

## Plural Epistemic Indefinites\*

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### 1. Introduction.

Across languages, we find epistemic indefinites, i.e. existential determiners that can convey information about the speaker's epistemic state.<sup>1</sup> One such indefinite is Spanish *algún*, which marks ignorance on the part of the speaker. By using *algún* in (1a) the speaker signals that he is unable (or unwilling) to identify the doctor that María married. Hence, it would be odd for him to add a *namely* continuation that explicitly identifies the doctor in question, as in (1b). From now on, we will refer to the marking of the speaker's lack of knowledge as an 'epistemic effect.' (Alonso-Ovalle and Menéndez-Benito, 2003).<sup>2</sup>

- (1) a. María se casó con algún médico  
María married with ALGÚN doctor.  
'María married some doctor or other.'
- b. María se casó con algún médico, † en concreto con el doctor Smith.  
María married with ALGÚN doctor namely with the doctor Smith  
'María married some doctor or other, namely Dr. Smith.'

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<sup>1</sup>See Haspelmath's (1997) typological survey and Abusch and Rooth (1997); Aloni (2007); Aloni and van Rooij (2007); Alonso-Ovalle and Menéndez-Benito (2003); Alonso-Ovalle and Menéndez-Benito (2009); Becker (1999); Chierchia (2006); Ciucivara (2007); Condoravdi (2005); Hinterwimmer et al. (2009); Farkas (2002, 2006); Fălauş (2009); Ionin (2008); Kagan (2007); Strawson (1974); Tovena and Jayez (2006); Kratzer and Shimoyama (2002); Yanovich (2005); Aloni and van Rooij (2007); Zabbal (2004) and Zamparelli (2007), among others.

<sup>2</sup>*Algún* can also convey ignorance with respect to the number of individuals that satisfy the existential claim (Alonso-Ovalle and Menéndez-Benito, 2009). There seems to be dialectal differences regarding this component, which we ignore in what follows. See Alonso-Ovalle and Menéndez-Benito (2009) for discussion of this type of ignorance.

Surprisingly, the plural version of *algún*, *algunos*, does not trigger an epistemic effect, as shown by the availability of a *namely* continuation in (2). The contrast between (1) and (2) is particularly puzzling in light of the fact that other epistemic indefinites can convey ignorance in both their singular and plural forms. German *irgendein* is a case in point: both its singular form, *irgendein*, and its plural form, *irgendwelche*, are incompatible with *namely*, as (3) shows.

- (2) María vive con algunos estudiantes, en concreto con Pedro y con Juan.  
María lives with ALGUNOS students, namely with Pedro and with Juan  
'María lives with some students, namely Pedro and Juan.'
- (3) a. María hat irgendeinen Arzt geheiratet, ‡ und zwar Dr. Smith.  
María has IRGENDEINEN doctor married namely Dr. Smith  
'María married some doctor or other, namely Dr. Smith.'
- b. María wohnt mit irgendwelchen Studenten zusammen, ‡ und zwar mit Pedro und Juan.  
María lives with IRGENDWELCHEN students together, namely with Pedro und Juan.  
Pedro and Juan  
'María lives with some students, namely Pedro and Juan.'

In this paper, we provide an account of the difference between (1) and (2) that builds on our previous research on *algún* (Alonso-Ovalle and Menéndez-Benito, 2009). In that work, we proposed that the epistemic effect induced by *algún* arises because this indefinite imposes an anti-singleton constraint on its domain of quantification (see section 2.) Here we argue that the interaction of this domain constraint with plurality blocks the epistemic effect (section 3). In contrast, assuming that *irgendein* is a domain widener (Kratzer and Shimoyama, 2002), we expect it to trigger an epistemic effect when it combines with plural morphology (as sketched in section 4.)

## 2. The Epistemic Effect of Singular *Algún*.

This section briefly summarizes the analysis of the singular form *algún* put forward in Alonso-Ovalle and Menéndez-Benito (2009). Section 2.1. characterizes the epistemic effect triggered by *algún* and section 2.2. sketches our analysis of this epistemic effect.

