

An overt *even* operator over covert-based focus alternatives: The case of Hebrew *BIXLAL*¹

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ABSTRACT

This paper offers an analysis of the Hebrew focus sensitive particle *bixlal* and its accented version *BIXLAL*. It argues that both particles are members of the typology of *even*-like operators in Hebrew, along the unmarked particle *afilu*, but that *BIXLAL* is special in that instead of standardly associating with overt focused material, it is constrained to associate with focused material which is covert (and hence prosodically null), and hence must operate over ‘covert-based’ alternatives. To illustrate this suggestion, the paper shows how a range of special readings found when *BIXLAL* appears in sentences with one dimensional and multi-dimensional adjectives in the positive form (paraphrased as *very*, *-er than*, *in general*, *at all* etc) can be derived by assuming that *BIXLAL* has the same semantics as *even*, but that it associates with the covert comparison class argument of *POS* in such sentences, leading to a higher standard with the preajcent of *BIXLAL* compared to the standard with its alternatives. A general conclusion of the paper, then, is that the (in)ability of scalar focus sensitive particles to associate with covert material and to operate over ‘covert-based’ alternatives should be added to the inventory of parameters along which such particles have been reported to vary both within and across languages. The paper ends by pointing out other potential scalar particles associating with covert material cross-linguistically, and by examining the behavior of *BIXLAL* given theories of *even*-based NPIs and of the focus-prosody correlation.

0. Introduction

The particle *even* in English has received much attention in the semantic-pragmatic literature on scalarity and polarity. Following works like Horn 1969, Karttunen & Peters 1979, Rooth 1985, 1992, Guerzoni 2003, 2004, 2007, Chierchia 2013, Crnič 2011, 2014 we take the core lexical entry of *even* in English in to be along the lines of (1), where *even* (C_F) (p) (w) presupposes that p , the preajcent of *even*, is stronger on a scale $>_c$ than all its distinct alternatives q in the C_F (where C_F is the contextually relevant subset of $\|p\|^F$, i.e. of the set of focus alternatives to p)². If defined, *even* (C_F) (p) (w) asserts that p is true w :

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² A notational comment: In Rooth’s theory, and in much of the literature on focus sensitive particles, the contextually supplied subset of focus alternatives is symbolized as C . We change this here to C_F to avoid confusion with the comparison class argument, C , in the semantic structure of sentences with adjectives in the positive form, which will be extensively used below.

$$(1) \quad //even//^c = \lambda C_F. \lambda p. \lambda w: \forall q \in C_F \ q \neq p \rightarrow p >_c q. \ p(w) = 1$$

$$\text{Where } C_F \subseteq //p//^F \wedge //p//^O \in C_F \wedge \exists q \ q \neq p \wedge q \in C_F$$

As is well known, though, several components in this entry have been debated. Many of the discussions of these debated components in the literature involve comparison of English *even* with other *even*-like operators cross linguistically, often in languages where more than one such operator exists (see e.g. Rullmann 1997, Guerzoni 2003, 2004, 2007, Lahiri 1998, 2008, Gast & van der Auwera 2011, Nakanishi 2006, 2007, Schwenter & Vasishth 2001, Giannakidou 2007, Crnič 2011, Iatridou & Tetevosv 2016, Liu 2017, Charnavel 2017). These studies identified a number of parameters along which such operators vary, like (i) the position of the prejacent p on the scale relative to its alternatives (high vs. low, leading to a strong vs. weak prejacent, respectively) or the scope bearing properties of the operator (ii) the presence / absence of an additive/existential presupposition, or even an exclusive presupposition (iv) the level of context dependency of the operator (v) the ability of the *even*-like operator to operate over whole questions, (vi) the dimension of the scale, (vii) whether or not the alternatives are ‘sum-based’ or ‘atom-based’, etc.

The main goal of this paper is to contribute to this body of research by arguing for the existence of yet another relevant parameter for classifying *even*-like operators, not discussed so far in this typological kind of literature, namely the ability / inability to operate on what we will call ‘covert-based’ alternatives to the prejacent. Unlike standard ‘Roothian’ focus alternatives, derived by substituting an overt, and usually prosodically marked element in p by another element of the same semantic type, we take such alternatives to be derived by letting the operator associate with a covert element in p . In such cases the covert associate is the only source of alternatives, so unlike what usually happens - all overt material in p is kept fixed in the alternatives q .

We base our proposal on examining the standard *even*-like particle in Hebrew, *afilu*, and two other particles: *bixlal* and its accented version, *BIXLAL*. While *afilu* is always paraphrased in English as *even*, *bixlal* has not been considered a member of the *even*-like family in the traditional linguistic literature. Moreover, its accented version, *BIXLAL*, has been reported to induce a wide range of readings, paraphrasable in English as, e.g. *very*, *in general*, and *at all*, but not *even*.

We propose that (a) *bixlal* is part of the *even*-like typology of operators in Hebrew, very similar to *afilu* and *even*, and (b) instead of assuming multiple lexical ambiguity *BIXLAL* we can derive the range of readings it induces by taking this particle to be an *even*-like particle as well, which differs from English

even and from Hebrew *afilu* and *bixlal* in that it associates with covert focused elements, and hence operates over ‘covert-based’ alternatives.³

The paper is structured as follows: In section 1 we introduce the Hebrew *bixlal* / *BIXLAL* and the range of readings it induces. Section 2 argues that unaccented *bixlal* can be analyzed as a member of the family of *even*-like operators in Hebrew along the more standard member of this family, *afilu*. In sections 3 and 4 we turn to accented *bixlal* (i.e. *BIXLAL*) in sentences with one dimensional and with multidimensional adjectives, respectively, and show how the range of readings *BIXLAL* yields (paraphrasable as, e.g. *very*, *in general*, *at all*, etc.) can be derived by the interaction between (a) the *even*-like nature of *BIXLAL*, (b) its operation over ‘covert-based’ alternatives, and (c) independently motivated analyses of sentences with one dimensional and multidimensional adjectives. Section 5 locates the analysis in a wider context by (a) comparing *BIXLAL* to other potential scalar operators over ‘covert-based’ alternatives (b) discussing *BIXLAL* in light of *even*-based theories of NPIs like *at all* (e.g. Chierchia 2013) and (c) examining ways to capture the prosodic effects of association with covert material with *BIXLAL*. Section 6 concludes and discusses some directions for further research.

