pl	<i>po(i/ro)-</i>	–

For (di)transitive verbs (in active voice), the two hierarchies in (3) determine whether the agent or the theme argument is cross-referenced:

- (3) a. Person hierarchy: 1 > 2 > 3
 b. Thematic role hierarchy: agent > theme

To illustrate the person hierarchy, consider the examples in (4), which both feature the transitive verb (*o*)*topa* ‘find’, and both involve a first and a third person argument. In accordance with the person hierarchy, the first person argument is cross-referenced on the verb, regardless of whether it is the agent, as in (4a), where it is cross-referenced with the set A marker *a-* ‘A1sg’, or the theme, as in (4b), where it is cross-referenced with the set B marker *che-* ‘B1sg’:

- (4) a. **A**-topa jagua.
 A1sg-find dog
 ‘I find a/the dog.’
 b. **Che**-topa jagua.
 B1sg-find dog
 ‘A/the dog finds me.’

The thematic role hierarchy in (3b) comes into play when both the agent and the theme are third person, as in the example in (5), which features the transitive verb (*oi*)*pytyvõ* ‘help’. In such cases, it is the agent argument that is cross-referenced, with a set A marker (that the friend is the theme is indicated by the suffix *-me* on *iñ-angirũ* ‘his friend’):

- (5) Context: The Little Prince has met the lamplighter and takes pity on him.

Oi-**pytyvõ**-se kuri iñ-angirũ-me.
 A3-help-DES past B3-friend-PE

‘He wanted to help his friend.’

(de Saint-Exupéry 2005, p. 52)

Finally, when the agent is first person and the theme is second person, a portmanteau marker cross-references both the agent and the theme argument. This is illustrated in (6), where the first person agent and the second person (singular) theme arguments are both cross-referenced on the verb (*o*)*guerovia* ‘believe’ with *ro-* ‘1:2sg’:

- (6) Context: The pilot reports what the Little Prince said to him when he was upset about what the pilot said about flowers.

Peteĩ py’aro kirirĩ-re, he’i chéve: “Ndo-**ro-gueroviá**-i!”
 one hate silent-REHE A3.say pron.NAG.1sg NEG-1:2sg-believe-NEG

‘After a hateful silence, he said to me: “I don’t believe you!”’ (de Saint-Exupéry 2005, p. 28)

2.2. The Distribution of Implicit Arguments

As defined in [Tonhauser \(2017\)](#), an argument is implicit if it is neither cross-referenced on the verb nor realized by an independent noun phrase. Given the Paraguayan Guaraní cross-referencing system introduced above, only arguments of transitive or ditransitive verbs may be non-cross-referenced: the sole argument of an intransitive predicate is always cross-referenced, and therefore never implicit. Furthermore, due to the person hierarchy in (3a), first person agent or theme arguments of (di)transitive verbs are always cross-referenced, and are therefore never implicit. Second person arguments, on the other hand, can be implicit: in (7), for instance, the second person agent argument is implicit, and the first person theme argument is cross-referenced:

(7) Context: Sandra talks to her sister.

Nde che-’ermána. Che-rayhu.
pron.AG.2sg B1sg-sister B1sg-love

‘You are my sister. [You] love me.’

([Tonhauser 2017](#), p. 196)

First person recipients or causee arguments of ditransitive verbs are also not cross-referenced on the predicate, and may therefore be implicit. For details on non-cross-referenced arguments, see ([Tonhauser 2017](#), p. 211).

Implicit arguments are not subject to a number restriction: they can be singular, as in (1), or plural, as in (8B):

(8) A: Re-hechá=pa che-róga-kuéra?
A2sg-see=Q B1sg-house-PL
‘Did you see my houses?’

B: Heẽ, a-hecha.
yes A1sg-see

‘Yes, I saw [them].’

([Tonhauser 2017](#), p. 220)

Implicit arguments can denote human entities, as in (7), non-human animate entities, as in (9), or inanimate entities, as in (8B). However, as reported in [Tonhauser \(2017\)](#), there are examples for which some speakers of Paraguayan Guaraní reject implicit human theme and recipient arguments: For such speakers, such arguments must be realized with an independent pronoun.

(9) Che-vesína o-guereko peteĩ mbarakaja. Kuehe che-su’u.
B1sg-neighbor A3-have one cat. yesterday B1sg-bite

‘My neighbor has a cat. Yesterday [it] bit me.’

([Tonhauser 2017](#), p. 214)

Finally, implicit arguments cannot be information-structurally prominent. For instance, as illustrated in (10), the shifted topic (Marko) cannot be realized by an implicit argument, as shown by the unacceptability of (10a), but must be realized with an independent pronoun, as shown in (10b):

(10) Context: Sandra is talking to her ex-boyfriend about her current boyfriend Marko.

Nde nda-che-rayhú-i..
pron.AG.2sg NEG-B1sg-love-NEG

‘You don’t love me...’

a. #há=katu che-rayhu.
and=CONTRAST B1sg-love
(but [he] loves me.)

b. há=katu ha’e che-rayhu.
and=CONTRAST pron.AG.3 B1sg-love

‘but he loves me.’

([Tonhauser 2017](#), p. 225)

3. Anaphoric Interpretations of Implicit Arguments

The distribution of implicit arguments in Paraguayan Guaraní was illustrated in [Tonhauser \(2017\)](#) on the basis of examples in which the implicit argument received an anaphoric interpretation, that is, the implicit argument received its interpretation by being anaphorically resolved to an accessible discourse referent ([Karttunen 1976](#); [Kamp 1981](#); [Heim 1982](#)). To capture this interpretation of implicit arguments, I assume that the implicit argument introduces a presupposition that its discourse referent must be identified with discourse referent that is already established in the discourse model, that is sufficiently salient, and that is accessible. For instance, in (1), repeated here, the implicit agent argument of *(o)mbo-hováí* ‘answer’ introduces the presupposition that its discourse referent x must be identified with an accessible, salient discourse referent y in the discourse model. In the formal representation in (11), the presupposition is identified as such with [Beaver’s \(2001\)](#) partial operator ∂ ; the type e variable sp denotes the speaker of the utterance (the pilot):

- (1) Context: The pilot asks the Little Prince if he has plans for tomorrow.

Jepe na-che-**mbo-hováí**-ri.
but NEG-B1sg-CAUS-face-NEG

‘However, [the Little Prince/he] did not answer me.’ ([de Saint-Exupéry 2005](#), p. XXV)

- (11) $\llbracket (1) \rrbracket = \llbracket \neg \text{answer}'(sp)(x) \rrbracket$ with $\partial(x = y)$, where y is an accessible, salient discourse referent

I assume that the presupposition shown in (11) is introduced by the implicit argument. It is also possible to assume that it is introduced by a silent pronoun *pro* that is realized in the syntax. Such an assumption would make explicit that the anaphoric interpretation of implicit arguments in Paraguayan Guaraní is identical to that of English pronouns, with the exception that implicit arguments cannot be information-structurally prominent (see [Section 2.2](#)). Specifically, the interpretation of Paraguayan Guaraní implicit arguments that receive an anaphoric interpretation is similar to that of English pronouns in that the antecedent discourse referent can be strongly familiar, as in (9), where it was introduced by a noun phrase, or weakly familiar, that is, introduced by an entity that is salient in the context of utterance, like the speaker in (1) or a goat that is walking by ([Roberts 2003](#)). Furthermore, as shown in [Tonhauser \(2017\)](#), the interpretation of Paraguayan Guaraní implicit arguments that receive an anaphoric interpretation is similar to that of English pronouns in that deictic, discourse-anaphoric, bound, and donkey anaphoric interpretations are possible. The remainder of this section focuses on properties of the anaphoric interpretation that are useful to keep in mind when introducing the elided and existential interpretations in [Sections 4 and 5](#), respectively.

The first property is that implicit anaphoric arguments are felicitous only if there is a uniquely salient, familiar discourse referent ([Roberts 2003](#)), as in (1), (8), and (9). When such an antecedent discourse referent is not available, as in (12a), it is not possible for the argument to be implicit; rather, a full noun phrase must be used, as in (12b).

