

outscores negation. Indeed, this is a popular analysis for the NPI readings of Japanese WH-*mo* (Kratzer & Shimoyama 2002; Shimoyama 2006, 2011), as well as Korean WH-*to* (Sells & Kim 2006; Kim & Sells 2007). However, there are significant problems in importing this analysis to Tuvan *-daa* NPIs. First, it is not the case that all NPIs formed with *-daa* allow a universal interpretation in positive environments. The numeral *čangīs* ‘one; a single’ in combination with *-daa* functions as a minimizer NPI and is ungrammatical without negation.

- (4) Men **čangīs-daa nom** nomčũ-*(va)-dĩ-m
 I one-*daa* book read-(NEG)-PST-1SG
 ‘I didn’t read even one book’ / ‘I didn’t read any book(s)’

Adopting Szabolci’s (2015) argument that the contribution of quantifier particles (like *-daa*) is the same across all their uses, it is surprising that *daa* with WH-words builds \forall GQ/NPIs but with a low-point scalar like *čangīs* is forms only NPIs. If WH-*daa* NPIs are universals which obligatorily outscope negation, why then would *čangīs-daa* differ?³

A second problem for a wide-scoping universal analysis of WH-*daa* comes from examples where the *-daa*-marked element is in an embedded clause with negation on the matrix verb. Surprisingly, WH-*daa* (5-a) admits both the NPI (5-a-i) and \forall GQ readings (5-a-ii), in stark contrast to unembedded negation (2). As we see in (5-b), embedding the pure NPI *čangīs-daa* is likewise grammatical with clausemate negation—similarly to (4), it only admits a narrow-scope existential reading (5-b-i). (5-b) demonstrates that Tuvan allows genuine cross-clausal NPI licensing.

- (5) a. Men [seni **čünũ-daa** nomča-an dep] diŋna-va-dĩ-m
 I [you.ACC what.ACC-*daa* hear-PST COMP] hear-NEG-PST-1SG
 (i) ‘I didn’t hear that you read anything’
 (ii) ‘I didn’t hear that you read everything’
 b. Men [seni **čangīs-daa nom** nomča-an dep] diŋna-*(va)-dĩ-m
 I [you.ACC one-*daa* book read-PST COMP] hear-(NEG)-PST-1SG
 (i) ‘I didn’t hear that you read any book/even one book’
 (ii) *‘I didn’t hear that you read every book’ / *‘For even one book x, I didn’t hear that you read x’

In this paper, I argue that Tuvan *-daa* marked quantificational NPs (QNPs) are underlyingly existentials. Adopting the Alternatives-and-Exhaustification approach to NPIs (Chierchia 2013; Mitrović 2021), it is proposed that *-daa* itself is a morphosyntactic correlate of recursive exhaustification, with the various readings being a result of the types of alternatives which the host has, an approach closely resembling Xiang’s (2020) analysis of Mandarin *dōu*.

The structure of this paper is as follows. §2 discusses two main views of NPIs: the first that all NPIs are existentials, the second that NPIs in some languages are universals. It is argued that Tuvan *-daa*-based NPIs cannot be analyzed as universals. §3 considers the wider distribution of the particle and argues that its uses are best analyzed as reflecting one single denotation, rather than accidental homonyms. §4 provides my analysis. §5 concludes the paper.

³ Note that a similar issue emerges with minimizers formed with *one* and the aforementioned particles *-mo* in Japanese and *-to* in Korean (see Sells & Kim 2006, Nakanishi 2006, Shimoyama 2011; 435), given that these are likewise ungrammatical without negation. As my argument in this paper is largely concerns the appropriate treatment of Tuvan *-daa*, I will leave open whether a wide-scope \forall may be appropriate in other languages.

2. On wide scope universal NPIs. This section summarizes the main arguments and evidence proposed for wide-scope universal NPIs (§2.1) and argues that evidence from clausal embedding in Tuvan is inconsistent with such an analysis (§2.2).

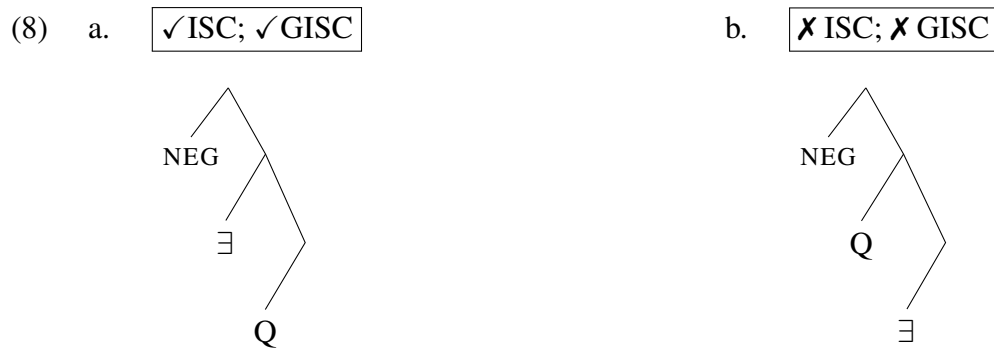
2.1. WIDE-SCOPE UNIVERSAL NPIs. Based on evidence from NPIs like English *any*, a common position is that NPIs are existential quantifiers which obligatorily scope below their licenser (Kadmon & Landman 1993; Chierchia 2013). This position is formalized as by Linebarger (1987; 338) as the IMMEDIATE SCOPE CONSTRAINT (ISC) (6). Note that, for simplicity I will focus purely on negation as a licenser of NPIs.