1. Introducing *bixlal* and *BIXLAL*: A range of uses

Migron 2003, who is the first to describe and analyze *bixlal* and *BIXLAL* in Hebrew, points out that the most standard use of this particle, manifested in its accented version, *BIXLAL*, is where it is paraphrased as the English Negative Polarity Item (NPI) *at all*, as in (2), with a negated predicate:

- (2) A: *dani gavoha?*
 Dani tall
 “Is Danny tall?”
 B: *lo hu BIXLAL lo gavoha / hu lo gavoha BIXLAL*⁴
 No. he BIXLAL not tall / he not tall BIXLAL

³ The analysis developed below is inspired by preliminary suggestions about the semantic contribution of *bixlal* / *BIXLAL* in Migron 2003, Greenberg & Khrizman (2012a, 2012b). Among other things the present paper improves on these suggestions in being much more detailed and precise regarding the compositional semantics of the constructions involved, in integrating updated claims about the semantics of English *even*, and in being contextualized within the typological variations of *even*-like operators and polarity sensitive particles cross linguistically.

⁴ As can be seen in (2) and (3), *BIXLAL* can appear before the predicate or in sentence-final position. Korat 2015 suggests that this syntactic difference leads to different interpretations. We leave an examination of this issue to further research.

“No. *He is not tall at all*”

Crucially, however, Migron notes that unlike *at all*, *BIXLAL* is not an NPI, since it can felicitously appear in matrix, positive sentences as well, as in (3), where it is paraphrasable as *in general*. In addition, Greenberg & Khrizman 2012a,b,c observe that in some cases *BIXLAL* in positive sentences can induce readings paraphrasable as *very* or *–er than* as in (4):⁵

- (3) a. A: *dani nexmad li-veny mishpaxto*
 dani nice to- members his-family
 “*Danny is nice to his family members*”
 B: *Hu BIXLAL nexmad / hu nexmad BIXLAL*
 He BIXLAL nice / he nice BIXLAL (following Migron 2003)
 “*He is nice in general*”
- b. *ba- mesiba yugshu dgey yam ve-dagim BIXLAL*
 in-the-party will-be-served fish sea and-fish BIXLAL
 “*Sea fish and fish in general will be served in the party*”
- (4) A: *dani gavoha.*
 Dani tall
 “*Danny is tall*”
 B: *ve- axiv yosi BIXLAL gavoha*
 And his-brother yosi BIXLAL tall
 “*And his brother Yosi is very tall / taller*”

As for the unaccented version of *bixlal*, Migron 2003 notes that it can be paraphrased as *even* in both positive and negative sentences. In this case another element, presumably the associate of *bixlal*, or part of it, is accented, as can be seen in (5) and (6), close variants of Migron’s examples. Notice the *Not only q, OPERATOR p*” construction, which is typical for using *even* as well: ⁶

⁵ The ‘very’ use is found in colloquial versions of spoken Hebrew, but is judged as perfectly felicitous in this register.

⁶ In addition to this *even*-like use, unaccented *bixlal* can also have ‘discursive’ use, seen in (i), a variant of an example in Migron 2003, which is characterized in Greenberg & Khrizman 2013, Greenberg 2014 and Greenberg & Orenstein 2016 as expressing strong or significant denial speech acts:

(i) A: *Rina carfatiya?*
 Rina French
 “*Is Rina French?*”
 B: *lo. Hi bixlal britit*
 No. she bixlal British

- (5) *Lo rak she-hem makirim, hem **bixlal** xaverim TOVIM*
Not only that-they acquainted they bixlal friends good
“Not only are they acquainted. They are even good friends”
- (6) *Lo rak she-lo ba li le'exol im Danny, **bixlal** lo ba li LIR'OT oto*
Not only that-not feel-me to eat with Danny. bixlal not feel-me to-see him
“Not only do I not feel like eating with Danny. I don't even feel like seeing him”

Migron 1993 intuitively suggested to account for all these uses of *bixlal* and *BIXLAL* by assuming that *bixlal* indicates that the predicate it combines with is more informative / stronger than alternative predicates, and that the same holds for *BIXLAL*, besides the fact that the alternatives in these cases involve ‘different interpretations’ of the predicate. In what follows we will adopt this intuitive suggestion and make it more precise by taking *bixlal* and *BIXLAL* to be *even*-like operators which associate with overt and covert material, respectively.

2. Unaccented *bixlal* as a member of the typology of *even*-like operators in Hebrew

2.1 *Even*, *afilu* and *bixlal*: The same core semantics

Inspired by the intuitive suggestions in Migron 2003, the main claim we make in this section is that *bixlal* should be considered part of the cross linguistic typology of *even*-like operators.

Such a claim is not trivial, since the correlate of *even* in Hebrew in all dictionaries, traditional grammars etc. is standardly taken to be *afilu*, and no mention of *bixlal* has been made in this context. However, in addition to the examples above there are many more cases where *bixlal* can be used to translate *even*, alongside *afilu*. Moreover, in such cases, *bixlal* seems to be indeed semantically similar to *even* and *afilu* in being felicitous when its prejacent is understood as stronger than the salient alternative, and infelicitous when the prejacent is weaker. An example is seen in (7):

- (7) (Context: *Danny and Yosi had a great success in the competition*)
*dani kibel medalyat kesef, ve-yosi afilu / **bixlal** kibel medalyat zahav / #bronza*

“No way. She is actually British”

In this paper we will mainly focus on the non-discursive readings of *bixlal* and will leave a thorough investigation of this use to future research (but see section 6 for a brief suggestion). To avoid confusion, then, we will mainly refrain from using data in which *bixlal* appears in questions or in denial contexts.