### 2.1 Characterizing the Epistemic Effect of *Algún*: Modal Variation.

Kratzer and Shimoyama (2002) claim that *irgendein* conveys a Free Choice effect in connection with modals. For instance, on the narrow scope reading of *irgendein*, the sentence in (4) indicates that Mary was allowed to marry *any* doctor in the domain of quantification.

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- (4) Mary musste irgendeinen Arzt heiraten.  
 Mary had to IRGENDEINEN doctor marry  
 ‘Mary had to marry some doctor or other.’ (Kratzer and Shimoyama, 2002)

Spanish *algún* displays a connection with modality that closely resembles that of *irgendein*. However, the epistemic effect induced by *algún* is weaker than Free Choice. To see why, suppose that Juan and I are playing hide-and-seek in our country house. I know that Juan is in the house. I don’t know exactly where, but I am convinced that Juan is not in the bathroom or in the bedroom. In this situation, I can felicitously utter (5) even though it is not true that, as far as I know, Juan could be in *any* of the rooms of the house. However, it would be inappropriate for me to utter (5) if I had a particular room in mind. *Algún*, then, triggers the inference that at least two individuals in the domain are possibilities. In Alonso-Ovalle and Menéndez-Benito (2009), we dubbed this a ‘Modal Variation’ effect.

- (5) Juan tiene que estar en alguna habitación de la casa.  
 Juan has to be in ALGUNA room of the house  
 ‘Juan is in a room of the house.’

The same effect obtains in cases where there is no overt modal: Like (5), the sentence in (6) can be truthfully uttered in the scenario above, but would be infelicitous if the speaker was convinced, say, that Juan was in the bathroom.<sup>3</sup>

- (6) Juan está en alguna habitación de la casa.  
 Juan is in ALGUNA room of the house  
 ‘Juan is in a room of the house.’

To capture the parallelism between cases like (5) and cases like (6), we assumed, building upon a suggestion in Kratzer and Shimoyama (2002, 10), that assertions are implicitly modalized. More concretely, we hypothesized that a covert epistemic operator (7) occupies the topmost position at LF. In non-modal sentences like (6), *algún* would be in the scope of this operator. The sentence in (6) would then have the LF in (8) (see also Chierchia 2006 for the same assumption).

- (7)  $[[\text{ASSERT}]]^c = \lambda p. \lambda w. \forall w' \in \text{Epistemic}_{\text{speaker of } c}(w)[p(w')]$   
 (8) LF: ASSERT [[alguna [habitación de la casa]] 1 Juan is in  $t_1$ ]

With this assumption in place, a sentence with *algún* has the structure in (9), where  $P$  and  $Q$  denote properties. (9) asserts that in all accessible worlds, there is at least one individual that satisfies both  $P$  and  $Q$ . The Modal Variation component disallows models where this existential claim is satisfied by the same individual in all accessible worlds.

- (9) LF: MODAL [algún (P)(Q)]

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<sup>3</sup>This effect obtains also with possibility modals. For reasons of space, we will focus solely on necessity modals here.

## 2.2 Deriving Modal Variation as an Implicature.

Kratzer and Shimoyama (2002) derive the Free Choice effect that we see in sentences like (4) as a conversational implicature that arises because *irgendein* is a domain widener: while a plain indefinite like *ein Arzt* selects a set of contextually relevant doctors, *irgendein Arzt* selects the set of all doctors in the world of evaluation. Following Kadmon and Landman (1993), Kratzer and Shimoyama assume that domain widening must be motivated. In the case of English *any*, Kadmon and Landman argued that the reason for widening was to strengthen the claim made. However, this cannot motivate domain widening in cases like (4) where *irgendein* is in an upward entailing context. Kratzer and Shimoyama suggest additional motivations for domain widening, one of them being avoidance of a false claim.

