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Negative Polarity and Domain Broadening: Evidence from Exceptive *ʔilla* in Levantine Arabic

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Abstract

Objectives: A standard approach to the meaning and semantic licensing of negative polarity items (NPIs) takes an NPI likeindefinite *any* to be a scalar expression that obligatorily activates alternatives to its contextual restriction based on the notion of *Domain Widening* (Kadmon and Landman 1993, Chierchia 2006) .The generalization underlying this approach is that an NPI induces a *domain broadening effect* which is subject to exhaustification in grammar. This paper contributes further evidence to this generalization by presenting and analyzing an occurrence of exceptive *ʔilla* in Levantine Arabic (LA) as a strong negative polarity item (NPI) with a *domain broadening effect*.

Methods: The paper explains an analogy between NPIs and exceptive *ʔilla* not only through restricted distribution in semantic licensing but also through a shared tendency to showing variation in distributional strength.

Results: Based on these observations, the paper finds that NPI exceptive *ʔilla* requires a (multi-)dimensional exhaustification analysis that attends to both truth conditional and non-truth conditional dimensions of meaning (e.g., implicatures or presuppositions).

Conclusions: This finding lends further support to an NPI theory of exceptive phrases that captures their truth conditional and distributional facts by grammatical exhaustification (See Gajewski 2011; Crnič 2018; Sauerland and Yatsushiro 2023).

Keywords: Domain Broadening; Exceptive Semantics; Exhaustification; Levantine Arabic

الشرعنة بالمنفي وتوسيع الخطاب: حالة الاستثناء في لغة الليفانت العربية

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ملخّص

الأهداف: تبحث هذا الورقة في دلالة جمل الاستثناء في لغة الليفانت العربية. تقدم الورقة تحليلا لحقائق الاستثناء استنادا لظاهرة توسيع ميدان الخطاب ضمن نظرية الانتفاء المنطقية التي استخدمت لتفسير دلالة الالفاظ التي يشرعنها النفي في السياق الدلالي والتركيبي.

المنهجية: يقوم التحليل على تطبيق إجراء الانتفاء الدلالي في حساب قيم الصدق لجمل الاستثناء على عدة مستويات. على المستوى الدلالي ينطبق الانتفاء من خلال نفي بدائل الجملة المتعلقة باسم الاستثناء، وبذلك يتم حساب قيم الصدق لتلك الجملة، وكذلك توزيعها الضعيف كتعبير متعلق بالتراتبية الستراوسونية. اما على المستوى السياقي ينطبق الانتفاء على بدائل الجملة المتعلقة بالميدان السياقي الاتساعي، وبهذه الحالة يتم حساب قيم الصدق لجمل الاستثناء بالإضافة إلى التوزيع القوي المتعلق فقط بالتراتبية النتناقصة القائمة على النفي.

النتائج: استنادا الى الملاحظة وما ترتب عنه من تعميم حول علاقة الاستثناء بالالفاظ التي يشرعنها النفي فإن الورقة وجدت أن نظرية الانتفاء ذات المستويين الدلالي والسياقي لها من القوة التفسيرية ما يمكنها من تحليل ظاهرة الاستثناء وتوزيعها القوي والضعيف تماما كظواهر الشرعنة بالمنفي.

الاستنتاج: لعل المشاركة النظرية الأساس لهذه الدراسة هي تعزيز نظرية الانتفاء على المستويين الدلالي والسياقي من خلال قياس النظرية بحقائق من الاستثناء، وبالتالي فإنه يمكننا الاستنتاج أن الانتفاء عملية دلالية واسعة النطاق تشمل الاستثناء والشرعنة بالمنفي.

الكلمات الدالة: توسع ميدان الخطاب، دلالة الاستثناء، الانتفاء، لغة الليفانت العربية.

1. Introduction

The semantic behavior of exceptive phrases consisting of the exceptive particle and its NP complement has been argued to parallel that of negative polarity items (NPIs) in at least two ways. First, the two categories of expression are similarly restricted in distribution (Gajewski 2008, 2013).

Second, just as other NPIs which vary with respect to the strength of their distribution, exceptive phrases exhibit a similar variation in distributional strength, albeit cross-linguistic, with a strong and weak use in grammar (See, for example, Sauerland and Yatsushiro 2023). Consider, for example, the paradigm of exceptive 'but' in (1) and (1′) in English. It has been observed that exceptive 'but' and the NPI 'any' are licensed under the so-called decreasing monotonic environments (DME) such as the restrictor of universal quantifiers as shown in (1a) and (1′a). As expected, the same type of expression may not be licensed under increasing monotonic environments (IME) as exemplified in (1b) and (1′b) in which the exceptive phrase occurs in the restrictor of existential quantifiers.

(1) a. Every/no student but Bob got a passing degree.
b. #Some student but Bob got a passing degree.