Danny got medal silver and-Yosi afilu / bixlal got medal gold / bronze
“Danny got a silver medal, and Yosi even got a gold / #bronze medal

We will suggest, then, that the core entry for *afilu* and *bixlal* is the same as that of *even* in (1) above:

$$(8) \quad //even//^{g,c} = //afilu//^{g,c} = //bixlal//^{g,c} = \lambda C_F. \lambda p. \lambda w: \forall q \in C_F \ q \neq p \rightarrow p >_c q. p(w) = 1$$

Before continuing to argue for this *even*-like nature of *bixlal*, two comments about (8) (and (1) above) are in order. First, the nature of ‘stronger than’ relation, expressed by $>_c$ is not specified in (8) in (1). A popular characterization of this relation in the literature on *even* (e.g. Karttunen and Peters 1979, Rooth 1992, Lahiri 1998, Chierchia 2013) takes it to be based on unlikelihood, so *even* p is taken to presuppose that p is the most unlikely (or - least likely) proposition among the alternatives in the set C . This characterization, however, has been subject to much debate, and other characterizations were suggested instead. In section 3.7 below we will make use of one such recent characterization, namely the gradability-based proposal developed in Greenberg 2015, 2018, to account for the sensitivity of both *even* and *BIXLAL* to standards of comparison. In the meantime, though, as well as in most of this paper, using the intuitive and unanalyzed ‘stronger than’ relation, expressed by $>_c$ will suffice for our purposes.

A second comment about the entry in (8) concerns the set C_F , of contextually supplied focus alternatives, that *even* (as well as *afilu* and *bixlal*) operates over. Some theories (e.g. Kay 1990, Rullmann 1997) discuss cases which seem to risk the universal quantification over alternatives:

(9) *Not only did Mary win her first-round match, she even made it to the semifinals.* (Kay 1990: 89)

(10) *John won the bronze medal in the competition, and Bill even won the silver medal*

It would be natural to assume that *Mary made it to the finals*, or that *Bill won the gold medal* are members of C_F in (9) and (10), respectively, since they seem to be very ‘relevant’ alternatives to the prejacent of *even* p (namely to *Mary made it to the semifinals* and to *Bill won the silver medal*, respectively) in the context. But if this is so then *even* is wrongly predicted to be infelicitous, since p would not be stronger than ALL alternatives in C_F anymore.

If the universal quantification is kept in (8), then, as we believe it should,⁷ we need to constrain the set of alternatives C_F . This can be done by allowing C_F to have as members only p and alternatives

⁷ Indeed, given data similar to (9)-(10), some theories (e.g. Kay 1990), proposed to replace the scalar presupposition in (1) and (8) by a weaker version requiring p to be stronger than a salient alternative, e.g. what Kay (1990) called

constructed based on salient material in a parallel structure (e.g. a salient parallel VP). In the case of (10), for example, we will not take C_F to be $\{Bill\ won\ bronze, Bill\ won\ silver, Bill\ won\ gold\}$, but the smaller $\{Bill\ won\ silver, Bill\ won\ gold\}$, with only one more member besides p . Such a move will allow the scalar presupposition to be met and will account for the felicity of *even*.

More generally, we will take the felicity of *even* in sentences like (9) and (10) to indicate that the generation of alternatives for *even* follows the structural algorithm for generating alternatives in Fox & Katzir 2011, Katzir 2014 (where both the lexicon as well as discourse salient material is exploited to construct alternatives using the ‘substitution source’), but that when certain discourse salient material is available to construct alternatives, alternatives constructed using the lexicon may, or perhaps must be ignored.^{8,9}

2.2. Further support for the *even*-like nature of *bixlal*

Let us turn back now to further supporting the *even*-like nature of *bixlal*. First, alongside the constructed examples in (5)-(7) above there are also attested examples where *bixlal* is easily translated as *even* or can be substituted by *afilu* in matrix sentences, associating with a ‘strong’ element. Two examples can be seen in (11) and (12):

(11) (Context: Getting different quotes / estimates for a renovation):

Exad hicia 4-5 elef, sheni 8-9 elef, shlishi 15 elef, ve-ha- revi'i bixlal
One offered 4-5 thousand, second 8-9 thousand, third 15 thousand and-the-fourth bixlal
higi'a - le 20-25 elef^{d0}

‘the context proposition’. Such a proposal, though, would wrongly predict *even* to be felicitous in (i)-(ii) (See Greenberg 2016 for further discussion):

- (i) (There were 10 problems in the quiz): Harry solved six problems. John solved seven problems, Susan solved four and Bill (#even) solved six
- (ii) (Harry, John and Bill participated in the sports competition). Harry won a gold medal, John won a bronze medal, and Bill (#even) won a silver medal.

⁸ See also Greenberg 2018b for a discussion of parallel conclusions regarding the set of alternatives for *only*.

⁹ In this respect it is interesting to compare this priority of contextually supplied alternatives over lexically supplied ones with *even* to the priority given to contextual alternatives by children in calculating scalar implicatures (as reported in Barner et al 2011)), and in giving some conjunctive readings of disjunctions (cf. Singh et al 2016). Thanks to Roni Katzir (p.c.) for a discussion regarding this point.

¹⁰ [http://www.carsforum.co.il/vb/showthread.php?419113-%D7%94%D7%99%D7%9B%D7%9F-%D7%95%D7%94%D7%90%D7%9D\)-%D7%A0%D7%99%D7%AA%D7%9F-%D7%9C%D7%91%D7%A6%D7%A2-%D7%91%D7%93%D7%99%D7%A7%D7%AA-quot-%D7%A6-%D7%A7-%D7%90%D7%A0%D7%92-%D7%99%D7%9F-quot-%D7%9C%D7%9C%D7%90-%D7%AA%D7%A9%D7%9C%D7%95%D7%9D/page2](http://www.carsforum.co.il/vb/showthread.php?419113-%D7%94%D7%99%D7%9B%D7%9F-%D7%95%D7%94%D7%90%D7%9D)-%D7%A0%D7%99%D7%AA%D7%9F-%D7%9C%D7%91%D7%A6%D7%A2-%D7%91%D7%93%D7%99%D7%A7%D7%AA-quot-%D7%A6-%D7%A7-%D7%90%D7%A0%D7%92-%D7%99%D7%9F-quot-%D7%9C%D7%9C%D7%90-%D7%AA%D7%A9%D7%9C%D7%95%D7%9D/page2), found on Google in 18.5.2016.

reached to 20-25 thousand

“The first one reached 4-5 thousands, the second 8-9 thousands, the third reached 15 thousands and-the-fourth even reached 20-25 thousands”