Simplifying slightly, their proposal goes like this: Upon hearing (4), we conclude that the speaker chose to widen the domain because any smaller domain would have led to a false claim. Suppose, for simplicity, that Dr. Abbot, Dr. Baker and Dr. Clark are all the doctors in the world of evaluation. The hearer would then reason as follows: Why didn't the speaker choose the domain containing only Dr. Baker and Dr. Clark? Because it is not true that in all permitted worlds, Mary married a doctor in that set. Repeating this reasoning for all the subsets of the set of doctors and putting the result together with the assertion (that in all permitted worlds, there is a doctor that Mary marries), leads to the Free Choice effect: that Mary is allowed to marry any of the doctors in the domain.<sup>4</sup>

In Alonso-Ovalle and Menéndez-Benito (2009), we claimed that *algún* is not a domain widener, but that it rather signals that its domain is not a singleton set. We used subset selection functions to model contextual domain restrictions (von Stechow, 2000; Kratzer, 2003a, 2005). Subset selection functions take a set and return one of its subsets. Contextual domain restrictions in the nominal domain can then be captured by assuming that quantifiers introduce a covert element  $f$ , interpreted as a variable ranging over subset selection functions, which selects a subset from the set denoted by the noun phrase. On this view, a sentence like *every student is happy* will be roughly represented as in (10), where  $f$  picks out a subset of the set of students. An utterance of this sentence can be felicitous even if the hearer does not know what value for  $f$  the speaker has in mind.<sup>5</sup> (This will be crucial for the analysis of *algunos* that we propose in section 3.)

(10) LF: [Every [ $f$  [student]] [is happy]]

In our proposal, *algún* is an existential quantifier which, like other quantifiers, introduces a subset selection function. The anti-singleton requirement can then be modeled as a constraint on the value of the selection function: *algún* requires its selection function to be an 'antisingleton' function (i.e., a function  $f$  such that for any set  $P$ ,  $f(P)$  is bigger than a singleton.) The denotation of *algún* would be as in (11): a function that takes a subset selection function  $f$  and two properties  $P$  and  $Q$  and is defined only when  $f$  is an

<sup>4</sup>Kratzer and Shimoyama (2002) entertain a different type of reasoning ('antiexhaustivity') to derive the Free Choice effect with possibility modals. The reader is referred to their paper for details.

<sup>5</sup>See, e.g., Schwarzschild (2002) and Kratzer (2003b).

antingleton subset selection function. When defined, it yields truth iff there is at least one individual in the domain of  $P$ s picked out by  $f$  that has property  $Q$ .

$$(11) \quad \llbracket \text{algún} \rrbracket = \lambda f: \text{antingleton}(f) \cdot \lambda P_{\langle e,t \rangle} \cdot \lambda Q_{\langle e,t \rangle} \cdot \exists x[(f(P))(x) \ \& \ Q(x)]$$

The pragmatic reasoning in Kratzer and Shimoyama (2002) can now derive the Modal Variation effect.<sup>6</sup> Consider the sentence in (12), which makes the assertion in (13).<sup>7</sup> The use of an antingleton indefinite triggers a competition with the alternative assertions that would result from restricting the domain to a singleton. Suppose that the rooms in the house are the bedroom, the living room, and the bathroom. The pragmatic competitors would then be the ones listed in (14). As in the case of *irgendein*, the hearer will conclude that all of the competitors are false. This will yield a Modal Variation effect, rather than a Free Choice effect: Strengthening (13) with the implicature that all the competitors in (14) are false rules out scenarios where the speaker knows which room Juan is in, but it does not require all rooms to be epistemic possibilities for the speaker.

(12) Juan está en alguna habitación de la casa.  
 Juan is in ALGUNA room of the house  
 ‘Juan is in a room of the house.’

(13) a. Claim:  $\Box_w[\exists x[x \in f(\{\text{the bedroom, the living room, the bathroom}\}) \ \& \ \text{in}_w(x)(j)]$   
 b. Antingleton constraint:  $|f(\{\text{the bedroom, the living room, the bathroom}\})| > 1$

(14) a.  $\Box_w(\exists x[x \in \{\text{the bedroom}\} \ \& \ \text{in}_w(x)(j)]) (= \Box_w(\text{Juan is in the bedroom in } w))$   
 b.  $\Box_w(\exists x[x \in \{\text{the living room}\} \ \& \ \text{in}_w(x)(j)]) (= \Box_w(\text{Juan is in the living room in } w))$   
 c.  $\Box_w(\exists x[x \in \{\text{the bathroom}\} \ \& \ \text{in}_w(x)(j)]) (= \Box_w(\text{Juan is in the bathroom in } w))$

### 3. The Plural Form: No Epistemic Effect.

Surprisingly, the plural form of *algún*, *algunos*, does not trigger an epistemic effect. As shown by (2), repeated below as (15), *algunos* is felicitous even if the speaker is able to identify the individuals that satisfy the existential claim.