- (12) Context: My friends visit me and see that I have a wound on my leg. I say:

- a. #Kuehe **che-su'u**.
yesterday B1sg-bite
(Yesterday, [it] bit me.)
b. Kuehe peteĩ jagua **che-su'u**.
yesterday one dog B1sg-bite
'Yesterday, a dog bit me.'

([Tonhauser 2017](#), p. 214)

A second property is that the antecedent discourse referent must not just exist but also be ‘accessible’, that is, it must be available for subsequent reference (see, e.g., [Karttunen](#)

1976, Kamp and Reyle 1993). One constellation in which a discourse referent that was introduced is nevertheless inaccessible for subsequent reference is if the indefinite noun phrase that introduces the discourse referent occurs in the scope of negation. Thus, a second piece of evidence that implicit arguments in Paraguayan Guaraní can receive anaphoric interpretations is that they are subject to well-studied accessibility restrictions. (13a), for example, is correctly predicted to be unacceptable because the indefinite noun phrase *peteĩ kóche* ‘a car’, which introduces a discourse referent for a car, occurs inside the scope of negation, and hence this discourse referent cannot serve as the antecedent for the implicit anaphoric argument in the second clause. In (13b), by contrast, the discourse referent introduced by the same noun phrase is accessible to the implicit argument, thereby making an anaphoric interpretation of the implicit argument possible:

- (13) a. #Juã nd-o-guerekó-i peteĩ kóche. **A-hecha-uka** ndéve kuehe.
 Juan NEG-A3-have-NEG one car A1sg-see-CAUS pron.NAG.2sg yesterday
 (Juan doesn’t have a car. I showed [it] to you yesterday.)
 b. Juã o-guereko peteĩ kóche. **A-hecha-uka** ndéve kuehe.
 Juan A3-have one car A1sg-see-CAUS pron.NAG.2sg yesterday
 ‘Juan has a car. I showed [it] to you yesterday.’ (Tonhauser 2017, p. 216f.)

In contrast to English, where implicit anaphoric arguments only occur with a small number of verbs (Fillmore 1986, p. 105), implicit anaphoric arguments can be observed with any transitive verb in Paraguayan Guaraní. The examples in (14) illustrate, for instance, anaphorically implicit arguments with (*o*)*japo* ‘make’ and (*o*)*juka* ‘kill’, respectively, two verbs that do not allow for anaphoric implicit arguments in English:

- (14) a. Context: Sofia and I work with wood. We make furniture. Yesterday we made a chair together; we made nothing else.
 Kuehe Sofía o-japo apyka ha che **a-japo** avei.
 yesterday Sofia A3-make chair and pron.AG.1sg A1sg-make too
 ‘Yesterday Sofia made a chair and I made [it], too.’
 b. Context: Sofia and I went hunting yesterday. She saw a boar and I killed it.
 Sofía o-hecha kure ka’aguy ha che **a-juka**.
 Sofia A3-see boar and pron.AG.1sg A1sg-kill
 ‘Sofia saw a boar and I killed [it].’

Against this background on the distribution of implicit arguments and their anaphoric interpretation, the next two sections of the paper introduce two additional interpretations that Paraguayan Guaraní implicit arguments can receive, namely elided interpretations (Section 4) and existential interpretations (Section 5).

4. Elided Interpretations

This section shows that implicit arguments in Paraguayan Guaraní may receive elided interpretations, which means that the implicit argument is interpreted as if a noun phrase that was realized in prior discourse occurred in the clause of the implicit argument. As per this characterization, the elided interpretation of implicit arguments is only available when there is a noun phrase in prior discourse (see Hankamer and Sag 1976 on surface anaphora). The noun phrase that was realized in prior discourse is referred to here as the ‘antecedent noun phrase’. To illustrate the elided interpretation, consider (15). The third person theme argument of (*o*)*hecha* ‘see’ in Bruno’s response is implicit. The antecedent noun phrase is *peteĩ kóche i-vaí-va* ‘an ugly car’ in Abel’s utterance. Bruno’s response is interpreted as if this antecedent noun phrase occurred in the response, that is, as if Bruno had uttered the version given in Bruno’:

- (15) Context: Abel and Bruno live in different cities and saw different ugly cars. They talk on the phone.

Abel: Kuehe a-hecha peteĩ kóche i-vaí-va.
 yesterday A1sg-see one car B3-ugly-REL
 ‘Yesterday I saw an ugly car.’

Bruno: Che a-hecha avei.
 pron.AG.1sg A1sg-see too
 ‘I saw [an ugly car/one], too.’

Bruno’: Che a-hecha peteĩ kóche i-vaí-va avei.
 pron.AG.1sg A1sg-see one car B3-ugly-REL too
 ‘I saw an ugly car, too.’

4.1. Formal Properties of Implicit Arguments That Receive Elided Interpretations

Two central questions in research on languages in which implicit arguments can receive elided interpretations is whether such arguments are best analyzed as null pronominal elements or as involving ellipsis, and, if they involve ellipsis, whether the type of ellipsis involved is NP ellipsis or verb-stranding VP ellipsis; see, for instance, research on Hebrew, Irish, and East Asian languages in Doron (1991); Goldberg (2002); Gribanova (2013); Kim (1999); McCloskey (1991); Otani and Whitman (1991). With respect to the first question, I assume that implicit arguments in Paraguayan Guaraní that receive an elided interpretation involve ellipsis rather than null pronominal elements (which, as discussed above, are assumed to predict the anaphoric interpretation of implicit arguments). I also assume, though without argument, that such implicit arguments in Paraguayan Guaraní are analyzed as NP ellipsis rather than verb-stranding VP ellipsis.

These assumptions correctly predict the interpretation of Bruno’s utterance in (15). Specifically, the implicit theme argument of *(o)hecha* ‘see’ in Bruno’s utterance can, in principle, receive either an anaphoric interpretation, illustrated in (16a), or an elided interpretation, illustrated in (16b). Under the anaphoric interpretation, Bruno’s utterance would be felicitous if and only if there was an accessible, salient discourse referent y for a car, and Bruno’s utterance would be true if and only if Bruno saw that car y . While there is such an accessible, salient discourse referent y for a car (namely the car that Abel saw), Bruno’s utterance would be false under the anaphoric interpretation of the implicit theme argument because the context specifies that Bruno saw a different car than Abel. This means that the implicit argument in Bruno’s utterance is not interpreted as the discourse referent introduced by the noun phrase *peteĩ kóche i-vaí-va* ‘an ugly car’ in Abel’s utterance. Under the elided interpretation of the implicit theme argument, however, Bruno’s utterance is correctly predicted to be true. Under this interpretation, Bruno’s utterance is interpreted as if the noun phrase *peteĩ kóche i-vaí-va* ‘an ugly car’ occurred in his utterance, that is, Bruno’s utterance is interpreted as the variant in Bruno’. This utterance is correctly predicted to be true in the discourse context because there is a car such that Bruno saw it, and there is no requirement that the car be identical to the car that Abel saw: on the contrary, the discourse referent introduced by the elided indefinite noun phrase in Bruno’s utterance introduces a discourse referent x for a car that is required to be a new discourse referent (Kamp 1981; Heim 1982):

- (16) a. Anaphoric interpretation
 $\llbracket (15 \text{ Bruno}) \rrbracket = \llbracket \text{see}'(x)(b) \rrbracket$, with $\partial(x = y)$, where y is an accessible, salient discourse referent for a car
- b. Elided interpretation
 $\llbracket (15 \text{ Bruno}) \rrbracket = \llbracket (15 \text{ Bruno}') \rrbracket = \llbracket \text{car}'(x) \wedge \text{see}'(x)(b) \rrbracket$, where x is a new discourse referent for a car

The analysis of implicit arguments with an elided interpretation also correctly predicts that such arguments do not require accessible discourse referents, in contrast to implicit arguments that receive an anaphoric interpretation. For instance, in (17), the noun phrase *peteĩ kóche* ‘a car’ introduces a discourse referent in the scope of negation. As illustrated

in Section 3, this discourse referent is not a suitable antecedent for an anaphoric implicit argument because it is not accessible (as shown above, (13a) is unacceptable). The implicit argument in the second clause of (17), however, can receive an elided interpretation: what Ana owns is what is denoted by the antecedent noun phrase *peteĩ koche* ‘a car’:

- (17) Nd-a-guerekó-i peteĩ kóche, há=katu Ána o-guereko.
 NEG-A1sg-have-NEG one car and=CONTRAST Ana A3-have
 ‘I don’t have a car, but Ana has [a car/one].’