(1′) a. Every/no student who solved any problem got a passing grade.
b. #Some student who solved any problem got a passing grade/
(Chriechia 2013: 65)

Levantine Arabic (e.g., Jordanian and Palestinian Arabic) has an interesting paradigm of exceptive constructions which show sensitivity to negative polarity. Just as exceptive 'but' or 'except' in English, the exceptive particle *ʔilla* serves as a (connected) exceptive particle which typically modifies universally quantified or universally interpreted propositions as shown in (2). In this way, exceptive *ʔilla* manifests itself as a weak NPI which is licensed in the DME of the left restriction of the universal quantifier.

(2) a. *kull tˁtˁulaab nadʒaħu ʔilla Khalid*
All the student passed except Khalid
'All the students passed except Khalid.'
b. *wala tˁaalib nadʒaħ ʔilla Khalid*
no student passed except Khalid
'No student passed except Khalid.'

Quite interestingly, when exceptive *ʔilla* occurs in pro-subject sentences, it induces a domain broadening effect. In this case, the *ʔilla* phrase serves as a strong NPI which is only licensed in the local scope of negation as shown in (3).

(3) a. * *pro nadʒaħ ʔilla Khalid*
passed except Khalid
'Someone passed except Khaled.'
b. *ma* pro *nadʒaħ ʔilla Khalid*
not passed except Khalid
'Nobody passed except Khaled.'

The exceptive sentences in (2) and (3) differ in the following sense. In (2), the exceptive operator *ʔilla* subtracts the set comprising the excepted individual (i.e., {Khaled}) from the salient domain of quantification D, which further restricts the universal quantifier *kull tˁtˁulaab* 'all the students'. In these examples, exceptive *ʔilla* is a weak negative polarity item that

may be licensed in DME of the left argument of the universal quantifier. By contrast, exceptive *ʔilla* in (3) subtracts the set comprising the excepted individual (i.e., {Khaled}) from a non-salient broader domain of quantification D+ (where D ⊆ D+). Exceptive *ʔilla* here is a strong negative polarity item (NPI) since it can only be used in an environment that is embedded by negation and it is banned from occurring in an unembedded positive environment. As the paradigm shows, exceptive *ʔilla*, being associated with a certain domain of discourse, has a *domain broadening effect* in which an exceptive with a broader domain of discourse behaves as a strong NPI. To fix some terminology, we use $ʔilla_D$ to refer to the latter weak negative polarity occurrence of exceptive *ʔilla* and $ʔilla_{D+}$ to refer to the former strong negative polarity use of the exceptive.

The raison d'être of this article is to analyze the weak and strong negative polarity occurrences of exceptive *ʔilla* by giving the paradigm a multidimensional exhaustification analysis which best accounts for the weak-strong NPI *ʔilla* relative to the notion of domain broadening. This article is organized as follows. Section two provides the theoretical background of the paper. Section three describes the distribution of exceptive *ʔilla*. It shows that $ʔilla_{D+}$ is a strong NPI with a highly restricted distribution that is similar to that of other strong NPIs. Section three offers a semantic analysis to the weak and strong negative polarity occurrences of exceptive *ʔilla* (i.e., ʔilla$_D$ vs. $ʔilla_{D+}$). The analysis is based on the multi-dimensional, exhaustification-based theory along the lines of Gajewski-Chierchia which attends to the truth conditional and non-truth conditional, presuppositional dimensions of meaning. The last section concludes the paper.

2. Objectives and Methodology

This paper seeks to explain a common and widespread paradigm of exceptive sentences which is frequently used by speakers in (Southern) Levant (e.g., Palestinian and Jordanian Arabic). The paradigm is exemplified as follows.

(4) a. *kull tˁtˁulaab nadʒaħu ʔilla Khalid*
All the student passed except Khalid
'All the students passed except Khalid.'
b. *wala tˁaalib nadʒaħ ʔilla Khalid*
no student passed except Khalid
'No student passed except Khalid.'

(5) a. * pro *nadʒaħ ʔilla Khalid*
passed except Khalid
'Someone came except Khaled.'
b. *ma* pro *nadʒaħ ʔilla Khalid*
not passed except Khalid
'Nobody passed except Khaled.'

Descriptively, an interesting observation is captured as follows. It appears to be the case that the exceptive particle *ʔilla* typically combines with universally quantified or universally interpreted statements (i.e., headed by universal quantifiers such as *kull* 'every' or *wala* 'no'). However, when exceptive ʔ*illa* occurs in existentially interpreted null subject pro-subject sentences, the particle shows strong sensitivity to negation. For the purpose of replicating my intuitive judgment regarding the paradigm in (4) and (5), a group of native speakers of Syrian, Palestinian and Jordanian Arabic speakers at the university level have been informally consulted. The informants overwhelmingly approved the universally quantified exceptive sentences in (4) and the negated existentially interpreted pro subject sentence in (5.b). On the other hand, they strongly reject exceptive sentences in which the exceptive particle *ʔilla* combines with the positive existentially interpreted pro subject sentence (e.g., 5b). These data point to the following interesting fact about exceptive *ʔilla*: exceptive *ʔilla* behaves like an NPI whose restricted distribution requires licensing in the context of downward entailing operators including the

immediate scope of negation and the restriction of universal quantifiers.