(15) María vive con algunos estudiantes, en concreto con Pedro y con Juan.  
 María lives with ALGUNOS students, namely with Pedro and with Juan  
 ‘María lives with some students, namely Pedro and Juan.’

We contend that the behavior of *algunos* actually follows from the account presented in section 2. On that proposal, the epistemic effect of *algún* comes about because this item triggers a competition with a number of alternative assertions. We will argue that

<sup>6</sup>For arguments that the Modal Variation effect is an implicature, see Alonso-Ovalle and Menéndez-Benito (2009).

<sup>7</sup>Here, and in what follows ‘ $\Box_w$ ’ corresponds to the ASSERT operator.

in the case of *algunos*, no alternative assertions constitute viable competitors, and that, as a result, no epistemic effect arises.

In order to develop our argument, we need to introduce some assumptions about plurality. The next section is devoted to this task.

### 3.1 Assumptions about Plurality.

Following Link (1983), we assume that the domain of individuals ( $D_e$ ) contains both atomic and plural individuals. Plural individuals are sums of atomic individuals, and  $D_e$  is closed under sum formation.

Furthermore, we assume that singular count nouns like *student* consist of a number-neutral noun stem ( $\sqrt{STUDENT}$ ), as in (16),<sup>8</sup> and the number feature [*singular*], which selects the set containing all atomic individuals in the extension of the noun stem, as in (17).<sup>9</sup> As (18) illustrates, we take plural noun phrases to be number-neutral, just like noun stems.<sup>10</sup>

$$(16) \quad \llbracket \sqrt{STUDENT} \rrbracket^w = \left\{ \begin{array}{c} \text{Juan} \oplus \text{Pedro} \oplus \text{Sara} \\ \text{Juan} \oplus \text{Pedro, Juan} \oplus \text{Sara, Pedro} \oplus \text{Sara,} \\ \text{Juan, Pedro, Sara,} \end{array} \right\}$$

$$(17) \quad \llbracket \textit{singular} \rrbracket (\llbracket \sqrt{STUDENT} \rrbracket^w) = \llbracket \textit{student} \rrbracket^w = \{\text{Juan, Pedro, Sara}\}$$

$$(18) \quad \llbracket [\textit{students}]_{NP} \rrbracket^w = \left\{ \begin{array}{c} \text{Juan} \oplus \text{Pedro} \oplus \text{Sara} \\ \text{Juan} \oplus \text{Pedro, Juan} \oplus \text{Sara, Pedro} \oplus \text{Sara,} \\ \text{Juan, Pedro, Sara,} \end{array} \right\}$$

On this view, plurality is introduced by the determiner (Martí, 2008).<sup>11</sup> Putting this together with the claim that *algún* requires an antingleton subset selection function (section 2.2), the denotation of *algunos* is as in (19): a function that combines with a subset selection function  $f$  and with two properties  $P$  and  $Q$  and is defined only when  $f$  is an antingleton subset selection function. When defined, it yields truth iff there is at least *one plural individual* in the domain of  $P$ s picked out by  $f$  that also has property  $Q$ .<sup>12</sup>

$$(19) \quad \llbracket \textit{algunos} \rrbracket = \lambda f : \text{antising}(f) . \lambda P_{\langle e,t \rangle} . \lambda Q_{\langle e,t \rangle} . \exists x [|x| > 1 \ \& \ (f(P))(x) \ \& \ Q(x)]$$

Now that we have all these assumptions in our toolbox, let us see what the analysis of *algún* that we presented in section 2.2. predicts for *algunos*.

<sup>8</sup>For any individuals  $a, b$ ,  $\lceil a \oplus b \rceil$  is the sum of  $a$  and  $b$ .

<sup>9</sup>Müller (2000), see also discussion in Kratzer (2008) and Kratzer (forthcoming).

<sup>10</sup>In support of this view, see e.g., Martí (2008), and, for the general claim that the plural is semantically unmarked, Sauerland et al. (2005) and references therein.