If implicit arguments that receive an elided interpretation are interpreted as if the antecedent noun phrase occurred in the clause, then we expect such implicit arguments to introduce discourse referents that are available for subsequent anaphoric reference. This expectation is borne out, as illustrated in (18). The noun phrase *peteĩ mburika* ‘a donkey’ in the first clause of (18) introduces a discourse referent in the scope of negation (so one that is inaccessible for anaphoric implicit arguments outside the scope of negation). The implicit argument in the second clause of (18) receives an elided interpretation: it is interpreted as a donkey (parallel to (17)). Empirical evidence that this implicit argument introduces a discourse referent comes from the acceptability of the third clause of (18), which features an anaphoric implicit argument: the donkey that the speaker has encountered is the one that bit her:

- (18) Ána nd-o-topá-i araka’eve peteĩ mburika há=katu che
 Ana NEG-A3-meet-NEG never one donkey and=CONTRAST pron.AG.1sg
 a-topa ha che-su’u.
 A1sg-meet and B1sg-bite
 ‘Ana has never encountered a donkey but I have encountered [one] and [it] bit me.’

Like implicit anaphoric arguments, implicit arguments that receive an elided interpretation can be animate (as in (18)) or inanimate (as in (17)). The elided noun phrase can be a theme argument (as in (17) and (18)), or an agent argument: in the examples in (19), the agent arguments of *(o)visita* ‘visit’ and *(oi)su’u* ‘bite’ are elided.²

- (19) a. Context: Since I live far away from my mother, we have different priests. Mine is called Jesus, and hers is called Jose. Yesterday my mother’s priest went to visit her, and mine visited me. I tell my husband:
 Kuehe peteĩ pa’i o-visita che-sý-pe ha che-visita chéve
 yesterday one priest A3-visit B1sg-mother-PE and B1sg-visit pron.NAG.1sg
 avei.
 too
 ‘Yesterday a priest visited my mother and [a priest] visited me too.’
- b. Context: I live in Paraguay and yesterday a cat bit me. I called my friend Sandra in Germany to tell her, and she told me that a cat bit her, too! I tell my husband:
 Kuehe peteĩ mbarakaja oi-su’u Sándra-pe ha che-su’u avei.
 yesterday one cat A3-bite Sandra-PE and B1sg-bite too
 ‘Yesterday a cat bit Sandra and [a cat] bit me, too.’

The antecedent noun phrases of implicit arguments that receive an elided interpretation can be singular, as in (17) and (18), plural, or quantificational, as shown in the examples in (20):

- (20) A: E-guerú=pa { mokoĩ / sa’i / heta / enterovéa } líbro?
 A2sg-bring=Q two few many every book
 ‘Did you bring two books / few books / many books / every book?’
 B: Heẽ, a-gueru.
 yes A1sg-bring
 ‘Yes, I brought [two books] / [few books] / [many books] / [every book].’

4.2. Strict and Sloppy Interpretations of Implicit Arguments with Elided Interpretations

A hallmark of ellipsis is strict and sloppy interpretations (Ross 1967). These interpretations arise in sentences in which the antecedent expression of the elided expression contains an expression that receives an anaphoric interpretation, like a pronoun or a cross-reference marker.

Under the strict interpretation, the denotation of the pronoun in the elided expression is identical to that of the antecedent expression (that is, Deirdre likes Sue's dog), whereas it is not identical under the sloppy interpretation (that is, Deirdre likes her own dog). An example is the expression *her dog*, which contains a possessive pronoun, in the VP ellipsis example *Sue likes her dog, and Deirdre does, too*. Research on implicit arguments in other languages that can receive elided interpretations reports the availability of both strict and sloppy interpretations; see, for instance, Otani and Whitman (1991) on Mandarin, Korean, and Japanese, and Cyrino and Lopes (2016) on Brazilian Portuguese. In Korean, for instance, Otani and Whitman (1991) report that the implicit theme argument of the transitive verb *pe- 'discard'* in (21) can receive a strict interpretation, according to which Yengmi threw out Chelswu's letters, and a sloppy interpretation, according to which Yengmi threw out her own letters:

- (21) Chelswu-ka [caki-uy phyenci-ul] peli-ess-ta. Yengmi-to [e]
 Chelswu-NOM self-of letter-ACC discard-PST-DECL Yengmi-also
 peli-ess-ta.
 discard-PST-DECL
 'Chelswu threw out his letters. Yengmi also threw out [his/her letters].' (Otani and Whitman 1991, p. 346; glosses and translation adapted)

To investigate whether implicit arguments with elided interpretations also exhibit both strict and sloppy interpretations, I constructed Paraguayan Guaraní examples like those in (22) and (23).³ The examples in (22c) and (23c) are acceptable in the context that is only compatible with the strict interpretation, that is, (22a) and (23a), as well as in the context that is only compatible with the sloppy interpretation, that is, (22b) and (23b). These results suggest that Paraguayan Guaraní implicit arguments that receive an elided interpretation are acceptable with both a strict and a sloppy interpretation:

- (22) a. Context for strict interpretation: I have a dog to which I occasionally give a bath. Sandra doesn't have a dog, but she really likes taking care of my dog.
 b. Context for sloppy interpretation: Sandra and I each have a dog. Mine is called Lobi and hers is called Bobi. I gave a bath to my dog yesterday and Sandra is going to give a bath to hers today.
 c. A-mbo-jahu che-jaguá-pe kuehe (ha) Sándra o-mbo-jahú-ta
 A1sg-CAUS-bathe B1sg-dog-PE yesterday and Sandra A3-CAUS-bathe-PROSP
 ko ára-pe.
 this day-PE
 'I gave a bath to my dog yesterday and Sandra is going to give a bath to [my dog / her dog] today.'
- (23) a. Context for strict interpretation: Raul has a house in the countryside. He went there yesterday. Today he invited his friend Feli to join him because he's feeling a bit lonely. Feli is going to go today.
 b. Context for sloppy interpretation: Raul and Feli each have a house in the countryside. Raul went to his house yesterday and Feli is going to his today. Neither of them goes to the other's house.
 Raul o-ho hóga-pe kuehe. Féli o-hó-ta ko ára-pe.
 Raul A3-go B3.house-PE yesterday Feli A3-go-PROSP this day-at
 'Raul went to his house yesterday. Feli is going to go to [Raul's house / Feli's house] today.'

Unfortunately, however, these examples do not provide conclusive evidence that Paraguayan Guaraní implicit arguments that receive an elided interpretation are compatible with a strict interpretation. Instead, the acceptability of (22c) in the context of (22a) merely provides empirical support that my consultants interpret the implicit argument of (o)mbo-jahu ‘bathe’ in the second clause as the speaker’s dog; likewise, the acceptability of (23c) in the context of (23a) merely provides empirical support that my consultants interpret the implicit argument of (o)ho ‘go’ in the second clause as Raul’s house. While this interpretation is compatible with the assumption that the implicit arguments are elided ones that receive a strict interpretation, the interpretation is also compatible with the assumption that the implicit argument receives an anaphoric interpretation, with the discourse referents of *che jagua* ‘my dog’ in (22c) and *hóga* ‘his/Raul’s house’ as the antecedent discourse referents. In other words, these examples do not provide conclusive empirical support for the existence of the strict elided interpretation, given that Paraguayan Guaraní also has implicit arguments that receive an anaphoric interpretation. The same goes for examples like (21) in Korean, which also has implicit arguments that receive an anaphoric interpretation.