(6) IMMEDIATE SCOPE CONSTRAINT (ISC): An NPI is an existential which is in the immediate scope of negation.

However, an alternative view is that NPIs in some languages are actually universal quantifiers which obligatorily scope *over* their licensers, which Sells & Kim (2006) formalize as the GENERALIZED IMMEDIATE SCOPE CONSTRAINT (GISC):

(7) GENERALIZED IMMEDIATE SCOPE CONSTRAINT (GISC): An NPI and negation are in an immediate scope relation with each other (Kim & Sells 2007; Shimoyama 2011; 421).

Both the ISC and GISC are syntactic minimality requirements on the licensing of NPIs. ‘Immediate Scope’ means that there is no additional scope-taking quantifier Q intervening between NEG and the polarity-sensitive quantifier. Thus, for existential NPIs, the ISC and GISC both permit $[\neg > \exists > Q]$ (8-a) and disallow $[\neg > Q > \exists]$ (8-b):⁴

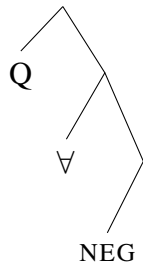


Where things differ between ISC and GISC is the behavior of NPIs which are analyzed to be universals. With an additional scope-taking Q, the only scope which (7) permits is one where the Q is outside the scope of \forall and NEG, as in (9-a), while Q between \forall and NEG is ungrammatical (9-b).

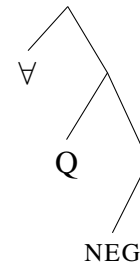
⁴ An example of ISC effects is (i) with surface-scope readings of *nobody*, *usually*, and *anything*. (i-b) and (i-c) are consistent with (8-a), while (i-a) violates (8-b).

- | | | |
|-----|-----------------------------------|------------------------|
| (i) | a. *Nobody usually read anything. | $[\neg > Q > \exists]$ |
| | b. Usually, nobody read anything. | $[Q > \neg > \exists]$ |
| | c. Nobody read anything usually. | $[\neg > \exists > Q]$ |

(9) a. X ISC; ✓ GISC



b. X ISC; X GISC



Shimoyama (2011) proposes a test to assess whether NPIs are underlyingly universal or existential through the addition of a scope-taking operator Q. If this Q can take scope below negation and produces a non-anti-additive environment, an NPI should not be available below here if it is existential (i.e. $*[\neg > Q > \exists_{\text{NPI}}]$). However, if the NPI is actually a universal it should be available on wide-scope $[\forall_{\text{NPI}} > Q > \neg]$ reading, because the NPI is still in the immediate scope of negation. Applying this test to Japanese WH-*mo* NPIs, Shimoyama (2011) demonstrates that Japanese NPIs can be shown to behave like universals.

At the time of writing, I have not been able to elicit such data from Tuvan, so the facts cannot be reported. As Shimoyama (2011; 426–7) indicates, these judgments are not extremely straightforward, as they require considering three scope-taking elements, a task which some speakers find quite straightforward and others less so. Thus, it would be necessary to poll numerous speaker. These limitations aside, in the next subsection I will discuss examples that are inconsistent with a wide-scoping universal analysis of Tuvan *-daa*. Thus, while the current paper does not conclusively argue against the existence of wide-scope universal NPIs as an option in some languages, it will be argued that what appears to be superficially similar to Japanese WH-*mo* in Tuvan is potentially quite different.

2.2. PROBLEMS FOR A WIDE-SCOPE ANALYSIS OF *-daa* NPIs. As was reported in §1, Tuvan WH-*daa* gets a universal reading in episodic affirmative sentences (10) (repeated from (1)):

- (10) Men düün {**čünü-daa** / **kimni-daa**} kör-dü-m
 I yesterday {what.ACC-*daa* / who.ACC-*daa*} see-PST-1SG
 ‘I saw every{thing/one} yesterday’

With clausemate negation, WH-*daa* is obligatorily interpreted as an NPI (11-a):

- (11) Men düün {**čünü-daa** / **kimni-daa**} kör-be-di-m
 I yesterday {what.ACC-*daa* / who.ACC-*daa*} see-NEG-PST-1SG
 a. ‘I didn’t see any{thing/one} yesterday’
 b. *‘I didn’t see every{thing/one} yesterday’

A wide-scope reading of WH-*daa* is unavailable even in contexts where a speaker is correcting a previously-mentioned WH-*daa* universal. For example, if a teacher utters (12-a) and a (very honest) student is denying that he or she indeed read everything, it is infelicitous to correct this with WH-*daa* as in (12-b); instead a distinct universal like *šuptu* ‘all’ must be used instead.