<sup>11</sup>We take predicate denotations to be cumulative (Krifka, 1998; Kratzer, forthcoming) (Cumulativity for expressions of type  $\langle e, t \rangle$  is defined as follows:  $\forall x \forall y [P(x) \ \& \ P(y)] \rightarrow P(x \oplus y)$ .)

<sup>12</sup>Notation: For any individual  $x$ ,  $\lceil |x| \rceil$  is only defined if there is a set of atomic individuals that  $x$  is the sum of. If defined,  $\lceil |x| \rceil$  is the cardinality of the set of atomic individuals that  $x$  is the sum of.

### 3.2 The Antisingleton Constraint and *Algunos*.

We have claimed that the epistemic effect of *algún* is an implicature triggered by the antisingleton constraint. The implicature results from the competition between the assertion made and the alternative assertions that correspond to the possible ways of narrowing the domain to a singleton. In what follows, we will show that, in the case of *algunos*, this competition does not arise. The domains containing just one atomic individual give rise to contradictions, and each domain containing just one plural individual yields a proposition that corresponds to one of the propositions that speaker may have intended to assert. As a result, the hearer will not consider any of these propositions as viable competitors and, therefore, no epistemic effect is expected to arise.

Let us illustrate this by working through the example in (20) below which, given our assumptions, is interpreted as in (21).

- (20) María vive con algunos estudiantes.  
 María lives with ALGUNOS students  
 ‘María lives with some students.’

- (21) a.  $\Box_w(\exists x[|x| > 1 \ \& \ x \in f(\llbracket students \rrbracket^w) \ \& \ \text{lives-with}_w(x)(m)])$

‘In all accessible worlds, María lives with at least one group of students in the contextually restricted domain of students picked out by  $f$ .’

- b. Antisingleton constraint:  $|f(\llbracket students \rrbracket^w)| > 1$

The representation in (21a) contains the free variable  $f$ , which ranges over subset selection functions. We will start by discussing what the possible values for this variable are — to determine what the competitors are we need to know first what propositions can be expressed by (21a).

Let us assume that the denotation of the plural noun phrase *students* is as in (18). What are the possible values for  $f(\llbracket students \rrbracket^w)$ ? The set of subdomains of (18) contains  $127 (2^7 - 1)$  elements (the cardinality of the set containing all the members of the power set of (18) except for the empty set.) The antisingleton constraint requires  $f(\llbracket students \rrbracket^w)$  to contain more than one member. There are three types of subdomains of (18) that meet this requirement: those that contain only singularities, (e.g., {Juan, Pedro}); those that contain only pluralities (e.g., {Juan  $\oplus$  Pedro, Pedro  $\oplus$  Sara}); and, finally, the ‘mixed’ subdomains that contain both singularities and pluralities (e.g., {Juan, Pedro, Juan  $\oplus$  Pedro}).

The subdomains that contain only singularities can be excluded as possible values for  $f(\llbracket students \rrbracket^w)$ , because they give rise to a contradiction, as illustrated by (22) below — (22) can only be true if in every accessible world María lives with a plural individual in the set {Juan, Pedro}. As this set contains only atomic individuals, this condition can never be satisfied.

- (22)  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Juan, Pedro}\} \ \& \ \text{lives}_w(x)(m)])$

‘In all accessible worlds, there is a *plural* individual  $x$  in  $\{\text{Juan, Pedro}\}$  such that María lives with  $x$ .’

The remaining subdomains that meet the antisingleton requirement yield the fifteen propositions in (23).<sup>13</sup> Importantly, the hearer does not necessarily know which of the propositions in (23) the speaker intended to assert, i.e., she does not have to know what value for  $f$  the speaker has in mind. (As noted above, quantificational claims can be felicitous even if the hearer cannot determine what the intended implicit restriction is.)