The paradigm in (4) and (5) presents us with the following instance of a puzzle: in LA, it appears to be the case that exceptive *ʔilla* is distributionally restricted in an NPI manner. Exceptive *ʔilla* intuitively modifies the restrictor of universal quantifiers which is a downward entailing environment. Exceptive *ʔilla* never occurs in upward entailing environments such as the restrictor of existentially interpreted sentences and in this way exceptive *ʔilla* requires association with negation which is again a downward entailing environment. In this way, exceptive *ʔilla* semantically behaves as an NPI element which in only licensed in downward entailing environments. The question then arises: what's special about the semantics of exceptive *ʔilla* in such a way that it behaves like an NPI?! In what follows, we address the question by giving exceptive *ʔilla* an analysis that is similar to other NPIs. Our unified analysis has the theoretical advantage of preserving exceptive semantics of exceptive *ʔilla* as a subtractive particle and at the same time it well predicts its restricted NPI distribution.

3. Background: Polarity sensitivity and domain broadening

Chierchia (2006, 2013), following a proposal which was first put forth by Kadmon and Landman (1993) and further developed by Krifka (1995) and Lahiri (1998), analyzed a paradigm of existential indefinites which vary with respect to the size of the domain of discourse they come with (i.e., On the assumption that all quantificational statements including existential indefinites come with a contextually-valued domain variable D which determines the quantifier's range (Westerstahl 1988; Stanley and Szabo 2000). The paradigm is exemplified in (6).

(6) a. *There is any student in the building.
a′. There isn't any student in the building.
b. There is a/some student in the building.
b′. There isn't a/some student in the building.
(Chierchia 2006, p. 536-536)

Under the *domain widening hypothesis*, what distinguishes the negative polarity sensitive *any* in (4- a, a′) from the other non-negative polarity indefinites *a*/*some* in (1b, b′) is the fact that the former comes with a wider domain of discourse than that of the latter. Intuitively, while the domain of discourse D associated with a/some in (1 b, b′) leads the interlocutor to consider a contextually-determined, salient domain of discourse D (e.g., the domain of students comprising our linguistics –major students), the domain of discourse associated with indefinite *any* D+ is a wider one (i.e., where D ⊆ D+) which includes more marginal student groups such as the university/ community college students in our city or any other student groups under consideration.

Chierchia (2006, 2013) observed that indefinite *any*, which is inclined to go for wider domains, is stronger and more emphatic than indefinite *a*/*some* despite the fact the two classes of existential indefinites are no different in terms of the basic truth conditional meaning. For example, the domain D+ associated with the nominal phrase modified by *any* in (7a) may not be smaller than the domain associated with the nominal phrase without *any* as in (7b). In this way, the use of the indefinite in (7a) is felt be logically stronger or more logically informative than (7a).

(7) a. There aren't cookies left.
b. There aren't any cookies left.
(Chriechia 2013, p. 29)

Since domain widening is only conceivable by comparison, an item with a domain widening effect such as *any* distinguishes itself as an activator of obligatorily induced set of domain alternatives which associates and are quantified over by a relevant alternatives-based operator such an exhaustivity operator in grammar (Krifka 1995; Chierchia 2006, 2013; Crnič 2014, 2019). Given this comparison on the basis of domain alternatives, Chierchia (2013, p. 29-30) argued that an alternatives semantics for the negative polarity *any* is in order. Chierchia's (2013) analysis is quite straightforward.

Details aside and assuming the ontology and interpretation of semantic types in table 1, existential *any* induces the domain alternatives in (8).

Table 1. The ontology and interpretation of semantic types

Domains	Objects	Semantic Types
E *W*	Individuals Worlds	e w
{TRUE, FALSE}	true values	t

Notice that the semantic types involved are defined recursively: for any two types α and β, there is another type ⟨ α, β ⟩ which is a mapping from the domain of objects α into the domain of objects β and nothing else is a type.

(8) $C_D = \{\lambda Q \in D_{<et,t>}\ \lambda P \in D_{<et,t>}\ .\ \exists x \in D_{<et>}.\ P(x)\ \&\ Q(x)$ is TRUE for $D \subseteq D+\}$

The alternatives set in (8) associates and is quantified over by an exhaustivity operator EXH which has a denotation similar to that of exclusive *only* (See Fox 2007 and Chierchia et al. 2012): it asserts its propositional complement and negates all relevant alternative propositions to the complement. The exhaustivity operator in use is defined in (9) (i.e., The basic definition of EXH in (4) is sufficient for the purpose of this paper. See Chierchia. et al (2012) and Bar-Lev and Fox (2020) and Fox and Katzir (2011) for a more sophisticated theory on the semantics of alternatives and exhaustification).

(9) ⟦ EXH_{CD} (p)(w) ⟧ is TRUE iff p(w) is TRUE and for all q in C_D, if $p \not\subseteq q$ then q(w) is FALSE.