To investigate whether Paraguayan Guaraní implicit arguments may receive strict elided interpretations, one needs to construct examples in which the discourse referent(s) denoted by the antecedent noun phrase are not accessible to the implicit argument (to rule out the possibility that the implicit argument receives an anaphoric interpretation). In English, a suitable candidate for such an antecedent noun phrase is *a picture of her dog* under negation: in *Sue doesn’t have a picture of her dog*, the discourse referent introduced by the noun phrase *a picture of her dog* is not accessible for subsequent reference (see, e.g., #*It has a wooden frame*). The critical question, which I unfortunately must leave to future research, is whether a Paraguayan Guaraní translation of *Sue doesn’t have a picture of her dog*, and *Deirdre doesn’t, either* allows for an implicit theme argument in the second clause, and whether this translation is judged to be acceptable in a context in which Deirdre does not have a picture of Sue’s dog (but has many pictures of her own dog, to rule out the sloppy interpretation). If judged to be acceptable (which I would expect), this kind of example would provide conclusive support for the availability of implicit arguments that receive a strict, elided interpretation.⁴

4.3. Interim Summary

In summary, implicit arguments in Paraguayan Guaraní may receive not just anaphoric interpretations, but also elided interpretations. In contrast to anaphoric interpretations, where the implicit argument receives the same interpretation as the antecedent discourse referent (which must be accessible), implicit arguments under an elided interpretation are interpreted like the antecedent noun phrase (and do not require an accessible antecedent discourse referent). As expected, implicit arguments that receive an elided interpretation can receive a sloppy interpretation.

5. Existential Interpretations

A third type of interpretation of implicit arguments in Paraguayan Guaraní are existential interpretations. For instance, the second clause in the English example in (24), where the implicit theme argument of *eat* receives an existential interpretation, is interpreted as it not being the case that John ate something. I assume that an implicit argument that receives an existential interpretation is interpreted as existentially quantified over: accordingly, the second clause of (24) is interpreted as $\neg\exists x(\textit{eat}'(x)(j))$.

- (24) There was a piece of bread on the table but John didn’t eat. (Condoravdi and Gawron 1996, p. 3).

Evidence that existential interpretations are a third type of interpretation of implicit arguments in Paraguayan Guaraní comes from examples in which an anaphoric or elided interpretation is not available for the relevant implicit argument. In (25), for instance, the implicit theme argument of (o)*purahéi* ‘sing’ receives an existential interpretation: the pulley

was singing something ($\exists x(\text{sing}'(x)(\text{pulley}))$). Evidence that the theme argument does not receive an anaphoric interpretation is that there is no suitable antecedent discourse referent (for a particular song); likewise, evidence that the theme argument does not receive an elided interpretation is that there is no antecedent noun phrase in prior discourse that denotes a song. The examples in (26) and (27) illustrate the existential interpretation with the implicit theme arguments of *(o)karu* 'eat' and *(o)menda* 'marry', respectively: in (26), Luli's son is understood to have eaten something, and, in (27), the speaker is understood to have married somebody. In (27), the context establishes that the speaker married somebody who is not Argentinian, which supports the assumption that the implicit theme argument of *(o)menda* 'marry' receives an existential interpretation, not an anaphoric one (according to which the speaker married the same person as Rosalia) or an elided one (according to which the speaker married an Argentinian):

- (25) Context: The pilot, the first person narrator, pulled up a bucket of water from the well.

Che-apysá-pe yjahupiha o-**purahéi** guéteri hína
B1sg-ear-PE pulley A3-sing still PROG

'The pulley was still singing [something] in my ears.' (de Saint-Exupéry 2005, p. 80)

- (26) Context: Luli asks her adult son if he is hungry. He responds:

Nahániri. A-**karú**-ma.
no A1sg-eat-already

'No, I already ate [something].'

- (27) Context: It's been a while since I last talked to my friend Rosalia. She doesn't know that I got married to a Paraguayan last month. However, before I can tell her, she tells me that she married an Argentinian last year. I say:

Ani chéne! Che a-**menda** avei!
NEG.IMP NEG.IMP pron.AGS.1sg A1sg-marry too

'No way! I married [somebody], too!'

5.1. Properties of the Existential Interpretation of Implicit Arguments

The denotation of implicit arguments that receive an existential interpretation is restricted to be a culturally appropriate kind compatible with the selectional restrictions of the verb, as in (26) and (27), but can be deemed unimportant or unknown, as in (28); see Fillmore (1969) and Fillmore (1986) for discussion.

- (28) Context: The Little Prince wants to go look at the sunset right now, but it's only morning. The pilot says:

Jepe ña-**ha'ārō** mante-va'erã.
but A1pl.incl-wait just-MUST

'We have to wait [for something].' (de Saint-Exupéry 2005, p. VI)

Little Prince: 'What on earth are we going to wait for?' — Pilot: 'We're going to wait for the sunset.'

An utterance of a single clause can involve more than one implicit argument and the two implicit arguments need not receive the same interpretation. This is illustrated for the ditransitive predicate *(o)japo-uka* 'cause to make' in (29), where both the causee argument (the maker) and the theme argument (the thing made) are implicit. The causee argument receives an existential interpretation (English *somebody*), while the theme argument receives an anaphoric interpretation (English *it*):

- (29) Context: I had a wall built by some guy called Juan who you don't know. You visit my house and see my new wall. I say:

A-japo-uka.
A1sg-make-CAUS

'I made [somebody] make [it].'

The assumption that implicit arguments that receive an existential interpretation are existentially quantified predicts that such implicit arguments, unlike those that receive an anaphoric or elided interpretation, do not make available a discourse referent for subsequent reference. This prediction is borne out: In (30a), for instance, the implicit theme argument of *(o)menda* 'marry' receives an existential interpretation: the speaker married someone. This implicit argument does not, however, introduce a discourse referent, as demonstrated by the fact that the third person set B cross-reference marker *i-* 'B3' in the final clause is not acceptable. The variant in (30b), where the theme argument is not implicit but realized by the independent noun phrase *paraguáyo* 'a Paraguayan' is acceptable: here, the third person cross-reference marker in the final clause has a suitable antecedent discourse referent, namely the one introduced by *paraguáyo* 'a Paraguayan'.

- (30) *Ána n-o-mendá-i* *argentíno-re...*
Ana NEG-A3-marry-NEG Argentinian-REHE
'Ana didn't marry an Argentinian.'
- a. #*Ché=katu* *a-menda* *ha i-kyrã.*
 pron.AG.1sg=CONTRAST A1sg-marry and B3-fat
 (I, on the other hand, married [somebody] and he is fat.)
- b. *Ché=katu* *a-menda* ***paraguáyo-re*** *ha i-kyrã.*
 pron.AG.1sg=CONTRAST A1sg-marry Paraguayan-REHE and B3-fat
 'I, on the other hand, married a Paraguayan and he is fat.'

5.2. Classifying Paraguayan Guaraní Verbs: An Investigation of 71 Verbs

The existential interpretation is only available for particular implicit arguments of particular verbs, namely causees of causative-marked transitive verbs, as in (29), as well as the theme arguments of what I refer to (following Dixon 1994) as ambitransitive verbs, that is, verbs that have both an intransitive and a transitive use, like *(o)purahéi* 'sing' in (25) and *(o)menda* 'marry' in (30).⁵ This finding is based on an investigation of the valence of 71 verbs: for each verb, I investigated whether it could co-occur with the causativizing prefix *mbo-* shown in (31a), which attaches only to intransitive verbs, with the causativizing suffix *-uka* shown in (31b), which attaches only to transitive verbs,⁶ and with the portmanteau cross-reference marker *po-* '1:2pl' shown in (31c), which is acceptable only with transitive verbs. I also investigated whether the verb was judged to be acceptable in the intransitive frame in (31d), and in the transitive frame in (31e). The full set of verbs tested and the consultants' judgments are provided in Appendix A:

- (31) a. **A-mbo-jahu** *che-membý-pe.*
 A1sg-CAUS-bathe B1sg-child-PE
 'I bathe my child.' (Tonhauser 2017, p. 204)
- b. **A-hecha-uka** *Juã-pe che-kóche.*
 A1sg-see-CAUS Juan-PE B1sg-car
 'I showed Juan my car.' (Lit. I made Juan see my car.)
- c. Context: A mother is talking to her two children.
 Po-hayhu.
 1:2pl-love
 'I love you.' (Tonhauser 2017, p. 199)

- d. A-guahẽ Juã róga-pe, ha'e [VERB] hína.
 A1sg-arrive Juan B3.house-PE pron.AG.3 PROG
 'When I arrived at Juan's house, he was VERBING.'
- e. A-ñe-porandu mba'é=pa / máva-pe=pa Juã [VERB] hína.
 A1sg-JE-ask what=Q who-PE=Q Juan PROG
 'I asked myself what/who Juan was VERBING.'