- (12) a. Ugaanig=sen. Sen [[meeŋ küzen-im] **čünü-daa** nomču-du-ŋ.
 smart=2SG. you [[my.GEN want-1SG.POSS] what.ACC] read-PST-2SG
 ‘You are smart. You read everything I wanted (you to)’

- b. Men {#**čünü-daa** / šuptu-zun} nomču-va-di-m
 I {what.ACC-*daa* / all-POSS.ACC} read-NEG-PST-1 SG
 ‘I didn’t read EVERYTHING (I only read some things)’

When WH-*daa* appears in an embedded clause with negation on the matrix verb, however, the picture changes (13-a). Here both an NPI (the (a) readings in (13)) and a negated universal reading is available (the (b) readings in (13)).

- (13) a. Men [seni **čünü-daa** nomča-an dep] diŋna-va-di-m
 I [you.ACC what.ACC-*daa* hear-PST COMP] hear-NEG-PST-1 SG
 (i) ‘I didn’t hear that you read anything’
 (ii) ‘I didn’t hear that you read everything’
- b. Men [**kimni-daa** čaraš dep] sana-vas=men
 I [who.ACC-*daa* beautiful COMP] consider-NEG.PRES=1 SG
 (i) ‘I don’t consider any of them beautiful’ (none are)
 (ii) ‘I don’t think all of them are beautiful’ (some are, some aren’t)
- c. Men [seni **kayī-daa student-in** baškīla-an] di-ve-di-m
 I [you.ACC which-*daa* student-POSS.ACC teach-NEG-PST-1 SG
 (i) ‘I didn’t say that you taught any of those students’
 (ii) ‘I didn’t say that you taught all of those students’

While the NPI (a) readings were judged as more natural when given such sentences in isolation, the universal (b) readings improved when provided appropriate context. Disambiguating the two readings is aided by a prosodic distinction between the two uses of WH-*daa*: the NPI reading has a rise in pitch on the WH-word, while the universal reading has a flatter intonation. This prosodic difference is present in unembedded examples of WH-*daa* as well.

Intriguingly, while Japanese WH-*mo* displays the same pattern of being a universal in affirmative sentences (14-a), but NPI with clause-mate negation (14-b),⁵ embedded WH-*mo* with matrix negation (14-c) is totally ungrammatical on an NPI reading of WH-*mo* (14-c-i), while speakers I have consulted report that the universal reading is extremely marginal (14-c-ii),⁶ and is often corrected to a discrete universal quantifier like *minna* ‘everyone’.

- (14) Japanese WH-*mo*
- a. Ken-wa **dare-o-mo** aisi-tei-ru
 Ken-TOP who-ACC-*mo* love-STATIVE-PRES
 ‘Ken loves everyone’ (Imani 2020; 497-8)
- b. Ken-wa **dare-(o)-mo** ais-tei-na-i
 Ken-TOP who-(ACC)-*mo* love-STATIVE-NEG-PRES
 ‘Ken doesn’t love anyone’ (Imani 2020; 497-8)
- c. ??/*Taro-wa [Yoko-ga **dare-(o)-mo** syootaisi-ta to] iwa-nakat-ta
 Taro-TOP [Yoko-NOM who-(ACC)-*mo* invite-PST that] say-NEG-PST
 (i) *‘Taro didn’t say that Yoki invited anyone’ (Shimoyama 2011; 418)

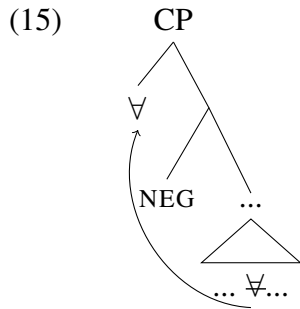
⁵ Note that in Japanese, there are two key differences between WH-*mo* universals and NPIs. For WH-*mo* universals structural case markers are obligatory (i.e. (14-a) with just *dare-mo* is bad). For NPIs, case markers are optional, though many speakers prefer to drop them. Next, there is a difference in the intonational melody: the universal WH-*mo* items have a high pitch on the first mora of the WH-word, while for NPIs the pitch rises on the second mora.

⁶ Note that (14-c) is adapted from (Shimoyama 2011; 418), where *dare-mo* is presented without a case marker and the only judgment reported is the ungrammaticality of the NPI reading.

(ii) ??‘Taro didn’t say that Yoki invited everyone’

Thus, despite the similarity in alternating between a universal and NPI meaning in unembedded sentences, Tuvan WH-*daa* and Japanese WH-*mo* depart significantly in embedded clauses. As presented in §2.1, Japanese WH-*mo* NPIs are often analyzed as a wide-scope universal which requires clausemate negation. How this detail relates to the marginality of (14-c-ii) is unclear, but a story along these lines emerges from the absence of (14-c-i)—if WH-*mo* must raise (at LF) to the edge of its clause to a position higher than negation, it would seem that this movement is blocked by a clause barrier.