Because the existential in (6a) is a left DME determiner, exhaustifying the sub-domain alternatives triggered by existential *any* necessarily gives rise to inconsistent truth conditions;

(10) ⟦ (6a)⟧ is TRUE
a. iff there is some student ∈ D+ in the building in world w and for all q ∈ {that there is some student ∈ D in the building in w such that $D \subseteq D+$}, if [that there is some student in D+ in the building in w] $\not\subseteq$ q, then q(w) is FALSE.
b. iff there is some student ∈ D+ in the building in w and it is not the case that there is some student in the building in D in w for all $D \subseteq D+$.

Since the existential licenses inferences from subsets to supersets, it may not be the case that some student in D+ is in the building in w and at the same time some student in D, where $D \subset D+$, is not in the building in w. Contradiction!

Consider now (6b) in which existential *any* is embedded under negation which is a DME operator. Since the propositional complement (i.e., prejacent) of the exhaustivity operator is stronger than all of its sub-domain alternatives (i.e., for all q ∈ {that there is no some student ∈ D in the building in w such that $D \subseteq D+$}), it is the case that [that there is some student ∈ D+ in the building in w] ⊆ q), exhaustification is now vacuous and hence it gives rise to consistent truth conditions (See Fox and Spector (2018) for an economy constraint that regulates the application of vacuous exhaustification). Let us now consider the LA exceptive constructions in (4) and (5), repeated as (9) and (10), respectively. The truth conditional meaning of exceptive construction in (11) and (12) are based on the two semantic inferences of *subtraction* and *exhaustivity* (von Fintel 1993, 1994 and Gajewski 2008, Crnič 2018) (i.e., For more on exceptives, the interested reader is referred to von Fintel (1994), Moltmann (1995), Lappin (1996), Peters and Westerståhl (2006), García Álvarez (2008), Hirsch (2016) and Vostrikova (2021)). Subtraction transforms quantification into one that subtracts the set comprising the excepted object from the domain of quantifier. In the examples in (11), subtraction removes the set {Khalid} from the domain of the universal quantifier. *Exhaustivity*, on the other hand, requires that the subtracted set be the minimal set such that it can be removed and the resulting quantificational statement remains true.

(11) a. *kull tˁtˁulaab nadʒaħu ʔilla Khalid*
All the student passed except Khalid
'All the students passed except Khalid.'
b. *wala tˁaalib nadʒaħ ʔilla Khalid*
no student passed except Khalid
'No student passed except Khalid.'

(12) a. * *pro nadʒaħ ʔilla Khalid*
passed except Khalid
'Someone passed except Khaled.'
b. *ma pro nadʒaħ ʔilla Khalid*
not passed except Khalid
'Nobody passed except Khaled.'

For our purpose, let us assume with Crnič (2018) that the subtraction inference in exceptive *ʔilla* is lexically encoded in its semantics as represented by the lexical entry in (11). As defined, the exceptive operator *ʔilla* is a function that takes the exception set X of type ⟨e,t⟩, Y the nominal predicate of type ⟨e,t⟩ , D the quantifier of type ⟨e,t, ⟨e,t, t⟩⟩ and G the main predicate of type ⟨e,t⟩. It returns the basic subtractive meaning in which quantifier D relates a nominal restriction Y with X subtracted with the main predicate G.

(13) ⟦ *ʔilla* ⟧ =: $\lambda X_{\langle e,t\rangle}\, \lambda Y_{\langle e,t\rangle}\, \lambda D_{\langle e,t,\, \langle e,t,\, t\rangle\rangle}\, \lambda G_{\langle e,t\rangle}$. D (Y − X) (G)

The exhaustivity inference is derived by grammatical exhaustification using an exhaustivity operator EXH_{α}. This operator denotes a function which asserts its prejacent p (i.e., its propositional complement) and it excludes its non-weaker relevant set of alternative propositions C_{α} to the prejacent p which are derived by replacing the complement of the exceptive phrase with the complement's subset denotations as defined in (14) (Crnič 2018).

(14) a. C_{α} = {λXλYλDλG. D (Y − X) (G); λXλYλDλG. D (Y – X') (G) for all X' ⊂ X}
b. ⟦ $EXH_{C\alpha}$ (p)(w) ⟧ is TRUE iff p(w) is TRUE and for all q in C_{α}, if p ⊈ q then q(w) is FALSE

On the assumption that the empty set { } is a subset of every set, the denotation {λXλYλDλG. D (Y – {}) (G)} makes a relevant alternative. To see this let us compute the truth conditions of the exceptive sentence in (11a).

(15) a. **The subtractive basic meaning (subtractive inference)**
∀x. x ∈ ({STUDENT} – {Khalid}) → x passed.
b. **The Exhaustified meaning (exhaustively inference)**
⟦ $EXH_{C\alpha}$ (9.a)(w) ⟧ is TRUE iff [∀x. x ∈ ({STUDENT} – {Khalid}) → x passed] is TRUE in w & [∀x. x ∈ ({STUDENT} – { }) → x passed] is FALSE
⇔ [∀x. x ∈ ({STUDENT} – {Khalid}) → x passed] is TRUE in w & [∀x. x ∈ ({STUDENT}) → x passed] is FALSE

Exceptive *ʔilla* in (15) subtracts the set comprising the excepted individual (i.e., {Khaled}) from the salient domain of quantification D, which restricts the universal quantifier *kull tˁaalib* 'every student'. The extracted set is the minimal one since it is the only exception set with no proper subsets that undergo subtraction. In these examples, exceptive *ʔilla* is a non-polarity item as it can be used in an unembedded environment.