As shown in Table 2, the investigation revealed three verb classes: intransitive verbs, which have intransitive uses, but not transitive ones, and are unacceptable with affixes reserved for transitive verbs; transitive verbs, which have transitive uses, but not intransitive ones, and can occur with affixes reserved for transitive verbs; and ambitransitive verbs, which can be used both intransitively and transitively, and which can often occur with both causative affixes. Most of the judgments suggested that ambitransitive verbs are unacceptable with the portmanteau prefix.

Table 2. Verb classes in Paraguayan Guaraní. A checkmark '✓' means that the combination tends to be judged to be acceptable, an asterisk '*' that it tends to be judged to be unacceptable.

Verb Class	<i>mbo-</i> 'CAUS-'	<i>-uka</i> '-CAUS'	<i>po(i)</i> '1:2pl'	Intr. Use	Tr. Use
Intransitive	✓	*	*	✓	*
Transitive	*	✓	✓	*	✓
Ambitransitive	✓	✓	most: *	✓	✓

The investigation revealed the following ambitransitive verbs:^{7,8}

- (32) Ambitransitive verbs in Paraguayan Guaraní:
 (o)gana 'win', (o)karu 'eat', (o)kasa 'hunt', (o)kosina 'cook', (o)lee 'read', (o)mbovyvy 'sew', (o)menda 'marry', (o)mopotĩ 'clean', (o)ñemitỹ 'sow', (o)peska 'fish', (o)pita 'smoke', (o)purahéi 'sing', (o)rambosa 'breakfast', and (o)studia 'study'

As mentioned above, only the implicit theme arguments of ambitransitive verbs can receive existential interpretations, not those of transitive verbs. This was established by investigating whether the implicit argument was acceptable in a context that explicitly excluded the anaphoric and elided interpretations, as in the examples in (33). The implicit theme argument of the ambitransitive verb (o)kasa 'hunt' may receive an existential interpretation, as shown in (33a). The implicit theme argument of the transitive verb (o)hecha 'see', on the other hand, may not receive an existential interpretation, as shown in (33b):

- (33) a. Context: Sofia and I went hunting. Sofia hunted a boar and I hunted a rabbit; I hunted nothing else. I say:
 Sofia o-kasa peteĩ kure ka'aguy ha che a-kasa avei.
 Sofia A3-hunt one boar and pron.AG.1sg A1sg-hunt too
 'Sofia hunted a boar and I hunted [something], too.'
- b. Context: Sofia and I went hiking. She saw a boar and I saw a rabbit; I saw nothing else. I say:
 #Sofia o-hecha peteĩ kure ka'aguy ha che a-hecha avei.
 Sofia A3-see one boar and pron.AG.1sg A1sg-see too
 (Sofia saw a boar and I saw [something], too.)

5.3. Towards an Analysis of the Existential Interpretation of Implicit Arguments

If ambitransitive verbs have an intransitive and a transitive lexical entry, as is assumed here, one can derive the existential interpretation of an example like (33a) in two ways. The first would be to assume that the intransitive lexical entry of (o)kasa 'hunt', in which

the theme argument is existentially quantified, is used. The translation of that lexical entry is shown in (34a): the translation of the verb is of type $\langle e, t \rangle$, so intransitive, but the constant *hunt'* is transitive with the theme argument existentially quantified. Alternatively, one could assume that the transitive lexical entry of *(o)kasa* 'hunt' was used: as shown in (34b), the translation of the verb here is $\langle e, \langle e, t \rangle \rangle$, so transitive. To derive the existential interpretation, one would then need to assume that the theme argument can be existentially quantified in those sentences in which no theme argument is overtly realized. This mechanism of existentially quantifying over implicit theme arguments of transitive verbs would need to be restricted to verbs that also have an intransitive lexical entry, so as to avoid deriving the existential interpretation for verbs that only have a transitive lexical entry, like *(o)hecha* 'see' in (33b):

- (34) a. Intransitive *(o)kasa* 'hunt' $\implies \lambda y[\exists x(\text{hunt}'(x)(y))]$
 b. Transitive *(o)kasa* 'hunt' $\implies \lambda x[\lambda y[(\text{hunt}'(x)(y))]]$

Which of these two analyses is more adequate depends in part on the answer to the question of whether implicit arguments of ambitransitive verbs are compatible not just with existential interpretations, but also with anaphoric and elided ones. The examples in (35a) and (35b) show that ambitransitive verbs with implicit theme arguments are acceptable in contexts that license anaphoric and elided interpretations, respectively. This observation might be taken to suggest that the theme arguments of ambitransitive verbs can also receive anaphoric and elided interpretations. It is important to note, however, that the contexts do not preclude an existential interpretation of the implicit theme arguments, as indicated by the English translations:

- (35) a. Context: Sofia and I went hunting. Sofia hunted a boar and I hunted the same one; I hunted nothing else. I say:
 Sofia o-kasa peteĩ kure ka'aguy ha che a-kasa avei.
 Sofia A3-hunt one boar and pron.AG.1sg A1sg-hunt too
 'Sofia hunted a boar and I hunted [it/something], too.'
- b. Context: Sofia and I went hunting. Sofia hunted a boar and I hunted a different boar; I hunted nothing else. I say:
 Sofia o-kasa peteĩ kure ka'aguy ha che a-kasa avei.
 Sofia A3-hunt one boar and pron.AG.1sg A1sg-hunt too
 'Sofia hunted a boar and I hunted [one/something], too.'

Consultants' comments are suggestive of anaphoric and elided interpretations, respectively: for instance, when asked about what Sofia hunted in (35a), one consultant stated that she hunted the boar that Sofia hunted (suggesting an anaphoric interpretation); likewise, when asked about what Sofia hunted in (35b), one consultant stated that she hunted a different boar (suggesting an elided interpretation). It is therefore possible to assume that anaphoric and elided interpretations are possible for implicit theme arguments of these verbs, via their transitive lexical entries, just as they are for regular transitive verbs. However, while consultants' comments can be useful clues, they are merely clues and "it is up to the researcher to interpret those clues and determine their relevance... for the analysis" (Matthewson 2004, p. 408). One therefore also has to entertain the possibility that the intransitive lexical entry of *(o)kasa* 'hunt' was used in (35), such that the examples literally mean 'Sofia hunted a boar and I hunted something, too', and that the seemingly anaphoric and elided interpretations are due to consultants further specifying the existentially quantified theme argument from the information given in the context. In summary, a more in-depth investigation is needed to understand how implicit arguments that receive an existential interpretation are best analyzed.