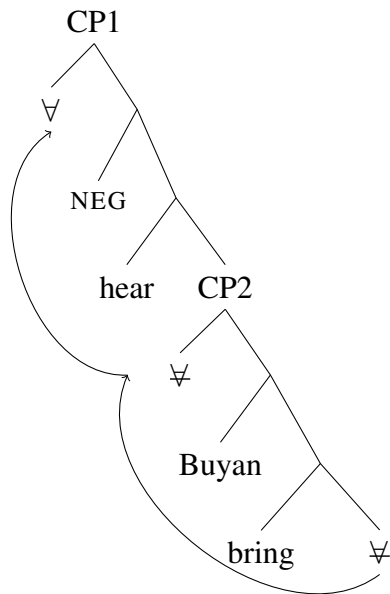
In order to maintain that Tuvan WH-*daa* QNPs are uniformly universal quantifiers, with clausemate negation the \forall GQ obligatorily raises above negation at LF (33) as in (17-a):



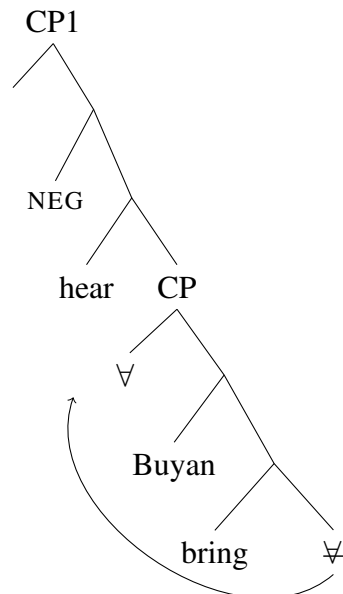
Correspondingly, for the examples where WH-*daa* is in embedded clause (16), the NPI reading could be derived from LF moving a \forall GQ to the edge of the matrix clause (17-a), while the narrow-scope universal reading is a result of the \forall GQ staying in within the embedded CP (17-b).

- (16) Men [Buyan-nĩ **čünü-daa** ekkel-gen] di-ve-di-m
 I [Buyan-ACC what.ACC-*daa* bring-PST] say-NEG-PST-1SG
 a. ‘I didn’t say that Buyan brought anything’
 b. ‘I didn’t say that Buyan brought everything’

(17) a. NPI



b. \forall GQ



However, this wide-scope universal analysis breaks down when we consider *čangis-daa* NPIs. *Čangis-daa* admits no universal reading (18-a), but is nevertheless perfectly grammatical in embedded clauses where negation is hosted on the matrix verb (18-b):

- (18) a. Men **čangis-daa nom** nomču-*(va)-dī-m
 I one-*daa* book read-(NEG)-PST-1SG
 ‘I didn’t read even one book’ / ‘I didn’t read any book(s)’
 b. Men [seni **čangis-daa nom** nomča-an dep] diŋna-*(va)-dī-m
 I [you.ACC one-*daa* book read-PST COMP] hear-(NEG)-PST-1SG
 (i) ‘I didn’t hear that you read any book/even one book’
 (ii) *‘I didn’t hear that you read every book’ / *‘For even one book x, I didn’t hear that you read x’

It is, in my mind, entirely uncontroversial to assume that *čangis-daa* is in no way a universal quantifier: the host *čangis* functions as a numeral ‘one’-like element;⁷; it has the semantics of a minimizing NPI which are standardly analyzed as existentials (Chierchia 2013); and, most significantly, it never clearly contributes a universal meaning.

To maintain a universal analysis of *čangis-daa*, the embedded data (18-b) is most challenging, as we would be required to assume that this element is required to raise out of an embedded clause as in (17-a). Further, there is a final detail that is totally unexplained. Namely, when *čangis-daa* and *WH-daa* both appear in an embedded clause with negation on the matrix verb, the reading of *WH-daa* is fixed to an NPI:

- (19) Men [[**čangis-daa kiži-ni**] **čünü-daa** ašta-an dep] diŋna-va-dī-m
 I [[one-*daa* person-ACC] what.ACC-*daa* clean-PST COMP] hear-NEG-PST-1SG
 a. ‘I didn’t hear that anyone cleaned anything’
 b. *‘I didn’t hear than anyone cleaned everything’

As shown in (19-a), when pure NPI *čangis-daa* and NPI/∀GQ both appear in the embedded clause, the $[\neg > \forall]$ reading of the latter is unavailable. That is to say, when *čangis-daa* intervenes between negation and *WH-daa*, the reading of *WH-daa* is fixed. The relevance of this is that if *čangis-daa* is intervening between negation and *WH-daa*, we would anticipate that the movement of *WH-daa* out of the embedded clause would be blocked. If *WH-daa* were a ∀GQ, we would predict that this would produce the narrow-scope negation reading for *WH-daa* as in (19-b).

Taken together, these facts paint a picture where neither *WH-daa* nor *čangis-daa* are underlyingly universals.

3. An aside: One vs. many meanings. Before proceeding to my proposal for the semantics of Tuvan *-daa* QNPs, it is worth stepping back and asking a broader question. So far the argument I have sketched against *-daa* QNPs being underlyingly universals has tacitly assumed that the meaning of the particle *-daa* itself is consistent across meanings, following the general heuristic

⁷Note that the particle *-daa* is essential to the NPI reading of *čangis-daa*. Without *-daa*, it is a positive polarity item:

- (i) Men **čangis** nom nomču-va-dī-m
 I one book read-NEG-PST-1SG
 a. ‘(Among all the books I read) there is one book I didn’t read’ [$\exists > \neg$]
 b. *‘I didn’t read any book(s)’ [$\neg > \exists$]

of Lahiri (1998), Szabolcsi (2015, 2017) and Mitrović (2021).⁸ But is this indeed a reasonable assumption? I argue that the overwhelming similarity between the distribution of similar particles in unrelated languages suggests against analyzing these elements as accidental homonyms. That is, *-daa* fits the distribution of what a MO-particle, following Szabolcsi’s (2015) terminology based on the well-studied Japanese particle *-mo*.