- (12) *cever ha-hazmanot shel ha-xevra me-ha-lako'ax ala le-81 milion ve-cever ha-Cluster the-orders of the-company of-the-customer rose to-81 million and-cluster the-hazmanot la-shnatayim ha-krovot **bixlal** ala le-170 milion¹¹*
orders to-the- two-years the-close bixlal rose to 170 million
 “The company’s orders of the customer rose to 81 million and the orders for the next two years even rose to 170 millions”

More attested examples of *bixlal* with an *even*-like interpretation are found in DE contexts, as in the first argument of a universal quantifier (13), the complement of *before* (14) and that of *forbidden* (15), associating with ‘weak’ elements:

- (13) *ani margish she-ani roce le-hitpocec (!!!!!) ve-la-harog kol mi she- **bixlal** xoshev*
I feel that-I want to-explode and-to-kill every who-that bixlal think
alay be-derex lo tova¹²
about-me in-way not good
 “I feel I really want to explode (!!!!) and kill anyone who even thinks about me in a bad way”
- (14) *ani mocet et ecmi lo pa'am mexapeset pitronot le-ben ha-zug sheli lifney she-hu **bixlal** bikesh*
I find acc myself not once look-for solutions to-son the-pair mine before that-he bixlal asked¹³
 “I find myself, from time to time, looking for solutions to my partner before he even asks”
- (15) *lo rak she-asur li le-faret et pratey ha-mivca ela she- la-oyev*
Not only that-forbidden to-me to-detail acc details the-mission but that to-the-enemy
*asur **bixlal** lada'at she- asinu et ze¹⁴*
forbidden bixlal to-know that we-did acc this
 “Not only can’t I give details about the mission. It’s even forbidden that the enemy knows we did it.”

Bixlal, then, can be easily translated as *even* in such cases, though *afilu* still seems the default choice.

¹¹ <http://www.sponser.co.il/Article.aspx?ArticleId=10613>, found on Google in 18.5.2016.

¹² <https://www.fxp.co.il/showthread.php?t=3603383>, found on Google in 18.5.2016

¹³ <http://xnet.ynet.co.il/laisha/articles/0,14961,L-3108963,00.html>, found on Google in 18.5.2016.

¹⁴ <http://webcache.googleusercontent.com/search?q=cache:YYdlNTvZDcgJ:knesset.gov.il/protocols/data/rtf/huka/2005-01-17.rtf+&cd=1&hl=iw&ct=clnk&gl=il>, found on Google in 18.5.2016.

Based on these similarities between *afilu* and *bixlal* we conclude that Hebrew has indeed at least two *even*-like particles,¹⁵ namely *afilu* and *bixlal*. This makes Hebrew similar to many other languages which, as mentioned above, have been reported to have several *even*-like particles (see e.g. Gast & van der Auwera's 2011, 2013 examination of 45 European and 16 Transeurasian languages, Giannakidou's 2007 work on Greek, and Crnič's 2011 review of Slavic languages). In all of these languages the different members of the *even*-like typology are not (necessarily) synonymous. Rather, they are reported to differ from each other in their distribution and semantic effects, depending on their specification in a number of parameters, while still sharing the core *even*-like semantics.

In a similar way, when proposing that *bixlal* is a member of the *even*-like typology in Hebrew, alongside the default member, *afilu*, we are not committed to the claim that the two are synonymous, or that they are both synonymous with English *even*. Instead, the claim is that all of these particles share the core scalar *even*-like semantics, though they may differ from each other along various parameters.

One example of such a difference between *bixlal* and *afilu*, which actually supports the *even*-like nature of *bixlal*, concerns a specific effect it has in questions.¹⁶ To see it consider, first, the effect of *even* in the constituent question (16) and the polar question (17), from Iatridou & Tetevosov 2016:

- (16) A: *Shall we go to Oleana for dinner?*
 B: *What do they even serve there? / What do they serve there even?*
- (17) A: *Shall we ask Joan to prepare something special for dinner?*
 B: *Is Joan even here?*

Iatridou & Tetevosov characterize this use of *even* (referred by them as 'our *even*') as operating over the whole question, presupposing that this question is the least likely to ask. The resulting effect, according to them, is that the speaker is ignorant "about the most basic thing about...the Question under Discussion" (p. 3) or that "the speaker does not know if the most basic prerequisite of the topic under discussion holds" (p. 23).

Without going now into the question of whether Iatridou & Tetevosov's analysis of this use of *even* is the right one,¹⁷ we now observe that the only way to translate *even* in such questions to Hebrew is

¹⁵ As proposed in Greenberg and Orenstein 2016, in addition to *afilu* and *bixlal* Hebrew also uses *af*, a high register short version of *afilu* (which seems to also appear in NPIs like *af-exad* (*any*, lit 'even one'), and an NPI *even*-like operator, *ve-lu* (cf. Sharvit 2008). It also has a standard additive particle *gam*, usually translated as *also*, which seems to get scalar *even*-like features in some environments (e.g. above modal operators). We postpone further investigation of these, as well as potentially other *even*-like particles in Hebrew, to future research.

¹⁶ See section 6 for other differences.

¹⁷ Elliott et al 2015 and Daniels 2018 point out challenges for this analysis of Iatridou & Tetevosov of 'out *even*'. Daniels suggests an alternative analysis which integrates Greenberg's 2018a 'gradability-based' semantics for *even*

by using *bixlal*: In particular, informants judge the questions in (18) and (19) as perfectly natural with *bixlal* and as infelicitous with *afilu*:¹⁸

(18) A: *bo nipageS be-olena le-aruxat erev.*

Come meet at-olena for-dinner.

“Let’s meet at Olena’s for dinner”

B: *ma hem bixlal / ??afilu magishim? / ma hem magishim bixlal / ??afilu?*

What they bixlal / afilu serve / What they serve bixlal / afilu

“What do they even serve?/ What do they serve even?”

(19) A: *ulay nazmin et joan le-haxin mashehu meyuxad le-aruxat erev?*

Maybe invite acc Joan to-prepare something special for-dinner

“Perhaps we will invite Joan to prepare something special for dinner?”

B: *joan bixlal / #afilu kan?*

Joan bixlal / afilu here

“Is Joan even here?”