Interestingly, when exceptive *ʔilla* in LA comes with a broader domain of discourse as it is the case in (12), *ʔilla* can only be licensed in the immediate scope of the negative. In this way, exceptive *ʔilla* manifests itself as both weak and strong NPI which requires a theory of multidimensional exhaustification in order to capture its correct truth conditions and its varying NPI nature depending in domain broadening in the context of use.

4.The distribution of exceptive ʔilla$_{D+}$

Exceptive *ʔilla*$_{D+}$ is highly restricted in distribution. It behaves like an NPI that can only be licensed in the immediate scope of the negative operator. In this way, exceptive *ʔilla*$_{D+}$ behaves like other strong NPIs whose distribution is mainly restricted to the local scope of negation.

To show this, let us first take the hypothesis that weak NPIs are licensed by the so-called Strawson downward entailing operators as defined in (16) in terms of von Fintel (1999).

(16) a. For any p and q of type t, p Strawson-entails q if and only if p is FALSE or q is TRUE.
b. For functions f and g of type ⟨α, β⟩, f Strawson-entails g of and only if for all x of type α such that g(x) is defined (i.e., meaning that the presupposition(s) of g(x) are satisfied), f(x) Strawson-entails g(x).
(von Fintel 1999: p 104)

This hypothesis is a modification for the stronger 'Downward Entailing Hypothesis' after Ladusaw's (1979). As paraphrased in von Fintel (1999: p 100), this hypothesis is defined as follows.

(16′) An NPI is only grammatical if it is in the scope of S such that ⟦ S ⟧ is downward entailing environment
A function F ⟨α, β⟩ is downward entailing operator if and only if for all x and y of type α if x cross-categorially entails y, then F(y) cross-categorially entails F(x) (von Fintel 1999: p 100).

Because the Strawson Downward entailing hypothesis (von Fintel 1999: 100) predicts a wider range of environments, including the downward entailing ones, we begin with it.

The hypothesis in (16) correctly predicts a variety of environments that license weak NPIs (e.g., *any* in English) including the negative and the other negative factive predicates as exemplified in (17).

(17) a. No doctor has seen anyone.
b. Only Bill ate anything.
c. Bill is sorry that he said anything.
d. If Bill ate anything, then it was a hoagie.
(Gajewski 2011, p. 114-115)

Since the negative operator is a downward entailing operator, it is also a Strawson downward licensor. As for the the presuppositional triggers *only*, *sorry*, and *conditional-if*, despite the fact that they are apparently non-downward entailing operators, they are indeed Strawson-downward entailing licensors. To consider one example, it is easy to see that the sentence 'Only Bill ate a vegetable' in (18a) Strawson-entails its subset 'Only Bill ate a potato' in (18′a)

(18) a. Only Bill ate a vegetable
b. ⟦ Only Bill ate a vegetable ⟧ is true if and if

Assertion	**Presupposition**
∀x. x ≠ Bill → ¬ [x ate a vegetable]	Bill ate a vegetable

(18′) a. Only Bill ate a potato
b. ⟦ Only Bill ate a potato ⟧ is true if and if

Assertion	**Presupposition**
∀x. x ≠ Bill → ¬ [x ate a potato]	Bill ate a potato

It is the case that ∀x. x ≠ Bill → ¬ [x ate a potato].

On the assumption that a weak NPI is licensed by Strawson downward entailing operators, it is easy to see how weak NPIs can be licensed by other presuppositional triggers such as negative factive predicates can function as Strawson downward entailing operators. If exceptive *ʔilla*$_{D+}$ is to be interpreted as a weak NPI, it should be the case it is licensed by a Strawson downward entailing operator. Contrary to the fact, exceptive *ʔilla*$_{D+}$ cannot be licensed by such operators as evidenced by the fact that it cannot be embedded under presuppositional triggers including exclusive only or negative factive predicates as shown in (19).

(19) a. **bas/faqatˤ pro nadʒaħ ʔilla*$_{D+}$ *Khalid*
only passed except Khalid
'Only someone passed except Khalid.'
b. **ʕali ʔaasif ʔinnu pro nadʒaħ ʔilla*$_{D+}$ *Khalid*
Ali sorry that passed except Khalid
' Ali is sorry that someone passed except khalid.'
c. **ʔiða pro nadʒaħ ʔilla*$_{D+}$ *Khalid, maʕnaha raħ tixrab l-ħafla*
If passed except Khalid, meaning will be spoiled the-party
' If someone passed except Khalid, then the party will be spoiled.'
d. **ʕali tafaadʒaʔ ʔinnu pro nadʒaħ ʔilla*$_{D+}$ *Khalid*
Ali surprised that passed except Khalid
'Ali is surprised that someone passed except Khalid.'

In this way, *ʔilla*$_{D+}$ patterns with other strong NPIs with a more restricted distribution such as expressions like *in week*, *until*, and *either* in English. As way of example, consider the pattern involving strong NPI *in weeks*.