There are three other main functions of Tuvan *-daa*. The first is an additional reading of WH-*daa* which emerges when in the scope of a possibility modal, where it optionally acquires a universal *any*-like free-choice item (\forall -FCI) reading (20). The \forall -FCI reading is only available in the scope of a modal, as we see in the contrast between (20-a-i) and (20-b-i).

- (20) a. Ežik-ti **kim-daa** sokta-p bol-ur
 door-ACC who-*daa* knock-CVB can-PRES
 (i) ‘Anyone can knock at the door’ (but not necessarily everyone) \forall -FCI
 (ii) ‘Everyone can knock at the door’ (all at once) \forall -GQ
- b. Ežik-ti **kim-daa** sokta-p tur
 door-ACC who-*daa* knock-CVB stand.LT.VB
 (i) *‘Anyone is knocking at the door’ * \forall -FCI
 (ii) ‘Everyone is knocking at the door’ \forall -GQ

Like English free-choice *any* vs. \forall GQ *every*, the contrast between these readings has to do with the range of possible alternatives which can be true simultaneously. That is, considering (20-a), the *any* reading denotes that of all the contextually relevant people, each is a potential knocker, though it does not require that they all knock at the same time; the universal reading (20-a-ii), on the other hand, requires that all relevant entities knock (i.e. at the same time).⁹

The \forall -FCI reading of WH-*daa* can optionally be reinforced with the element *bolza* ‘it be’ (21). In the scope of a possibility modal, *bolza* has the effect of disambiguating between the free-choice reading (21-a-i) and the \forall GQ reading (21-a-ii). WH-*daa bolza* is ungrammatical in non-modal sentences (21-b).

- (21) a. Ežik-ti **kim-daa bolza** sokta-p bol-ur
 door-ACC who-*daa* IT.BE knock-CVB can-PRES
 (i) ‘Anyone can knock at the door’ \forall -FCI
 (ii) *‘Everyone can knock at the door’ * \forall -GQ
- b. *Ežik-ti **kim-daa bolza** sokta-p tur
 door-ACC who-*daa* IT.BE knock-CVB stand.LT.VB
 *‘Anyone is knocking at the door’ * \forall -FCI, * \forall -GQ

The other two roles of *-daa* are as markers of focus and coordination for nominals other than WH-words or *čangis*. When an element is focused, *-daa* can attach directly to that element (22), whether the sentence is positive (22-a) or negative (22-b). There are two distinct focus-related

⁸ See Mitrović & Sauerland (2014, 2016) for summary of arguments for and against a unified definition of these types of particles.

⁹ *čangis-daa* lacks free-choice readings:

- (i) *Men **čangis-daa nom** nomču-p šida-ar=men
 I one-*daa* book read-CVB can-PRES=1 SG
 *‘I can read any book’

meanings: (i) a plain additive reading wherein there are additional alternatives other than the focused element which are true, similar to English *also/too* (22-a-i) or negative post-focal *either* (22-b-i), and (ii) a counter-expectational *even*-reading (22-a-ii), (22-b-ii) wherein the focus-marked element is the contextually least-likely member for which the ordinary value holds.

- (22) Men-**daa** nom ekkel-(be)-di-m
 I-*daa* book read-(NEG)-PST-1 SG
- a. Positive:
- (i) Additive: ‘[I]_F read that book, too’
 (ii) Mirative: ‘Even [I]_F read that book’
- b. Negative:
- (i) Additive: ‘[I]_F didn’t read that book, either’
 (ii) Mirative: ‘Even [I]_F didn’t read that book’

As for coordination, multiple coordinands can be marked with *-daa* (23). In positive sentences, this contributes a distributive ‘both...and’ reading (23-a), while in the scope of negation it contributes a *neither...nor* reading (23-b).

- (23) Men [**kofe-daa**] [**šay-daa**] iš-(pe)-di-m
 I [coffee-*daa*] [tea-*daa*] drink-(NEG)-PST-1 SG
- a. Positive: ‘I drank both coffee and tea’
 b. Negative: ‘I drank neither coffee nor tea’

While these seemingly disparate readings may seem on first blush too different for a unified definition, they are united by the fact that they involve semantic alternatives (in the sense of Chierchia et al. 2012; Chierchia 2013). Focus involves reasoning about pragmatic alternatives of the element under focus (Rooth 1992; Szabolcsi 2017), while coordination is transparently the coordination of alternatives (Mitrović & Sauerland 2014, 2016). Finally, as for NPIs and FCIs, as I will outline in §4, these involve reasoning about the alternatives of an existential (following the framework developed by Krifka 1995; Fox 2007; Chierchia 2013).

Another reason to assume that particles like this have a consistent meaning comes from crosslinguistic comparison. That is, if the roles that a particle like *-daa* served were not united, we would not expect for them to have parallels in other languages. Indeed we do—Tuvan *-daa* has the distribution of what Szabolcsi (2015) refers to as a MO particle, after the previously mentioned Japanese *-mo*. Table 1 provides some of the basic functions other well-studied particles: Japanese *-mo*, Hindi/Urdu *bhii*, and Hungarian *is/sem*.¹⁰

As we see in Table 1, there is seemingly total overlap between Tuvan *-daa* and Japanese *-mo*, while Hindi/Urdu *bhii* and Hungarian *is/sem* perform a subset of these same roles. Given that these languages are not genetically related, it seems likely that, on some level, the resulting meaning of these constructions is compositional rather than idiomatic. That is to say, this is a natural class of meanings.¹¹

¹⁰ For other examples of such particles, see Szabolcsi (2015, 2017); Mitrović (2021). Note that Hungarian *sem* is the negative concord allomorph of *is*.