This difference between *bixlal* and *afilu* in questions resembles similar variations with *even*-like operators reported in other languages. For example, Iatridou & Tetevosov 2016 report that the Russian *voobščē*, the Greek *akome ke* and the German *überhaupt* naturally encode the ‘discourse’ use of *even*, operating over whole questions¹⁹, whereas the more canonical *even*-like particles, namely *daže*, *kan* and *sogar*, respectively, are only fine in the ‘garden-variety’ structure, operating over more standard focus

(briefly reviewed in section 3.7 below) and the assumption that here *even* scopes above a question speech act operator.

¹⁸ The effects of *bixlal* here seem to also be very similar to the ‘extreme ignorance’ effects of questions with *bixlal* that Greenberg & Khrizman 2012,a,b report, as in (i):

- (i) A: *ani lo maamina be-refua alternativit*
I not believe in-medicine alternative
‘I don’t believe in alternative medicine.’
 B: *ma ze refua alternativit bixlal?*
what this alternative medicine bixlal
‘What on earth is alternative medicine?’

Notice also that *bixlal* is natural in “double emphatic questions”, as in (ii) (Doron & Wolf 2016):

- (ii) *lama mi ata bixlal?*
why who you bixlal
“Who are you, anyway?”

We leave the discussion of the effects of *bixlal* in such cases to another occasion.

¹⁹ Iatridou & Tetevosov’s (2016) analysis of *überhaupt* as an *even*-based operator thus differs from both Anderssen’s (2006) analysis of this particle as a general domain widener and Rojas-Esponda’s (2014) analysis of this particle as marking a move to a higher QUD. We adopt this kind of analysis for *bixlal* as well (but further examination of the various effects of *überhaupt* are still needed. See section 5.4 for a comment).

alternatives. A similar picture seems to emerge now for Hebrew: *afilu* is the default case for ‘garden variety’ cases, operating only on standard focus alternatives, while *bixlal* can also operate over whole questions.²⁰ From this perspective, the difference between *bixlal* and *afilu* in (18)-(19) does not undermine, but actually supports the *even*-like nature of *bixlal*.

3. *BIXLAL* as an *even* over ‘covert-based’ alternatives: Cases with one dimensional adjectives

3.1 Introduction

We now want to focus on a set of facts which distinguish *bixlal* from both *even* and *afilu*, namely the range of readings this particle induces when it is accented (i.e. as *BIXLAL*) (e.g. *very*, *in general*, or *at all*). Our main claim is that although in such cases *BIXLAL* is not directly translated as *even*, and cannot be substituted by *afilu*, the range of reading it induces does not undermine, but in fact further supports its analysis as an *even*-like operator, albeit one which differ from *afilu*, *bixlal* and *even* along a specific parameter, namely its ability to operate over a special kind of alternatives.

More specifically, as mentioned above, Migron 1993 intuitively suggested to account for these readings by assuming that, just like *bixlal*, *BIXLAL* indicates that the predicate it combines with is more informative / stronger than its alternative, but that with *BIXLAL* the alternatives involve ‘different interpretations’ of the predicates. We will now follow this general intuition and some ideas of how to make it more precise in Greenberg & Khrizman 2012a,b,c, and suggest to derive the range of readings of *BIXLAL* from the interaction of (a) our semantics of *BIXLAL* as a focus sensitive *even*-like operator, and (b) the assumption that *BIXLAL* associates with a covert element in its prejacent, so the alternatives it operates over are ‘covert-based’²¹ and (c) the semantic properties of the prejacent of *BIXLAL*, and in particular the existence of covert material in it that *BIXLAL* can associate with.

To keep the discussion manageable, we will concentrate on cases where *BIXLAL* combines with adjectival predicates of different kinds, namely one dimensional (dealt with in this section) and multidimensional adjectives (dealt with in section 4).²²

²⁰ Notice, though, that in Hebrew the division of labor between *afilu* and *bixlal* seems less rigid, since although *bixlal* seems less common in ‘canonical’ *even*-like structures than *afilu*, it can still be found in such cases, as seen above.

²¹ An obvious question is why the operation over covert based alternatives is found with the accented version of *bixlal*, i.e. *BIXLAL*. We suggests some directions for explaining this fact in section 5.4 below. Our main goal in this paper, though, is more modest, namely to show how the assumption about the *even*-like operation over ‘covert-based’ alternatives can be used to explain the variety of readings found with *BIXLAL*.

²² But see section 5.2 for an example where *BIXLAL* appears with non-gradable predicates.

3.2 The intuition

Consider the occurrence of *BIXLAL* in (20) (a close variant of (4) above):

- (20) A: *dani gavoha. Ve-ma im yosi?*
 Danny tall and-what with Yossi
 “Danny is tall. And what about Yosi?”
 B: *hu BIXLAL gavoha*
 he BIXLAL tall
 “He is very tall / really tall / taller”

As observed in Greenberg & Khrizman (2012,a,b,c) (20) leads to several inferences, namely that Danny is tall, that Yosi is very or really tall, and that Yosi is taller than Danny. Below we will attempt to derive these inferences from the *even*-like semantics of *bixlal* and the special nature of the alternatives operated over. Again, we do not attempt to argue that *BIXLAL* is identical to English *even* (or Hebrew *afilu*). After all, as seen in (21) there is no simple way to translate *BIXLAL* in (20) as *even*, or to substitute it by *afilu* (no matter whether these are accented or not):

- (21) A: *dani gavoha. Ve-ma im yosi?*
 Danny tall and-what with Yossi
 “Danny is tall. What about Yosi?”
 B: *#hu AFILU/ afilu gavoha*
 he EVEN / even tall
 “#He is EVEN / even tall

What we will argue, instead, is that in (20) *BIXLAL* is an *even*-like operator over ‘covert-based’ alternatives, derived by letting *BIXLAL* associate with a covert focused element, and specifically with the covert comparison class argument, *C*, in the semantic structure of its prejacent (*Danny is pos C tall*). The result of such an association will eventually lead to a paraphrase as in (22):

- (22) A: *Danny is at least as tall as the contextually salient standard, and what about Yosi?*
 B: *He is even at least as tall as a higher standard*

3.3 *BIXLAL* is not an intensifier

Before turning to formally capture the idea that *BIXLAL* is an *even*-like operator over covert-based alternatives, we may want to consider a much simpler hypothesis. After all, *BIXLAL* seems to have an intensification effect in such sentences and can be paraphrased by *very* or *really*. Perhaps, then, *BIXLAL* is simply some sort of an intensifier?²³

We argue that the answer to this question should be negative, and that an analysis of *BIXLAL* as an *even*-based operator is preferable. This is not only because we prefer a more unified analysis of *BIXLAL* as related to its unaccented version, namely the *even*-like operator *bixlal*, but also due to two properties of *BIXLAL*, which makes it different from intensifiers, namely (a) the interaction of *BIXLAL* with surface negation, which makes it similar to *afilu* and (b) its sensitivity to standards of comparison, which makes it similar to both *afilu* and *even*. Let us examine these properties in turn.