(20) a. *John saw Mary in weeks
b. John didn't see Mary in weeks
c. *Only John has seen Mary in weeks
d. *If John has seen Mary in weeks, he will be upset
(Chierchia 2013, p. 213)

In an attempt to exclude Strawson downward entailing operators from the natural class of licensors that license strong NPIs, Zwarts (1998) proposed that anti-additivity is a requirement for licensing strong NPIs. Anti-additivity is defined as follows.

(21) A function f of type ⟨α, β⟩ is anti-additive if and only if for all x and y of type α, it follows that f(x ∨ y) ⇒ f(x) ∧ f(y) and f(x) ∧ f(y) ⇒ f (x ∨ y)
(Zwart 1998, p. 222 as paraphrased by Gajewski 2011, p. 113)

As argued in Gajewski (2011), the *anti-additivity hypothesis* (Zwarts 1998) can be easily falsified given expressions such as *hardly any*/*ever* and *little* which fail to test for anti-additivity. Chierchia (2013) also showed that the left argument

of universal quantifiers is an anti-additive environment that doesn't license strong NPIs as exemplified in (22).

(22) a. *Every person who has seen Mary in weeks is upset with her.
b. * No person who has seen Mary in weeks is upset with her.

As expected, the licensor of exceptive *ʔilla*$_{D+}$ is not required to be anti-additive as evidenced by that the fact that *ʔilla*$_{D+}$ is not licensed in the left argument of positive universal as shown in (20).

(23) a. *kull masaaq idʒtaz-u l-tˁtˁulaab ʔilla*$_{D+}$ *Khalid huwa mutatˁalab idʒbaari*
Every course passed-it the students except Khalid is prerequisite obligatory
'Every course which the students except Khalid passed is an obligatory prerequisite.'
b. * *kull masaaq pro idʒtaz-u ʔilla*$_{D+}$ *Khalid huwa mutatˁalab idʒbaari*
Every course passed-it except Khalid is prerequisite obligatory
'Every course which someone except Khalid passed is an obligatory prerequisite.'

The descriptive facts underlying the distribution of exceptive *ʔilla*$_{D+}$ points to the conclusion that exceptive *ʔilla*$_{D+}$ is a strong NPI with the following facts summarized in (24).

(24) a. Exceptive *ʔilla*$_{D+}$ is licensed in the local scope of the negative operator.
b. Exceptive *ʔilla*$_{D+}$ is not licensed by Strawson-downward entailing operators as evidenced by the fact that presuppositional triggers fail to license *ʔilla*$_{D+}$.
c. Exceptive *ʔilla*$_{D+}$ does not require its licensor to be anti-additive as evidenced by the fact that it is not licensed in the anti-additive environment of the left argument of universal quantifiers.

5. A multidimensional exhaustification analysis

5.1. Exhaustification at assertive truth condition dimension

Following a proposal which was first formalized in Gajewski (2011) and was fully implemented within an exhaustifiction-based framework in Chierchia (2013), we assume that strong NPIs activate (logical) alternatives which undergo exhaustification at multidimensional level of meaning: the truth-conditional and the non-truth-conditional dimension based on whatever presuppositions or implicatures the strong NPI may have. This section shows that a multidimensional account based on Gajewski – Chierchia best captures the highly restrictive distribution of exceptive *ʔilla*$_{D+}$ as a strong NPI.

Let us first show how exceptive *ʔilla*$_{D+}$ modified by negation, repeated from (10b), comes out to be grammatical.

(25) *ma pro nadʒaħ ʔilla Khalid*
not passed except Khalid
'Nobody came except Khalid.'

For the exceptive sentence in (25), we assume the following logical form with the following main elements. First, the pro subject introduces an existential force of quantification (See Shlonsky 1997 and Cinque 1988). Second, the existentially interpreted structure undergoes two instances of exhaustification: EXH$_{\alpha}$ which associates with the scalar alternatives of the exceptive complement and EXH$_{D}$ which targets the sub-domain alternatives of the restriction of the existential force which is triggered by the wider domain D+ . The exceptive in (25) then has the following LF structure.

(26) [EXH$_{D}$ [EXH$_{\alpha}$ ¬ [∃ [D+ except Khalid$_{\alpha}$] passed]]]

The application of $EXH_{C\alpha}$ yields consistent truth conditions. Since the scalar alternatives C_α involved are logically non-weaker than the plain meaning of the exceptive as defined in (27a), the truth conditions based on subtraction and exhaustivity inferences are obtained in (27c).

(27) a. **Plain meaning of the exceptive of (25)**
¬ ∃x. {x is in D+} – {Khalid} & x passed
b. **The scalar alternatives of (21a)**
C_α = {¬ ∃x. {x is in D+} – {Khalid} & x passed; ¬ ∃x. {x is in D+} – {} & x passed}
c. **Exhaustification targeting scalar alternatives**
⟦ $EXH_{C\alpha}$ (21b) (21a) ⟧ is TRUE iff
[¬ ∃x. {x is in D+} – {Khalid} & x passed] **Subtraction**
& [∃x. {x is in D+} – {} & x passed] **Exhaustivity**
⇔ {{x is in D+} ∩ {x: x passed} = {Khalid}

Associating and quantifying over subdomain alternatives, another application of EXH_D applies, but this time it applies vacuously since none of the subdomain alternatives triggered is non-weaker than the plain subtractive meaning in question.