¹¹ The careful reader will no doubt notice this overlap is somewhat at odds with my conclusion in §2 that Japanese WH-*mo* NPIs are plausibly wide-scope universal. It is no unfortunately beyond the scope of this paper to resolve this tension, though I refer the interested reader to Zeijlstra (2017) and Mitrović (2021) for ways to analyze wide-scope universal NPIs within the current framework.

Role	Reading	tyv <i>-daa</i>	jpn <i>-mo</i>	hin <i>bhii</i>	hun <i>is/sem</i>
Focus	add. <i>too</i>	X- <i>daa</i>	X- <i>mo</i>	X <i>bhii</i>	X <i>is</i>
	add. <i>either</i>	X- <i>daa</i>	X- <i>mo</i>	X <i>bhii</i>	X <i>sem</i>
	mir. pos. <i>even</i>	X- <i>daa</i>	X- <i>mo</i>	X <i>bhii</i>	<i>még</i> X <i>is</i>
	mir. neg. <i>even</i>	X- <i>daa</i>	X- <i>mo</i>	X <i>bhii</i>	(<i>még/akár</i>) <i>csak</i> X <i>is</i>
Coord	<i>both...and</i>	X- <i>daa</i> Y- <i>daa</i>	X- <i>mo</i> Y- <i>mo</i>	—	X <i>is</i> Y <i>is</i>
	<i>neither..nor</i>	X- <i>daa</i> Y- <i>daa</i>	X- <i>mo</i> Y- <i>mo</i>	—	X <i>sem</i> Y <i>sem</i>
Quant.	NPI	<i>kim-daa</i>	<i>dare-mo</i>	<i>koi</i> <i>bhii</i>	<i>akárki is, senki</i>
	\forall Q	<i>kim-daa</i>	<i>da're-mo</i>	—	—
	\forall -FCI	<i>kim-daa (bolza)</i>	<i>dare-de-mo</i>	<i>koi</i> <i>bhii</i>	<i>akárki is, bárki is</i>
	minimizer NPI	<i>čajgıs-daa</i>	<i>it/hito...-mo</i>	<i>ek bhii</i>	—

Table 1. Distribution of Tuvan *-daa*, Japanese *-mo* (Shimoyama 2006, 2011; Kobuchi-Philip 2009; Szabolcsi 2015, 2017; Nakanishi 2006; Mitrović 2021), Hindi/Urdu *bhii* (Lahiri 1998; Szabolcsi 2017), and Hungarian *is/sem* (Szabolcsi 2015, 2017; Halm 2016). Glosses of relevant lexical items: Japanese—*dare* ‘who’, *it* ‘one’, *hito* ‘one’; Hindi—*koi* ‘somebody/anybody’, *ek* ‘one’; Hungarian—*még* ‘even (more)’, *akár* ‘even’, *csak* ‘only; just’, *akárki*=*akár* ‘any’ + *ki* ‘who’, *senki*=*sem* + *ki* ‘who’, *bárki*= *bár* ‘any’ + *ki* ‘who’.

4. An alternative semantics analysis of Tuvan *-daa* QNPs. Having argued against analyzing Tuvan *-daa* QNPs as underlying universals which must outscope negation (§2) and arguing that the various uses of *-daa* constitute a natural class with a stable meaning (§3), we now turn to how best to analyze these elements. In what follows, I adopt Chierchia’s (2013) Grammatical Theory of Polarity Sensitivity, wherein polarity sensitive elements are analyzed as existentials with obligatorily active alternatives. In this theory, much of the work is done by covert exhaustifiers which operate upon the alternatives of the alternative-bearing elements within a proposition. The most basic exhaustifier is O(nly):

$$(24) \quad \llbracket O_{ALT}(\phi) \rrbracket = \phi \wedge \forall \psi \in ALT(\phi) [\psi \rightarrow \phi \subseteq \psi], \text{ where ‘}\subseteq\text{’ means ‘entails’ (Chierchia 2013; 31)}$$

$O_{ALT}(\phi)$ is an operator which takes a proposition ϕ and does two things: (i) it asserts that ϕ is true, and (ii) for all of ϕ ’s alternatives ($\forall \psi \in ALT(\phi)$) it asserts those alternative are entailed by ϕ and for all alternatives not entailed by ϕ , it negates them.