- (23) P1  $\Box_w (\text{María lives with Juan and Pedro in } w \vee \text{María lives with Juan and Sara in } w \vee \text{María lives with Pedro and Sara in } w \vee \text{Juan and Pedro and Sara in } w)$
- P2  $\Box_w (\text{María lives with Juan and Pedro in } w \vee \text{María lives with Juan and Sara in } w \vee \text{María lives with Pedro and Sara in } w)$
- P3  $\Box_w (\text{María lives with Juan and Pedro in } w \vee \text{María lives with Pedro and Sara in } w \vee \text{María lives with Juan and Pedro and Sara in } w)$
- P4  $\Box_w (\text{María lives with Juan and Sara in } w \vee \text{María lives with Pedro and Sara in } w \vee \text{María lives with Juan and Pedro and Sara in } w)$
- P5  $\Box_w (\text{María lives with Juan and Sara in } w \vee \text{María lives with Juan and Pedro in } w \vee \text{María lives with Juan and Pedro and Sara in } w)$
- P6  $\Box_w (\text{M. lives with Juan and Pedro in } w \vee \text{M. lives with Juan and Sara in } w)$
- P7  $\Box_w (\text{M. lives with Juan and Pedro in } w \vee \text{M. lives with Pedro and Sara in } w)$
- P8  $\Box_w (\text{M. lives with J. and P. in } w \vee \text{María lives with J. and P. and S. in } w)$
- P9  $\Box_w (\text{M. lives with Juan and Sara in } w \vee \text{M. lives with Pedro and Sara in } w)$
- P10  $\Box_w (\text{M. lives with J. and S. in } w \vee \text{M. lives with J. and P. and S. in } w)$
- P11  $\Box_w (\text{M. lives with P. and S. in } w \vee \text{M. lives with J. and P. and S. in } w)$
- P12  $\Box_w (\text{María lives with Juan and Pedro in } w)$
- P13  $\Box_w (\text{María lives with Juan and Sara in } w)$

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<sup>13</sup>Why only fifteen propositions? There are fifteen subdomains that contain *only* pluralities, and for every ‘mixed’ subdomain (i.e. every subdomain containing both singularities and pluralities) there is a domain containing only pluralities that yields a logically equivalent claim. The propositions in (i) and (ii) below, for instance, are logically equivalent.

- (i)  $\Box_w (\exists x[|x| > 1 \ \& \ x \in \{\text{Pedro, Juan, Pedro} \oplus \text{Juan}\} \ \& \ \text{lives}_w(x)(m)])$   
 ‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Pedro, Juan, Pedro} \oplus \text{Juan}\}$  such that María lives with  $x$ .’
- (ii)  $\Box_w (\exists x[|x| > 1 \ \& \ x \in \{\text{Pedro} \oplus \text{Juan}\} \ \& \ \text{lives}_w(x)(m)])$   
 ‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Pedro} \oplus \text{Juan}\}$  such that María lives with  $x$ .’

Thus, all the domains that the antisingleton constraint allows for boil down to just the propositions in (23). (Note that the antisingleton constraint allows for a domain like  $\{\text{Pedro, Juan, Pedro} \oplus \text{Juan}\}$  even though it yields the same proposition as the domain  $\{\text{Pedro} \oplus \text{Juan}\}$ , a singleton domain.)



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P14  $\Box_w$  (María lives with Pedro and Sara in  $w$ )

P15  $\Box_w$  (María lives with Juan and Pedro and Sara in  $w$ )

We are now in a position to show that the sentence in (20) has no viable pragmatic competitors. Given what we have said so far, (20) denotes a proposition only in a context in which  $f(\llbracket students \rrbracket^w)$  is not a singleton set. When this requirement is met, the sentence in (20) expresses the proposition that is true in a world  $w$  iff in all worlds accessible from  $w$ , there is at least a group of students in the contextually relevant domain that María lives with.<sup>14</sup>

(24) a. Assertion:  $\Box_w(\exists x[|x| > 1 \ \& \ x \in f(\llbracket students \rrbracket^w) \ \& \ \text{lives-with}_w(x)(m)])$

‘In all accessible worlds, María lives with at least one group of students in the contextually restricted domain of students picked up by  $f$ .’

b. Antisingleton constraint:  $|f(\llbracket students \rrbracket^w)| > 1$

Following what we said for *algún*, the pragmatic competitors for (20) would in principle be the propositions resulting from interpreting  $f$  as a function that picks out a singleton set from the denotation of the noun *students*. However, these propositions do not constitute viable alternatives. First, recall that the singleton domains containing just one *atomic* individual give rise to a contradiction (see e.g., (25) below.) Hence, the hearer will not consider these propositions as possible alternative assertions.