3.3.1 The interaction of *afilu* and *BIXLAL* (as opposed to intensifiers) with surface negation

Unlike English *even*, the Hebrew default *even*-like particle, *afilu* can appear either before surface negation (23a), or after the negated predicate (23c), but crucially not between surface negation and the modified predicate (23b):

- (23) (Context: *ha-mofa kvar histayem?*
The-show already finished
Has the show already finished?)
- a. *hu afilu lo hitxil*
it even not started
"The show hasn't even started"
- b. *# hu lo afilu hitxil*
it not even started

²³ As pointed out by a JOS reviewer, what further potentially supports such a suggestion is the fact that there are intensifiers which can lead to a 'noteworthy' effect, similarly to what has been sometimes claimed for *even* (cf. Herburger 2000). An example seems to be *fucking*, e.g. *John fucking won the [gold]_F medal*, which seems to indicate that compared to winning bronze or silver it's noteworthy that John won the gold medal.

Since Hebrew does not seem to have a good correlate of intensifying *fucking*, I compare *BIXLAL* below to the intensifiers *meod* ('very') and *mamaš* ('really'). But as far as I can see the sensitivity to standards of comparison, which as argued below makes *BIXLAL* similar to *even* and different from these two intensifiers makes it also different from *fucking*. Two cases exemplifying this difference are seen in (i) and (ii) (see section 3.7 for further discussion):

- (i) A: *John didn't do very well in the competition. And what about Bill?*
 B: *He ??even / fucking won the gold medal*
- (ii) A: *John is not tall. He is only 1.75m tall. And what about Bill?*
 B: *He is #even / fucking 1.90m tall.*

- c. *hu lo hitxil afilu*²⁴
it not started even
“The show hasn’t even started”

In contrast, the interaction of Hebrew intensifiers like *me’od* (‘very’) or *mamash* (‘really’) with surface negation is different. Like *afilu*, both types of intensifiers can precede negation (24a), but unlike *afilu* they can also appear between negation and the predicate (24b). They can also follow the negated predicate, as in (24c) (although they are a bit odd in this position):²⁵

- (24) a. *ze me’od / mamash lo meduyak*
this very really not precise
“It is very / really imprecise”
 b. *ze lo me’od / mamaS meduyak*
this not very /really precise
“It is not very / really precise”
 c. ? *ze lo meduyak me’od / mamaS*
this not precise very / really
“It is not very / really precise”

Turning now back to *BIXLAL* we observe that its interaction with surface negation is just like that of *afilu*, and unlike what we saw with the Hebrew intensifiers. In particular, like *afilu* and unlike the intensifiers, *BIXLAL* cannot occur between surface negation and the predicate:

- (25) a. *hu BIXLAL lo gavoha*

²⁴ One can take these facts to indicate that the difference between Hebrew *afilu* (and *BIXLAL* as seen below) on the one hand, and English *even* on the other hand, is that the surface position of the former above negation is also its position in LF, whereas for *even* this is only its position at LF, to which it is raised from surface position, as has been extensively discussed in the literature (e.g. Horn 1971, Karttunen and Peters 1979, Lahiri 1998, Guerzoni 2003, Crnič 2011). In both cases the scalar presupposition of these *even*-like particles is met. e.g. in (23) *the performance didn’t start* is stronger than *the performance didn’t end*. I leave a more thorough examination of these issues, and a comparison with the competing ‘ambiguity’ approach to *even* (e.g. Rooth 1985, Giannakidou 2007) to future research.

²⁵ Notice that in this sentence-final position there is also an interpretational difference between *afilu* and *me’od / mamash*: Assuming the ‘scope’ view of *even*, *afilu* in (23c) seems to scope above the negated predicate, so the sentence is paraphrased as “It is even the case that the show hasn’t started yet”. In contrast, as the gloss of (24c) shows, the salient reading of *me’od* and *mamaS* in this position is where they scope below negation (“It is not very / really precise”) and not above it (“It is very / really imprecise”).

He BIXLAL not tall
“He is not tall at all”
b.# hu lo BIXLAL gavoha
he not BIXLAL tall
c. hu lo gavoha BIXLAL
he not tall BIXLAL
“He is not tall at all”

In addition, while *BIXLAL* in this case is not directly translated as *even*, but as *at all*, (25a,c) can be nonetheless paraphrased with *even*, as in (26):²⁶

- (26) A: *Danny does not reach the contextually salient standard of tallness. And what about Yosi?*
 B: *He does not even reach a lower standard of tallness (= he is not tall at all) even >not*

In the sections below we make the *even*-based intuitive paraphrases of the sentences with *BIXLAL* in (22) above and in (26) more precise. At this point we just conclude that at least given its interaction with surface negation, *BIXLAL* seems indeed similar to the Hebrew *afilu*, and not to intensifiers.

3.3.2 An evaluative inference triggered by *even*, *afilu* and *BIXLAL* (as opposed to intensifiers)

A second property which makes *BIXLAL* similar to *even*, and different from intensifiers has to do with the sensitivity of *BIXLAL* to standards of comparison. In particular, we observed above that the use of *BIXLAL* in B’s utterance in (20) (*Yosi is BIXLAL tall*) strongly leads to the evaluative inference that Danny, mentioned in A’s utterance, is tall as well.