For a simple demonstration of how O(nly) works, consider a sentence like *Only [John]_F read that book*. The ordinary value of this proposition can be represented as $\phi(j)$, where $[\lambda_{x_e}.\phi(x)]$ denotes the set of book readers. Assume that there are three relevant members of the domain: $\{john, mary, bill\}$. This yields the set of alternatives $\{\phi(j), \phi(m), \phi(b)\}$. The contribution of *only* is to say that, of all these alternatives, only the ordinary value or ‘prejacent’ (= $\phi(j)$) is true. Because one of the members of the alternative set entails the prejacent, that alternative is not negated; all non-entailed alternatives are negated. This results in the following LF:

$$(25) \quad \llbracket O_{ALT}(\phi(j)) \rrbracket = \phi(j) \wedge \neg \phi(m) \wedge \neg \phi(b)$$

On this theory, NPIs are existentials with obligatorily active alternatives. That is to say, the core meaning of *anybody* is the same as *somebody*, with the additional piece of information that *anybody* has obligatorily active alternatives. Because existentials are equivalent to the disjunction

of their domain alternatives, we can represent the meaning of a sentence like *anybody swam* as $(p \vee q)$ (26-a), where $p = \text{'x swam'}$ and $q = \text{'y swam'}$. Because the alternatives of *any* are obligatorily active, the non-entailed ones must be exhaustified. The set of alternatives of (26-a) are represented in (26-b), which can be divided into the set of subdomain alternatives (26-b-i) and the set of scalar alternatives (26-b-ii). The exhaustification of this proposition is shown in (26-c), where the prejacent $(p \vee q)$ is asserted and the non-entailed alternatives are negated.

- (26) a. $(p \vee q)$
 b. $\text{ALT}(26\text{-a}) = \{p \vee q, p, q, p \wedge q\}$ $\text{Non-entailed ALT}(26\text{-a}) = \{p, q, p \wedge q\}$
 (i) $\text{D-ALT}(26\text{-a}) = \{p, q\}$ $\text{Non-entailed D-ALT} = \{p, q\}$
 (ii) $\sigma\text{-ALT}(26\text{-a}) = \{p \vee q, p \wedge q\}$ $\text{Non-entailed } \sigma\text{-ALT}(26\text{-a}) = \{p \wedge q\}$
 c. (i) $\text{O}_{\text{ALT}}(p \vee q) = (p \vee q) \wedge \neg p \wedge \neg q \wedge \neg(p \wedge q)$
 (ii) $= (p \vee q) \wedge \neg(p \vee q) \wedge \neg(p \wedge q)$ (De Morgan's)

Crucially, the result in (26-c-ii) is a contradiction. Thus, this LF is not interpretable. This contradiction is the source of ungrammaticality of these types of NPIs in positive sentences.

Under negation, the prejacent is negated, as well as the alternatives. Because negation reverses entailment relations, this circumvents the contradiction produced in (26). This is shown in (27), where all the alternatives are asserted by *O*(nly) in (27-c).

- (27) a. $\neg(p \vee q)$
 b. $\text{ALT}(27\text{-a}) = \{\neg(p \vee q), \neg p, \neg q, \neg(p \wedge q)\}$ $\text{Non-entailed ALT}(27\text{-a}) = \{ \}$
 c. $\text{O}_{\text{ALT}}(\neg(p \vee q)) = \neg(p \vee q) \wedge \neg p \wedge \neg q \wedge \neg(p \wedge q)$

The argument sketched thus far only extends for pure NPIs like English *ever*. That is, this cannot be the correct analysis of Tuvan WH-*daa* NPIs (we will return to pure NPI *čaggis-daa* shortly). Crucial to Tuvan WH-*daa* NPIs is that (i) they are unambiguously interpreted as a narrow-scope existential with clausemate negation, and (ii) resolve to a universal meaning in affirmative sentences. Two significant tweaks are required to account for this. The first is the recursive exhaustification (Fox 2007), which is necessary to strengthen existentials into universal-like meanings. The second is a modification of the members of the alternatives which are present in the alternatives set.

Recursive exhaustification involves exhaustifying not only the alternatives of the prejacent, but also the alternatives of those alternatives. On Chierchia's (2013) theory, FCIs are said to have 'pre-exhaustified' subdomain alternatives. That is, for a prejacent like $(p \vee q)$, its non-entailed subdomain alternatives are $\{\text{O}_{\text{ALT}}(p), \text{O}_{\text{ALT}}(q)\}$, where $\text{ALT}(p) = \{p, q\}$ and $\text{ALT}(q) = \{p, q\}$. This 'pre-exhaustification' is represented with a short-hand operator $\text{O}_{\text{Exh-DA}}$, a practice I follow here. It has been noted that recursive exhaustification without a scalar alternative has the effect of turning an existential/disjunction into a universal/conjunction (Bowler 2014; Bar-Lev & Margulis 2014). This is shown in (28).

- (28) a. $\text{O}_{\text{Exh-DA}}(p \vee q) = (p \vee q) \wedge \neg \text{O}(p) \wedge \neg \text{O}(q)$
 (i) $\text{O}(p) = p \wedge \neg q$
 (ii) $\text{O}(q) = q \wedge \neg p$
 b. (i) $= (p \vee q) \wedge \neg(p \wedge \neg q) \wedge (q \wedge \neg p)$
 (ii) $= (p \vee q) \wedge (p \rightarrow q) \wedge (q \rightarrow p)$ (Material implication)
 (iii) $= (p \vee q) \wedge (p \leftrightarrow q)$ (from $(p \rightarrow q) \wedge (q \rightarrow p)$)

$$(iv) = (p \wedge q)$$

If, however, a scalar alternative is included into an alternative set, the result would be a contradiction (i.e. $(p \wedge q) \wedge \neg(p \wedge q)$).