5.4. Ambitransitive Verbs in Cross-Linguistic Comparison

There is a remarkable overlap between the list of Paraguayan Guaraní ambitransitive verbs in (32) and English verbs whose implicit arguments can receive an existential interpretation, which include verbs such as *eat*, as shown in (24), as well as *read, sing, cook, sew, bake, paint, receive, and be married* (Condoravdi and Gawron 1996; Fillmore 1986; Fodor and Fodor 1980; Shopen 1973; Thomas 1979). This overlap raises the possibility that there is a strong linguistic tendency for verbs with similar meanings to allow for implicit arguments with existential interpretations (in languages that allow implicit arguments). At the same time, however, the Paraguayan Guaraní results also lend support to Fillmore’s (1986) claim that the availability of the existential interpretation cannot be solely determined by meaning: Paraguayan Guaraní has two verbs meaning ‘eat’, namely the transitive verb *ho’u* and the ambitransitive verb *(o)karu*,⁹ but only the latter allows for implicit arguments with an existential interpretation.¹⁰

5.5. Interim Summary

In summary, implicit arguments in Paraguayan Guaraní can receive not just anaphoric and elided interpretations, but also existential interpretations. This interpretation differs from the other two in at least two ways. First, implicit arguments that receive an existential interpretation are limited to particular arguments, namely causee arguments of causative ditransitive verbs and theme arguments of ambitransitive verbs. How to best capture this restriction is an open question. Second, the existential interpretation differs from the other two in that implicit arguments that receive an existential interpretation do not introduce a discourse referent that is available for subsequent reference.

6. Discussion

The previous sections have illustrated that implicit arguments in Paraguayan Guaraní, that is, arguments that are neither cross-referenced on the verb nor realized by an independent noun phrase, can receive anaphoric, elided, and existential interpretations. As summarized in Table 3, the three interpretations are formally distinct, as is the distribution of implicit arguments under the three interpretations:

Table 3. Formal distinctions between anaphoric, elided, and existential interpretations of implicit arguments in Paraguayan Guaraní.

	Anaphoric	Elided	Existential
interpretation sensitive to salient, accessible discourse referent	✓	–	–
interpretation sensitive to linguistic antecedent expression	–	✓	–
introduces discourse referent for subsequent reference	✓	✓	–
restricted to causativized and ambitransitive verbs	–	–	✓

These three interpretations were given formal characterizations in the previous sections that predict the respective interpretations. As summarized in (36a), an implicit argument that receives an anaphoric interpretation presupposes that its denotation is identical to that of an already introduced discourse referent. As shown in (36b), an implicit argument that receives an elided interpretation receives the same interpretation as a noun phrase in prior discourse. In addition, as shown in (36c), an implicit argument that receives an existential interpretation is existentially quantified:

- (36) Assume that *V* is a transitive verb, translated by the constant *v'* of type $\langle e, \langle e, t \rangle \rangle$, that *th* is an implicit theme argument, translated by the variable *x*, and that *Julia* is a noun phrase, translated by the constant *j* of type *e*. Then, the meaning of the Paraguayan Guaraní sentence *Julia V th*, that is, $\llbracket Julia V th \rrbracket$, is, if *th* receives...

- a. an anaphoric interpretation: $\llbracket v'(x)(j) \rrbracket$, with $\partial(x = y)$, where y is an accessible, salient discourse referent;
- b. an elided interpretation: $\llbracket Julia \ V \ NP \rrbracket$, where NP is a noun phrase occurring in prior discourse;
- c. an existential interpretation: $\llbracket \exists x(v'(x)(j)) \rrbracket$.

While these formal characterizations predict the respective interpretations, there are still several open questions that are left for future research. First, as noted above, the analysis does not predict that the existential interpretation is restricted to causativized and ambitransitive verbs. This analysis would also need to settle the question, raised above, of whether the existential interpretation derives from the intransitive or the transitive lexical entry of ambitransitive verbs. A second question pertains to the anaphoric and elided interpretations, specifically the fact that the both interpretations are compatible with implicit arguments of the same set of verbs (or at least an overlapping set of verbs). In other words, the analysis needs to formally capture that, for instance, the implicit theme argument of *(o)hecha* 'see' can receive either an anaphoric or an elided interpretation. One way to go would be to assume that *(o)hecha* 'see' is ambiguous between a lexical entry that licenses an implicit theme argument with an anaphoric interpretation, and another lexical entry that licenses an implicit theme argument with an elided interpretation. This analysis is, obviously, not satisfying: it would result in rampant ambiguity in the Paraguayan Guaraní lexicon because many verbs license both interpretations, and not just for the theme argument.

An ambiguity analysis is also not satisfying because Paraguayan Guaraní is not the only language in which implicit arguments can receive both anaphoric and elided interpretations. Consider, for instance, the data in (37) from Mandarin. In (37a), the implicit theme argument of the transitive verb *xihuan* 'like' receives an anaphoric interpretation: as pointed out in Huang (1984), the implicit argument is interpreted as an interlocutor (deictic interpretation) or as third person (discourse anaphoric interpretation) "[d]epending on the context" (footnote 4, p.537). In (37b), on the other hand, the implicit theme argument of *xihuan* 'like' receives an elided interpretation, as illustrated by the availability of both the sloppy and strict interpretation. For other languages with implicit arguments that allow both interpretations see, for instance, Huang (1991) on Japanese, Gribanova (2013) on Russian, and Cyrino and Lopes (2016) on Brazilian Portuguese:

- (37) a. Lisi hen xihuan.
Lisi very like
'Lisi likes [me, you, him, her, it].' (Huang 1984, p. 537, example and translation adapted)
- b. Zhangsan bu xihun [guanyü ziji-de yaoyan]; Mali ye bu xihuan.
Zhangsan not like about self-Gen rumor Mary also not like
'Zhangsan doesn't like rumors about himself. Mali also doesn't like [rumors about Zhangsan / rumors about herself]. (Otani and Whitman 1991, p. 346, example and translation adapted)

Future research will need to consider data from Paraguayan Guaraní and other languages in order to develop an empirically adequate analysis of implicit arguments in languages where such arguments can receive both anaphoric and elided interpretations.

7. Conclusions

Implicit arguments are a regular occurrence in Paraguayan Guaraní, owing to the cross-referencing system of the language. Tonhauser (2017) showed that such arguments can be compared to English pronouns, in the sense that they can receive anaphoric interpretations. This paper revealed that the comparison to English pronouns is lacking because implicit arguments can receive a broader set of interpretations, including not just anaphoric interpretations, but also elided and existential ones. There are both linguistic

and extra-linguistic constraints on the interpretation that a particular implicit argument can receive. As shown in Section 3, the anaphoric interpretation is only available if there is a uniquely salient, accessible discourse referent. Section 4 showed that the elided interpretation necessitates the availability of an antecedent noun phrase in prior discourse. In addition, as discussed in Section 5, the existential interpretation is only available for particular types of arguments. A study of these interpretations in naturally occurring discourse may reveal further constraints on their distribution.

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Appendix A. Verb Classes in Paraguayan Guaraní

The 71 verbs included in the investigation are given here together with the judgments that led to their classification as (di)transitive (Table A1), intransitive (Table A2), and ambitransitive (Table A3). Table A4 provides the judgments for verbs without a clear pattern. The first column of each table provides the verb with its English translation. The remaining five columns correspond to the five combinations in (31a–e), respectively. The judgments reported provide information about the consultant (judgments from consultants 1–3 were elicited during 2014/15; judgments from consultants 4–5 were elicited during 2015/16) as well as the judgment: ‘y’ means that the consultant judged the combination acceptable, and ‘n’ means that they did not judge it to be acceptable; an additional ‘?’ means that the consultant was not sure. Judgments that do not accord with the classification are bold-faced; some of these bold-faced exceptions can presumably be explained on the basis of semantic or selectional restrictions.

Table A1. Judgments for verbs that pattern like (di)transitive verbs.