(28) a. **Plain meaning of the exceptive of (25)**
$EXH_{C\alpha}$ (¬ ∃x. {x is in D+} – {Khalid} & x passed)
b. **The subdomain alternatives of (25.a)**
C_D = { $EXH_{C\alpha}$ (¬ ∃x. {x is in D+}– {Khalid} & x passed);
$EXH_{C\alpha}$ (¬ ∃x. {x is in D}– {Khalid} & x passed): for D ⊂ D+}
c. **Exhaustification targeting subdomain alternatives**
⟦ EXH_{CD} (22.b) (22.a) ⟧ is TRUE iff
⇔ [¬ ∃x. {x is in D+} – {Khalid} & x passed] **Subtraction**
[∃x. {x is in D+} – {} & x passed] **Exhaustivity**
⇔ {{x is in D+} ∩ {x: x passed} = {Khalid}

The computation gives rise to the intuitively correct truth conditions of (25).

As for the ungrammatical case of *ʔilla*$_{D+}$ in an unembedded positive environment as exemplified in (29), repeated from (12.a), we assume the LF in (30).

(29) a. * *pro nadʒaħ ʔilla Khalid*
passed except Khalid
'Someone passed except Khaled.'

(30) [EXH_D [EXH_α [∃ [D+ except Khalid$_\alpha$] passed]]]

In (30), none of the scalar alternatives in C_α is logically non-weaker than the plain meaning of the exceptive. Therefore, EXH_α proceeds vacuously as shown in (31).

(31) a. **Plain meaning of the exceptive of (29)**
∃x. {x is in D+} – {Khalid} & x passed
b. **The scalar alternatives of (31)**

C_α = { ∃x. {x is in D+} – {Khalid} & x passed; ∃x. {x is in D+} – {} & x passed}

c. **Vacuous exhaustification targeting scalar alternatives**

⟦ $EXH_{C\alpha}$ (26.b) (26.a) ⟧ is TRUE iff [∃x. {x is in D+} – {Khalid} & x passed]

The application of $EXH_{D,}$ on the other hand, is active. It yields contradictory truth conditions.

(32) a. **Plain meaning of the exceptive of (29)**

$EXH_{C\alpha}$ (∃x. {x is in D+} – {Khalid} & x passed)

b. **The subdomain alternatives of (32a)**

C_D = { $EXH_{C\alpha}$ (∃x. {x is in D+}– {Khalid} & x passed);

$EXH_{C\alpha}$ (∃x. {x is in D}– {Khalid} & x passed): for D ⊂ D+}

c. **Exhaustification targeting subdomain alternatives**

⟦ EXH_{CD} (27.b) (27.a) ⟧ is TRUE iff

⇔ $EXH_{C\alpha}$ (∃x. {x is in D+}– {Khalid} & x passed) &

¬ $EXH_{C\alpha}$ (∃x. {x is in D}– {Khalid} & x passed)

⇔ (∃x. {x is in D+}– {Khalid} & x passed & ¬ (∃x. {x is in D}– {Khalid} & x passed)

The outcome in (32c) is contradictory truth conditions: it may not hold that some individual in D+ except Khalid passed in w and at the same time some individual in D, where D is any proper subset of D, did not pass. This explains the unacceptability of (29).

As noted, an exhaustification analysis applies at the truth conditional dimension of meaning explains the paradigm in (11) and (12). The analysis correctly captures the fact that while *ʔilla*$_{D+}$ occurring in existentially interpreted positive pro-subject sentences are unacceptable and *ʔilla*$_{D+}$ occurring in existentially interpreted negative pro-subject sentences are fine.

5.2. Exhaustification at presuppositional non-truth conditional level

As previously noted, exceptive *ʔilla*$_{D+}$ is a strong NPI which may not be licensed by Strawson-downward entailing operators as evidenced by the fact that presuppositional triggers fail to license *ʔilla*$_{D+}$ such as exclusive only or other negative factive predicates. Let us take as a representative example the embedding under the presuppositional trigger of exclusive *only* operator and see how exhaustification holding at the presuppositional level of meaning rules out exceptive *ʔilla*$_{D+}$ occurrence as modified by presuppositional triggers such as exclusive 'only'. As way of example, consider (33).

(33) **bas/faqat*^{y} pro *nadʒaħ* *ʔilla*$_{D+}$ *Khalid*

only passed except Khalid

'Only someone passed except Khalid.'

Following a standard practice (Gajewski 2011; von Fintel 1999), the meaning of (33) consists of an assertion and a presupposition as represented in (34).