Crucially, this inference indeed results from the presence of *BIXLAL* in B’s answer, and not only from the fact that A explicitly asserted that Danny is tall.²⁷ As a support we observe that the presence of *BIXLAL* in B’s answer in (27) gives rise to the same inference, although here speaker A does not explicitly say that Danny is tall. In this case B’s answer with *BIXLAL* is only felicitous in a situation where 1.75m tall is considered tall relative to the relevant standard (e.g. if we are in a context where we need to choose players for the kids’ basketball team). Crucially, replacing *BIXLAL* with the intensifiers *me’od* (‘very’) and *mamash* (‘really’) does not lead to any such effect:

²⁶ See Chierchia 2013 for an *even*-based analysis of *at all*. See also section 5.3 for a comparison between Chierchia’s analysis and the present analysis of the *at all* reading of *BIXLAL*.

²⁷ Cf. a similar observation in Korat 2015.

- (27) A: *dani hu 1.75m. ve-ma im yosi?*
Danny is 1.75m and-what with Yossi
“Danny is 1.75m tall. And what about Yosi?”
 B: *hu BIXLAL / MEOD / MAMASH gavoha*
he BIXLAL / very / really tall
“He is very / very / really tall”

Indeed, in a situation where the context makes it clear that Danny is NOT tall given the salient standard, *BIXLAL* is infelicitous. In contrast, the intensifiers continue to be felicitous:

- (28) (Context: *The average height in this basketball team is 1.90*).
 A: *dani hu rak 1.75m. hu lo gavoha, ve-ma im yosi?*
Dani is only 1.75m. he not tall and-what with Yossi?
“Danny is only 1.75m tall. He is not tall. And what about Yosi?”
 B: *hu #BIXLAL / MOED / MAMASH gavoha*
he BIXLAL / VERY / REALLY tall
 Intended: *“He is very tall / taller”*

Importantly, similar patterns have been independently observed in Greenberg 2015, 2018 for English *even*. Compare B’s answers in (29a) and (29b):

- (29) A: *Danny is 1.70m tall.*
 a. B: *and Yosi is taller / and Yosi is [1.75m]_F*
 b. B: *and Yosi is even taller / and Yosi is even [1.75m]_F*

As is well known (e.g. Kennedy & McNally 2005), comparatives based on relative adjectives, like *Yosi is taller than Danny* do not lead to evaluative inferences, i.e. do not entail the positive form of the adjectives they are based on, for neither the source nor the target of the comparison. Thus, without *even*, the comparative in (29a) can be naturally continued with ...*but both are short* or with*but Danny is short*. The same continuation is perfectly felicitous for the *even*-less *and yosi is 1.75m* in (29a). As Greenberg 2015, 2018 observes, however, when *even* is present, as in (29b), the positive form is entailed: so such sentences cannot be felicitously continued with ...*but both are short* or by*but Danny is short*.

In other words, the presence of *even* in B's utterances in (29b) entails the evaluative judgement both Danny and Yosi are considered tall, and more technically, that the degree to which they are tall is at least as high as the contextually supplied standard of tallness (cf. Kennedy & McNally 2005). The same inference is found in Hebrew with *afilu*.²⁸ Moreover, similarly to *BIXLAL* in (28), *even* and *afilu* become infelicitous when the inference that Danny is tall is cancelled. This is seen in (30) for *even*.²⁹

(30) (Context: The average height in this basketball team is 1.90)

A: Danny is only 1.70m tall. He is not tall. And what about Yosi?

B: He is (#even) taller / He is (#even) 1.75m tall

In section 3.7 below we review Greenberg's 2015, 2018 proposal to capture the evaluativity and sensitivity of *even* to standards and apply this proposal to the parallel evaluativity and sensitivity of *BIXLAL* to standards. At this point our more modest goal is to further strengthen our claims that (a) *BIXLAL* is not an intensifier and (b) that it is similar to *even* and *afilu*.

3.4 The proposal: *BIXLAL* associates with the covert comparison class argument, C, in its prejacent

We now turn to suggest how the special effects of *BIXLAL* in (20) (*Danny is tall and Yosi is BIXLAL tall*) can be derived from the interaction of its semantics as an *even*-like operator and the assumption that it operates on 'covert-based' alternatives.

We start by following ideas in e.g. Bartsch & Vennemann 1972, von Stechow 1984, who take sentences with adjectives in the 'positive form', as in (31), to involve a covert degree modifier, *pos*, with an entry as in (32), which combines with a contextually supplied comparison class argument C, a gradable predicate G and an individual, x, and yields truth when the degree to which the individual has along the scale associated with G is at least as high as the standard determined by the comparison class C. Thus (31) has an LF as in (33a) and is interpreted as in (33b):

(31) *Yosi is tall*

(32) *pos*: $\lambda C. \lambda G. \lambda x. \exists d G(x, d) \wedge d \geq \text{standard}(C, G)$

²⁸ Cf. Umbach 2012 for similar observations concerning *noch groser* in German. I believe, though, that the mechanisms by which this effect is derived with *even* are different. More research is needed here though.

²⁹ But see footnote #37 for a case where further contextual support allows for cancelling this inference.

- (33) a. *Yosi is pos C tall*
 b. $\exists d \text{ tall } (Yosi, d) \wedge d \geq \text{standard } (C, \text{tall})$.

(33a), then, is the prejacent of *BIXLAL* in (20), with an interpretation as in (33b). The crucial question now is what propositions count as q , the distinct contextually relevant alternatives to this prejacent. This, of course, depends on what is focused in (33a).

Following ideas in Greenberg & Khrizman 2012, Greenberg 2014, we now propose that unlike the classical way of deriving focus alternatives (Rooth 1992, 1996), where an overt, and usually prosodically accented focused element, is substituted by another element of the same semantic type, in (33a) the focused element that *BIXLAL* associates with is covert, and hence cannot be prosodically marked (e.g. cannot bear accent).³⁰ More specifically, we take the focused element in (33a) to be the covert comparison class argument, C:

- (34) *Yosi is pos [C]_F tall*

Since C is focused and is the source of alternatives, the focus alternatives, q differ from p in (34) in the choice of C. As usual, we do not require *even* to operate over all such focus alternatives, i.e. over alternatives with any comparison class C, but only over those in the contextually supplied subset C_F (as in (1) and (8) above)), constructed based on relevant information and / or salient sub-constituents in the context (cf. Fox & Katzir 2011, Katzir 2014). In our case, the comparison class argument in A's sentence ("Danny is pos C tall") provides such a salient sub-constituent.