	<i>mo-</i> 'CAUS-'	<i>-uka</i> '-CAUS'	<i>po(i)-</i> '1:2pl'	Intr. Use	Tr. Use
(o)gueraha 'take'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)guereko 'have'	1n2n4n5n	1n2y4y5n	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)guerovia 'believe'	1n2y4y5y	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)gueru 'bring'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)hayhu 'love'	1n2n4n5n	1y2y4y5y	1y2y3y4y5y	1n2n4n5n	1y2y4y5y
(o)hecha 'see'	1n2n4n5y	1y2y4y5y	1y2y4y5y	1n2n3n4n5y	1y2y3y4y5y
(o)heja 'leave/let'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n	1y2y4y5y
(o)heka 'search'	1n2y?4n5y	1y2y4y5y	1y2y4y5y	1n2n	1y2y4y5y
(o)hendu 'hear'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1y2y3n	1y2y3y4y5y
(o)hovapete 'hit in face'	1y2y4n5y	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)invita 'invite'	1n2n4n4y	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)japo 'make/do'	1n2n4n5n	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y4y5y
(o)japo-uka 'cause to do'	1n2n	-	1y2n3n	1n2n	1y2y
(o)jogua 'buy'	1n2n4n5n	1y2y4y5y	1n2y3y4y5n	1n2n4n5n	1y2y4y5y
(o)julhu 'meet/discover'	1n2n4n5y	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)juka 'kill'	1n2n4n5n	1y2y4y5y	1n2n4y5y	1n2n4n5n	1y2y4y5y
(oi)kotevė 'need'	1n2y4y5n	1y2y4n5n	1y2y4y5y	1n2n3n4n5n	1y2y3y4y5y
(oi)kuua 'know'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(oi)kytī 'cut'	1n2n4n5y	1y2y4y5y	1y2y4y5y	1n2n3n4n5n	1y2y3y4y5y
(o)mbojy 'cook'	1n2n	1y2y4y5y	1y2y4y5y	1n2n4n5y	1y2y4y5y
(o)mbotove 'deny/refuse'	1n2n	1y2y	1y2y	1n2y	1y2y
(o)me'ė 'give'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n3n4n5n	1n2y3y4y5y
(o)mo-kañy 'lose sth'	1n2n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)mo-mbo 'throw out'	1n2n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(oi)mo'ā 'believe'	1n2n4n5n	1y2y4n5y	1n2y3n4n5n	1n2n3n4n5n	1n2y3n4y5y
(o)mohesakā 'explain'	1n2n	1y2y4y5y	1n2n4n5y	1n2n4n5n	1y2y4y5y
(o)moī 'put'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n3n4n5n	1n2y3y4y5y
(o)moīnge 'insert'	1n2n	1y2y4y5y	1y2y4y5y	1n2n3n4n5n	1n2y3y4y5y
(o)monėī 'accept'	1y2n	1y2y	1y2y	1n2y4n5n	1y2y 4n
(o)ņėpyrū 'begin'	1n2n4y5y	1y2n4n5y	1n2n4n5n	1n2n4n5n	1y2y4y5y
(o)ntende 'understand'	1y2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(oi)nupā 'hit'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
ho'u 'eat'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n3n4n5n	1y2y3y4y5y
(o)promete 'promise'	1n2n4n	1y2y4y	1n2n4y5y	1n2n4n5n	1y2y4y5y
(oi)puru 'use, lend'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(oi)pytyvė 'help'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)rairė 'fight'	1y2n4n5y	1y2y4n5n	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)rohory 'appreciate'	1n2n4n	1y2y4y	1y2y4y5y	1n2n4n	1y2y4y
(oi)su'u 'bite'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)topa 'find/meet'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)visita 'visit'	1n2n4n5n	1y2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y

Table A2. Judgments for verbs that pattern like intransitive verbs.

	<i>mo-</i> 'CAUS-'	<i>-uka</i> '-CAUS'	<i>po(i)-</i> '1:2pl'	Intr. Use	Tr. Use
(o)guahė 'arrive'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y4y5y	1n2n4n5n
(o)guapy 'sit'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y3y4y5y	1n2n3n4n5n
(o)jahu 'bathe'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y3y4y5y	1n2n3n4n5n
ou 'come'	1y2n4y5y	1n2n4n5n	1n2n4n5n	1y2y4y5y	1n2n4n5n
(che)kaigue 'lazy'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y4y5y	1n2n4y5n
(o)ke 'sleep'	1y2y4y5y	1n2n4n5n	1n2n3n4n5n	1y2y4y5y	1n2n4n5n
(oi)ke 'enter'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y 4n5y	1n2n4n5n
(o)sė 'leave'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y4y5y	1n2n4n5n

Table A3. Judgments for verbs that pattern like ambitransitive verbs.

	<i>mo-</i> 'CAUS-'	<i>-uka</i> '-CAUS'	<i>po(i)-</i> '1:2pl'	Intr. Use	Tr. Use
(o)gana 'win'	1y2y4y5y	1n2y4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)karu 'eat'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y3y4y5y	1y2y3y4y5y
(o)kasa 'hunt'	1y2y4n	1y2y4y	1y2y4y	1y2y4y5n	1y2y4y5y
(o)kosina 'cook'	1y2y4y5y	1y2y4y5y	1n2n4y5y	1y2y4y5y	1y2y4y5y
(o)lee 'read'	1y2y4n5y	1y2y4y5y	1n2n4n5y	1y2y4y5y	1y2y4y5y
(o)mbovyvy 'sow'	1n2n	1y2y4y5y	1n2y4n5n	1y2y4y5y	1y2y4y5y
(o)menda 'marry'	1y2y4y5y	1n2n4n5n	1n2n4n5y	1y2y4y5n	1y2y4y5y
(o)mo-potĩ 'clean'	–	1y2y4y5y	1y2y4y5y	1y2n3y4y5y	1y2y3y4y5y
(o)ñemitĩ 'sow'	1y2n4y5y	1y2y4y5y	1n2n4n5n	1y2y4y5y	1y2y4y5y
(o)peska 'fish'	1y2y4y5y	1y2y4y5y	1n2n4n5y	1y2y4y5y	1y2y4y5y
(o)pita 'smoke'	1n2y4y5y	1y2y4n5n	1n2n4n5n	1y2y4y5y	1y2y4y5y
(o)purahéi 'sing'	1y2y4y5y	1n2n4n5n	1n2n4n5n	1y2y3y4y5y	1y3y4y5y
(o)rambosa 'breakfast'	1y2y4y5y	1y?2n4n5n	1n2n4y5n	1y2y4y5y	1y2y4y5y
(o)studia 'study'	1y2y4y5y	1y2n4n5n	1n2n4y5y	1y2y4y5y	1y2y4y5y

The verb (*ho*)y'u (eat.water) 'drink water' consists of a transitive verb and an incorporated theme argument. While the consultants' judgments suggest that this verb has an intransitive use, their judgments on the remaining criteria were too mixed to establish a classification. The verb (*o*)guyguy 'look around' looks like a transitive verb based on its co-occurrence pattern with the two causative markers, but like an intransitive verb based on its distribution in transitive and intransitive frames. By contrast, the last six verbs in Table A4 (or, verb/adjunct combinations in the case of *ou i-pó-pe* (come B3-hand-PE) 'receive') look like intransitive verbs based on their co-occurrence pattern with the two causative markers, but like transitive verbs based on their distribution in intransitive and transitive frames.

Table A4. Judgments for verbs without a clear pattern.

	<i>mo-</i> 'CAUS-'	<i>-uka</i> '-CAUS'	<i>po(i)-</i> '1:2pl'	Intr. Use	Tr. Use
(<i>ho</i>)y'u 'drink water'	1n2n4y5y	1y2n4y5n	1n2n4n5n	1y2y3y4y5y	1y2n3n4n5y
(o)guyguy 'look around'	1n2n	1y2y	1n2n	1y2y	1n2y
(o)maña 'look'	1y2y4y5y	1n2n4n5y	1n2n4n5n	1n2n3n4y5y	1y2y3y4y5y
<i>ou i-póp-e</i> 'receive'	1y2y	1n2n	1n2n	1n2n	1y2y
(<i>che</i>)mandu'a 'remember'	1y2y4y5y	1n2n4n5n	1n2n4n5y	1n2n4n5n	1y2y4y5y
(<i>che</i>)resarai 'forget'	1y2y4y5y	1y2y4n5n	1n2n4n5n	1n2n3n	1n2y3y4y5y
(o)perde 'lose sth'	1y2y4y5y	1y2n4n5n	1y2y4y5y	1n2n4n5n	1y2y4y5y
(o)ñe-ha'ã 'try'	1y2y4y5y	1n2n4n5y	1n2n4y5n	1n2n4n5n	1y2y4y5y

Notes

¹ The Paraguayan Guaraní examples presented here are given in the standardized orthography of the language used in Paraguay (Ministerio de Educación y Cultura 2004; Velázquez-Castillo 2004a, p. 1421f.), except that all postpositions are attached to their host. Following this orthography, stressed oral syllables are marked with an acute accent and stressed nasal syllables are marked with a tilde; acute accents are not written for normally accented words (stress on the final syllable). The examples are glossed according to the Leipzig glossing conventions. The following additional glosses are used: A/B = set A/B cross-reference marker, CONTRAST = contrastive topic (Tonhauser 2012), DES = desiderative modal, MUST = necessity modal, -PE = marker of theme, spatial, or temporal arguments/adjuncts (Shain and Tonhauser 2011), pron.AG/NAG = agent argument / non-agent argument pronoun, PROSP = prospective aspect/modal (Tonhauser 2011), -REHE = object marker, 'at'.