(34) a. ⟦ 33 ⟧ is TRUE iff ∀y. y ∉ ∪{{x is in D+} – {Khalid}} → ¬ x passed (**Assertion**)

b. ⟦ 33 ⟧ is only defined if [∃x. {x is in D+} – {Khalid}} & x passed] (**Presupposition**)

Exhaustifying the assertive meaning leads to non-contradictory meaning. It proceeds vacuously as in (35).

(35) a. **Plain meaning of the exceptive of (33)**
$EXH_{C\alpha}$ (∀y. y ∉ ∪{{x is in D+} – {Khalid}} → ¬ x passed) ⇔
¬ [∃y. y ∉ ∪{{x is in D+} – {Khalid}} & x passed] **Subtraction**
& [∃y. y ∉ ∪{{x is in D+} – {}} & x passed] **Exhaustivity**
b. **The subdomain alternatives of (33)**
C_D = {$EXH_{C\alpha}$ (∀y. y ∉ ∪{{x is in D+} – {Khalid}} → ¬ x passed) ;
$EXH_{C\alpha}$ (∀y. y ∉ ∪{{x is in D} – {Khalid}} → ¬ x passed) : for D ⊂ D+}
c. **Vacuous exhaustification targeting scalar alternatives**
⟦ EXH_{CD} (30.b) (30.a) ⟧ is TRUE iff
$EXH_{C\alpha}$ (∀y. y ∉ ∪{{x is in D+} – {Khalid}} → ¬ x passed) ⇔
¬ [∃y. y ∉ ∪{{x is in D+} – {Khalid}} & x passed] **Subtraction**
& [∃y. y ∉ ∪{{x is in D+} – {}} & x passed] **Exhaustivity**

What about exhaustifying the presuppositional component of (33). Clearly enough, the operation gives rise to contradictory truth conditions as shown in (36) and (36′).

(36) a. **Plain meaning of the exceptive of (33)**
∃x. {x is in D+} – {Khalid} & x passed
b. **The scalar alternatives of (36)**
C_α = { ∃x. {x is in D+} – {Khalid} & x passed; ∃x. {x is in D+} – {} & x passed}
c. **Vacuous exhaustification targeting scalar alternatives**
⟦ $EXH_{C\alpha}$ (33) (33) ⟧ is TRUE iff [∃x. {x is in D+} – {Khalid} & x passed]

(36′) a. **Plain meaning of the exceptive of (33)**
$EXH_{C\alpha}$ (∃x. {x is in D+} – {Khalid} & x passed)
b. **The subdomain alternatives of (36′a)**
C_D = { $EXH_{C\alpha}$ (∃x. {x is in D+}– {Khalid} & x passed);
$EXH_{C\alpha}$ (∃x. {x is in D}– {Khalid} & x passed): for D ⊂ D+}
c. **Exhaustification targeting subdomain alternatives**
⟦ EXH_{CD} (36′b) (36′a) ⟧ is TRUE iff
⇔ $EXH_{C\alpha}$ (∃x. {x is in D+}– {Khalid} & x passed) &
¬ $EXH_{C\alpha}$ (∃x. {x is in D}– {Khalid} & x passed)
⇔ (∃x. {x is in D+}– {Khalid} & x passed & ¬ (∃x. {x is in D}– {Khalid} & x passed)
(Contradictory truth conditions: in some world of evaluation w, it is inconsistent that some individual in D+ except Khalid came some individual in D, where D ⊂ D+, did not come).

The analysis best predicts the strong NPI behavior of exceptive *ʔilla*$_{D+}$ involving a domain broadening effect. As a strong NPI (See Gajewski 2011 and Chierchia 2013), exceptive *ʔilla*$_{D+}$ is analyzed as a scalar expression that triggers both scalar and subdomain alternatives. The alternatives induced associate and are quantified over by relevant exhaustivity operators in LF. Exhaustification operates on both the truth conditional (assertive) and non-truth conditional presuppositional dimensions of meaning. By this strategy, the truth conditional and the strong NPI nature of exceptive *ʔillaD*$_{+}$ is accurately and straightforwardly obtained.

6. Conclusion

This article contributed further empirical evidence supporting the involvement of domain broadening in the semantics and distribution of strong NPIs. In Levantine Arabic, exceptive particle *ʔilla*$_{D+}$ that induces a domain broadening effect behaves like a strong NPI which can only be licensed by a limited subset of licensers, mainly the immediate scope of the negative operator. Unlike weak NPIs such as *any*, neither Strawson downward entailment nor anti-additivity is required to license exceptive *ʔilla*$_{D+}$. The paper extended a theory of NPI licensing based on multidimensional exhaustification along the lines of Gajewski-Chierchia to capture the strong NPI behavior of exceptive *ʔilla*$_{D+}$. Accordingly, activated scalar and subdomain alternatives undergo exhaustification in grammar through postulated exhaustivity operators which recursively factors the alternatives induced into meaning along with the basic exceptive meaning of *ʔilla*$_{D+}$. As a strong NPI expression (Gajewski 2011 and Chierchia 2013), the paper further showed that the exhaustification applied at both truth conditional, assertive and non-truth conditional presuppositional dimension of meaning best captures its strong licensing as confined to the immediate scope of negative operator.

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