The route I will pursue for Tuvan *-daa* is that *-daa* itself is a morphological correlate of a recursive exhaustifier being present in the structure. *-Daa* marks that its host has active alternatives and need to be interpreted by $O_{\text{Exh-DA}}$. By stipulation, I assume that WH-*daa* lacks scalar alternatives because the WH-word itself simply has no scalar alternatives. That is, because the alternative set only contains subdomain alternatives, in a positive environment it will naturally resolve to a universal *every* meaning. In this way, this approach is similar to Xiang’s (2020) analysis of Mandarin *dōu*, where the resulting meanings are a result of what counts as an alternative (i.e. it is contingent on the semantics of the element that the particle combines with).

- (29) Men **čünü-daa** ekkel-(be)-dim
 I what.ACC-*daa* bring-(NEG)-PST.1SG
 a. Pos: ‘I brought everything’
 b. Neg: ‘I didn’t bring anything’

On the other hand, because *čangis* ‘one’ (30) is a numeral, it is inherently scalar. Thus, recursive exhaustification will yield a contradiction, as the scalar alternative will be negated as well as the pre-exhaustified subdomain alternatives.

- (30) Men **čangis-daa nom** ekkel-*(be)-dim
 I one-*daa* book bring-(NEG)-PST.1SG
 ‘I didn’t bring any book(s)’

With clausemate negation, the reading that will result with pre-exhaustified subdomain alternatives is invariantly a narrow-scope existential, whether or not a scalar alternative is included. This is shown in (31), where the negated scalar alternative (present only for *čangis-daa*) is justified to the right.

- (31) a. $O_{\text{Exh-DA}}(\neg(p \vee q)) = \neg(p \vee q) \wedge \neg O(\neg p) \wedge \neg O(\neg q)$ ($\wedge \neg(p \wedge q)$)
 (i) $\neg O(\neg p) = \neg(\neg p \wedge \neg \neg q) \equiv \neg(\neg p \wedge q) \equiv (q \rightarrow p)$
 (ii) $\neg O(\neg q) = \neg(\neg q \wedge \neg \neg p) \equiv \neg(\neg q \wedge p) \equiv (p \rightarrow q)$
 b. $= \neg(p \vee q) \wedge (p \leftrightarrow q)$ ($\wedge \neg(p \wedge q)$)
 c. $= \neg(p \vee q)$

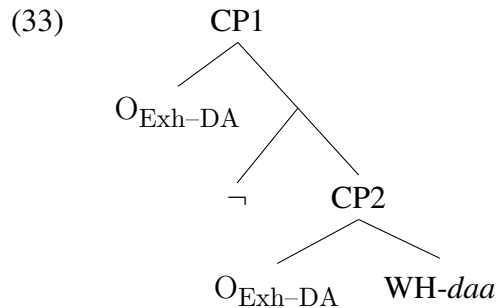
As we see in (31-c), the result is equivalent to a narrow-scope existential (whether or not the negated scalar is included).

Next, we consider the data from clausal embedding discussed in §2.2. My proposal is that, considering an example involving embedded WH-*daa* like (16) (translated in (32)), the source of this pattern is the place that the exhaustifier is present in the structure.

- (32) I didn’t say that [Buyan brought **what-daa**]
 a. NPI: ‘I didn’t say that Buyan brought anything’
 b. \forall GQ: ‘I didn’t say that Buyan brought everything’

Specifically, the exhaustifier can be hosted in the specifier of either the matrix or the embedded CP. When $O_{\text{Exh-DA}}$ is hosted in the embedded clause (CP2 in (33)), the resulting reading is a negated universal (32-b). That is, before negation operates over the CP, the existential is strength-

ened to a universal (as in (28)). When, on the other hand, the exhaustifier is hosted in the matrix clause CP (CP1), WH-*daa* is in the scope of negation before exhaustification occurs, and hence and NPI reading is produced (as in (31)).



On the other hand, if we replace WH-*daa* in (33) with *čangis-daa*, only one reading is produced. This is because *čangis-daa* cannot be interpreted by the lower exhaustifier, a *s čangis* carries a scalar alternative. Thus, the only reading available is the NPI reading, where it is interpreted by the exhaustifier in the specifier of CP1.

The final detail concerns the embedding of *čangis-daa* and WH-*daa* simultaneously (19), where the reading of WH-*daa* is fixed to the NPI. This, I contend, is produced for the same reason that only one reading of *čangis-daa* is available in the same construction. Specifically, multiple alternative-sensitive elements are *not* interpreted by multiple exhaustifiers; rather, an exhaustifier must interpret all alternative-sensitive elements within its scope. Because the embedded exhaustifier cannot interpret *čangis-daa* without yielding a contradiction, it likewise cannot interpret the lower WH-*daa*.

5. Conclusion. This paper has examined a novel set of semantic data from an understudied language and proposed an exhaustification-based solution. This situates Tuvan *-daa* as a special type of alternative-sensitive morpheme which is somewhat similar to others that have been studied in the literature, yet subtly different. It is therefore worthy of further study. It has been demonstrated that Tuvan *-daa* based NPIs are unlikely to be an example of wide-scope universals, and I have argued that they are covert existentials which are strengthened to universals via recursive exhaustification.

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