² Of the four consultants I elicited judgments from on (19b), one preferred the variant of the example with the first person pronoun *chéve*, as in (19a):

³ The examples in (22) and (23) differ from Korean examples like (21) in that the implicit argument is not information-structurally prominent by virtue of being contrasted. Paraguayan Guaraní examples that are parallel to (21) are unacceptable under a sloppy interpretation, as shown in (ia); only the variant in (ib), in which the relevant argument is not implicit, is acceptable.

(i) Context: Sofia hit her son on the arm, and Ana hit her own son on the leg; nobody hit anything else.

Sofía oi-nupã i-membý-pe ij-yvá-rupi...
Sofía A3-hit B3-child-PE B3-arm-through

‘Sofia hit her child on the arm...’

- a. #ha Ána oi-nupã hetymá-rupi.
and Ana A3-hit B3.leg-through
(and Ana hit [her child] on the leg.)
- b. ha Ána (oi-nupã) i-membý-pe hetymá-rupi.
and Ana A3-hit B3-child-PE B3.leg-through
‘and Ana hit her child on the leg.’

I hypothesize that examples like (i) are unacceptable because Paraguayan Guaraní implicit arguments cannot be information-structurally prominent, as mentioned in Section 2.2 (see also Tonhauser 2017). Specifically, in (i), the possessor of the theme argument in the second clause (intended to be interpreted as Ana’s child) is contrasted with the possessor of the theme argument of the first clause (Sofia’s child). Support for this hypothesis comes from the fact that examples like (22) and (23), in which the contrast between the first and second clauses does not involve the implicit argument but rather the temporal/aspectual reference of the clauses, are acceptable.

4 Bruno Estigarribia (p.c.) wonders whether inalienable possession interacts with the elided interpretation, such that an inalienably possessed NP cannot be elided. I do not currently have any data to weigh in on this hypothesis. To investigate this hypothesis, one would need to elicit judgments on examples like those mentioned above (*Sue doesn’t have a picture of her dog, and Deirdre doesn’t either*) and variants with inalienably possessed NPs, like *Sue doesn’t have a picture of her arm, and Deirdre doesn’t either*.

5 An anonymous reviewer suggested that the existential interpretation is only be available for those ambitransitive verbs where the sole argument of the intransitive lexical entry is an agent. The same reviewer also provided a diachronic perspective on ambitransitive verbs in the language. In Old Tupí, there were transitive verbs (which cross-referenced both arguments) as well as active and inactive intransitive verbs (which cross-referenced their single argument with the *a-* and *che-* series of cross-reference markers; see Table 1). The original theme cross-reference markers of transitive verbs fused with the root in Modern Paraguayan Guaraní, so that Old Tupí *o-i-echa* ‘A3-B3-see’ became Modern Paraguayan Guaraní *o-hecha* ‘A3-see’, thereby blurring the distinction between transitive and intransitive active verbs. Spanish verbs borrowed into Paraguayan Guaraní are generally borrowed with the *a-* series of cross-reference markers, further blurring the distinction. This may explain why none of the Paraguayan Guaraní ambitransitive verbs identified in my investigation are verbs that were transitive in Old Tupí.

6 For causative constructions in Paraguayan Guaraní see Velázquez-Castillo (2004b).

7 The verb (*o*)*ha’arō* ‘wait’ is also ambitransitive, but it was not included in the investigation. Evidence that it has a transitive lexical entry comes from the following example, where (*o*)*ha’arō* ‘wait’ occurs with the portmanteau prefix *ro* ‘1:2sg’:

- (i) **Ro-ha’arō** hína che-ru!
1:2sg-wait PROG B1sg-father
‘I was waiting for you (sg.), dad!’ (Estigarribia 2020, p. 138, example and glosses adapted)

8 The theme argument of transitive (*o*)*studia* ‘study’ is unmarked, as illustrated in (i). In contrast, the theme argument of transitive (*o*)*menda* ‘marry’ is obligatorily marked with the postposition *-re(he)* ‘at’, as shown in (ii). Estigarribia 2020, §4 refers to transitive verbs whose theme argument must be marked by a special postposition ‘postpositional complement verbs’. These data show that the existential interpretation is observed both with verbs whose overt theme argument is unmarked as well as with verbs whose theme argument is marked with a postposition.

- (i) A-studia hína guaraní.
A1sg-study PROG Guaraní
‘I am studying Guaraní.’ (Estigarribia 2020, p. 323, example adapted, glosses added)
- (ii) A-menda-se ndé-rehe.
A1sg-marry-DES pron.2sg-REHE
‘I want to marry you.’ (Estigarribia 2020, p. 142, example and glosses adapted)

9 The verb (*o*)*karu* ‘eat’ was intransitive in Old Tupí (I thank an anonymous reviewer for this information) and is also described as intransitive in, for instance, Estigarribia’s (2020) grammar of Modern Paraguayan Guaraní. This paper nevertheless treats (*o*)*karu* ‘eat’ as an ambitransitive verb that is, as a verb that has an intransitive lexical entry as well as a transitive one, on which its arguments can be implicit. This analysis is supported by naturally occurring examples like (i), where the verb occurs with the direct object argument *ñatiü* ‘moskito’. It is also supported by the fact that my consultants consistently accept the verb in the transitive frame in (31e); see the judgments in Appendix A. There is, however, also some evidence that the transitive use of (*o*)*karu* ‘eat’ may be a more recent development: it is judged to be unacceptable with the causativizer *-uka*, which combines with transitive verbs (31b), and the portmanteau cross-reference marker *po-* ‘1:2pl’ (31c); see the judgments in Appendix A. To maintain the position that (*o*)*karu* ‘eat’ is ambitransitive, I hypothesize that the combination of (*o*)*karu* ‘eat’ with the causativizer *-uka* is blocked by the existence of the transitive verb *ho’u* ‘eat’, and that consultants judged the combination of (*o*)*karu* ‘eat’ with *po-* ‘1:2pl’ to be unacceptable because of its meaning. I thank Bruno Estigarribia (p.c.) for raising this issue.

- (i) Context: The frog is crying, and the duck is enumerating his good qualities, to cheer it up:

Re-ñangareko yvotytỹ-re, re-karu ñati'ũ ha opa-icha-gua mymba-'i-rehe.
A2sg-take.care.of garden-REHE A2sg-eat mosquito and all-like-from animal-DIM-REHE

'You take care of the garden, you eat mosquitos and other kinds of bugs.'

(fable *Ypei*, author unknown)

¹⁰ That the version of (i) with the ambitransitive verb (*o*)karu 'eat' is judged to be unacceptable in the given context, in which the implicit argument of transitive *ho'u* 'eat' can receive an anaphoric interpretation, may at first suggest that ambitransitive verbs are not compatible with such interpretations. It is also possible, however that (*o*)karu 'eat' is blocked in this environment, under the assumption that its implicit argument can receive anaphoric, elided, and existential interpretations, whereas that of *ho'u* 'eat' can only receive anaphoric and elided interpretations.

- (i) Context: Yesterday my mother made a cake for my birthday.

Ange pyhare che-kyvy ho'u / #o-karu.
today night B1sg-brother A3.eat A3-eat

'Last night my brother ate [it] / #ate [something].'

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