(25)  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Juan}\} \ \& \ \text{lives-with}_w(x)(m)])$

‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Juan}\}$  such that María lives with  $x$ .’

What about the five singleton domains in (26) with one *plural* individual each?

(26)  $\{\text{Juan} \oplus \text{Pedro}\}, \{\text{Sara} \oplus \text{Pedro}\}, \{\text{Sara} \oplus \text{Juan}\}, \{\text{Juan} \oplus \text{Sara} \oplus \text{Pedro}\}$

These domains yield the propositions in (27). However, notice that each of these propositions is equivalent to one of the propositions that the speaker may have intended to assert. For instance, (28a) is equivalent to (28b). If the hearer does not know which proposition the speaker intended to assert, she will not be able to rule out any of the propositions in (27). For all she knows, any one of them could be the proposition that the speaker wants to assert.

(27) a.  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Juan} \oplus \text{Pedro}\} \ \& \ \text{lives-with}_w(x)(m)])$

‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Juan} \oplus \text{Pedro}\}$  such that María lives with  $x$ .’

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<sup>14</sup>We are assuming here that for any individuals  $x, y$  and world  $w$ ,  $\lceil \text{lives}_w(x)(y) \rceil$  is true iff every individual that is part of  $x$  lives with every individual that is part of  $y$  in  $w$ .

- b.  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Sara} \oplus \text{Pedro}\} \ \& \ \text{lives-with}_w(x)(m)])$   
 ‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Sara} \oplus \text{Pedro}\}$  such that María lives with  $x$ .’
- c.  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Sara} \oplus \text{Juan}\} \ \& \ \text{lives-with}_w(x)(m)])$   
 ‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Sara} \oplus \text{Juan}\}$  such that María lives with  $x$ .’
- d.  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Juan} \oplus \text{Sara} \oplus \text{Juan}\} \ \& \ \text{lives-with}_w(x)(m)])$   
 ‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Juan} \oplus \text{Sara} \oplus \text{Juan}\}$  such that María lives with  $x$ .’
- (28) a.  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Juan}, \text{Pedro}, \text{Juan} \oplus \text{Pedro}\} \ \& \ \text{lives-with}_w(x)(m)])$   
 ‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Juan}, \text{Pedro}, \text{Juan} \oplus \text{Pedro}\}$  such that María lives with  $x$ .’
- b.  $\Box_w(\exists x[|x| > 1 \ \& \ x \in \{\text{Juan} \oplus \text{Pedro}\} \ \& \ \text{lives-with}_w(x)(m)])$   
 ‘In all accessible worlds, there is a plural individual  $x$  in  $\{\text{Juan} \oplus \text{Pedro}\}$  such that María lives with  $x$ .’

Uttering a sentence containing *algunos*, then, does not trigger the same kind of competition that uttering a sentence with *algún* does. Therefore, we correctly predict that *algunos*, unlike its singular counterpart, does not trigger an epistemic effect.

#### 4. Prediction for Free Choice Items: *Irgendwelche*.

As noted above, the plural form of *irgendein*, *irgenwelche*, conveys ignorance. This is expected if *irgendein* is a domain widener. On this view, given our assumptions about plurality, *irgendwelche* would have the denotation in (29) (To reflect the fact that *irgendwelche* selects the maximal domain, we are taking the corresponding subset selection function to be the identity function.) The sentence in (30) will then express the proposition in (31).

$$(29) \quad \llbracket \textit{irgendwelche} \rrbracket = \lambda f: f = \text{IDENTITY} . \lambda P_{\langle e,t \rangle} . \lambda Q_{\langle e,t \rangle} . \exists x[|x| > 1 \ \& \ (f(P))(x) \ \& \ Q(x)]$$

(30) María wohnt mit irgendwelchen Studenten zusammen.  
 María lives with irgendwelchen students together.

‘Maria lives with some students.’

$$(31) \quad \Box_w(\exists x[|x| > 1 \ \& \ x \in \llbracket \textit{students} \rrbracket^w \ \& \ \text{lives-with}_w(x)(m)])$$

‘In all accessible worlds, María lives with at least one group of students in the maximal domain containing all students and their sums.’

We do not have any uncertainty now as to what the value of  $f$  may be:  $f$  must be the identity function. Given this, all the assertions below, which result from restricting the domain, are

viable competitors: they are stronger than the assertion (and they are not contradictory.)<sup>15</sup>

- (32) C1  $\Box_w$  (María lives with Juan and Pedro in  $w \vee$  María lives with Pedro and Sara in  $w \vee$  María lives with Juan and Pedro and Sara in  $w$ )
- C2  $\Box_w$  (María lives with Juan and Sara in  $w \vee$  María lives with Pedro and Sara in  $w \vee$  María lives with Juan and Pedro and Sara in  $w$ )
- C3  $\Box_w$  (María lives with Juan and Sara in  $w \vee$  María lives with Juan and Pedro in  $w \vee$  María lives with Juan and Pedro and Sara in  $w$ )
- C4  $\Box_w$  (María lives with J. and P. in  $w \vee$  María lives with J. and S. in  $w$ )
- C5  $\Box_w$  (María lives with Juan and Pedro in  $w \vee$  María lives with Pedro and Sara in  $w$ )
- C6  $\Box_w$  (M. lives with J. and P. in  $w \vee$  M. lives with J. and P. and S. in  $w$ )
- C7  $\Box_w$  (María lives with J. and S. in  $w \vee$  María lives with P. and S. in  $w$ )
- C8  $\Box_w$  (M. lives with J. and S. in  $w \vee$  M. lives with J. and P. and S. in  $w$ )
- C9  $\Box_w$  (M. lives with P. and S. in  $w \vee$  M. lives with J. and P. and S. in  $w$ )
- C10  $\Box_w$  (María lives with Juan and Pedro in  $w$ )
- C11  $\Box_w$  (María lives with Juan and Sara in  $w$ )
- C12  $\Box_w$  (María lives with Pedro and Sara in  $w$ )
- C13  $\Box_w$  (María lives with Juan and Pedro and Sara in  $w$ )

As in the case of singular *irgendein*, the hearer will conclude that all of the competitors are false. This, together with the assertion in (31), entails that as far as the speaker knows, María may be living with *any* group of students, i.e., we get a Free Choice Effect. To see why, suppose, as before, that the assertion is true, and that all the competitors are false. Let us choose one group of students arbitrarily, for instance, the sum of Juan and Pedro. Assume now that, according to what the speaker knows, María is not living with Juan and Pedro. Then, given the assertion, in all accessible worlds, María lives with Juan and Sara or with Pedro and Sara. But that means that, contrary to our assumption, C8 is true. Repeating this reasoning for each of the competitors, we get the Free Choice effect.

## 5. Concluding Remarks

In recent years, a considerable number of studies on epistemic indefinites have appeared. Taken together, these studies show us that epistemic indefinites come in different kinds.

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<sup>15</sup>There are fourteen non-empty *proper* subdomains of the set of students. In the case at hand, the competitor below is entailed by the assertion, given our assumptions about the interpretation of the verb (see footnote 14.)

- (i)  $\Box_w$  (María lives with Juan and Pedro in  $w \vee$  María lives with Juan and Sara in  $w \vee$  María lives with Pedro and Sara in  $w$ )

This sets the stage for a research program that aims to identify the parameters along which epistemic indefinites can vary, and to determine how these parameters interact. The present paper contributes to this enterprise by (i) identifying a hitherto unobserved contrast between types of epistemic indefinites, and (ii) providing an analysis for this contrast that crucially links it to other attested parameters, thereby making concrete typological predictions.

We have observed that Spanish *algún* conveys ignorance in the singular, but not in the plural. In previous work, we claimed that *algún* signals that its domain is not a singleton set. In this paper, we have argued that the interaction of the anti-singleton constraint with plurality blocks the epistemic effect. We have also shown that the analysis presented here makes the following typological prediction: epistemic indefinites that convey a Free Choice effect should convey ignorance in both their plural and singular forms, while epistemic indefinites that trigger a Modal Variation effect will only do so in the singular form. The prediction seems to be confirmed for German *irgendein*. Further research is needed to see whether this prediction is born out once we consider a wider set of languages.

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