To keep the difference between p and the alternatives q clear we will from now on refer to the comparison class in the relevant alternatives q to be C_1 and to the focused one, in the prejacent of *BIXLAL*, as C_2 . This yields the following scalar presupposition and assertion of (20):

- (35) A scalar presupposition of *BIXLAL* in (20) ('Danny is tall and Yosi is *BIXLAL* tall'):
For all contextually relevant comparison classes C_1 , distinct from C_2 :
Yosi is pos C_2 tall $>_C$ *Yosi is pos C_1 tall*
 $= \exists d \text{ tall } (Yosi, d) \wedge d \geq \text{standard } (C_2, \text{tall}) >_C \exists d \text{ tall } (Yosi, d) \wedge d \geq \text{standard } (C_1, \text{tall})$.
- (36) Assertion of (20): $\exists d \text{ tall } (Yosi, d) \wedge d \geq \text{standard } (C_2, \text{tall})$

³⁰ Cf. Chierchia 2013, Wagner 2012, Rochemont 2013, Wiagend 2016. for other cases where a focused element does not bear accent, and Erlewine 2013 for cases where a focus sensitive particle associates with covert traces. See also section 5.1 for comparison of *BIXLAL* with other scalar operators associating with covert material.

In prose, (20) presupposes that for all contextually relevant comparison classes C_1 , the proposition that Yosi's degree of tallness is at least as high as the standard determined by the comparison class C_2 is stronger than the proposition that his degree of tallness is at least as high as the standard determined by C_1 . The assertion is that Yosi's degree of tallness is at least as high as the standard determined by C_2 .

What relation should hold between the comparison classes C_1 and C_2 for the presupposition to be satisfied? We suggest that since the comparison class determines the standard, the standard determined by C_2 in p has to be higher than the standard determined by all relevant C_1 in q . The set of the relevant C_1 arguments in the q alternatives includes the comparison class argument C in the proposition denoted by A's salient sentence *Danny is pos C tall*.³¹ This is, we suggest, how we end up with the paraphrase in (22) above (*Yosi is even tall with respect to a higher standard than the one with respect to which Danny is tall*).

The fact that the degree to which Yosi is tall is presupposed to be at least as high as a standard which is higher than all relevant / salient standards can now help explaining the inference that he is considered *very* tall. Another way to look at this inference is to take the comparison class C_2 to be a subset of C_1 , and in particular the set of tall individuals in all salient comparison classes C_1 (cf. Kennedy & McNally 2005 on *very*).³²

³¹ Given the discussion of the felicity of *even* in cases where p is compared to only one contextually salient alternative (as in (10) above: *Danny won bronze in the competition, and Yosi even won [silver]_F*), one may consider a similar case here, and take the comparison class that Danny is a member of to be the only one which stands for C_1 in (35), so we end up with only two relevant alternatives, the prejacent, involving C_2 , and another proposition, involving Danny's comparison class. I leave this option, and more generally the wider implications for how alternatives are constructed in such cases to further research.

³² Notice that *BIXLAL* is fine not only with 'relative' adjectives like *tall*, but also with 'absolute' ones, e.g. *clean*:

- (i) A: *ha-xeder shel dani naki, ve- shel Yosi?*
 the-room of Dany clean and-of Yosi
 "Danny's room is clean. And Yosi's?"
 B: *Hu BIXLAL naki.*
 It BIXLAL clean
 "It is very clean / even cleaner"

This fact may seem challenging to the proposal above if we adopt Kennedy & McNally's 2005, Kennedy's 2007 claim that with Upper-closed adjectives (like *clean*) the standard is always at the scale maxima. Notice, though, that a similar problem is found with English *even*, as seen from the gloss in (iB) and in the attested example in (ii) (from a TripAdvisor review):

- (ii) Our room was clean, and the bathroom was even cleaner

Similarly to what we see with *BIXLAL*, if indeed the standard of cleanness in the first sentence is at the maximal endpoint of the cleanness scale, it is not clear how the bathroom can be cleaner than the writer's room.

One way to overcome this problem is to assume that even with such adjectives the standard is not fixed and still varies in context, as in e.g. McNally 2011, Sassoon & Toledo 2011. See also Solt 2011 and Burnett 2014 for a discussion. Another possibility is to assume a 'multidimensional', part-whole interpretation of (i) and (ii), where the first room is clean to a maximal degree in most parts, and the second is clean to a maximal degree in more parts (thanks to Galit Sassoon (p.c.) for this suggestion). We will leave this issue for further research and in the meantime continue to assume that *BIXLAL* associates with the comparison class argument.

3.5 Deriving the ‘taller than’ inference using scalar implicatures

Strictly speaking, our analysis of (20) (*‘Danny is tall. Yosi is BIXLAL tall’*) in (34)-(36) above is not enough by itself to derive the inference, mentioned above, that Yosi is taller than Danny. This is because the fact that Danny’s degree of tallness is at least as high as the lower standard, determined by C_1 , is compatible with a situation where this degree is, in fact, *much* higher than this lower standard and is actually higher than Yosi’s degree of tallness. In this situation Yosi will not be taller than Danny.

A direction for explaining this inference is to assume that *Danny is pos C tall*, denoted by A’s salient utterance, triggers a scalar implicature. More specifically, as argued above, the association of the *even*-like particle *BIXLAL* with the comparison class argument C_2 in *Yosi is BIXLAL pos [C₂]_F tall* in B’s utterance, leads to interpreting the standard determined by C_2 as higher than the one determined by all relevant comparison classes C_1 , including the comparison class C in *Danny is pos C tall*. We end up, then, with two predicates (*is pos C tall*), salient in the context, where one is stronger than the other. Similar cases discussed in the literature have been shown to involve scalar implicatures as well. Consider, for example, (37), a variant of an example from Matsumoto (1995), discussed in Katzir (2014, p.50):

- (37) *Yesterday was warm and today is a little bit more than warm*
 SI: \neg *Yesterday was a little bit more than warm*

Katzir argues that salient sub-constituents can be used to form scalar alternatives³³ which are then used when forming the scalar implicature in (37). We suggest that a similar case happens in (20). In particular, given the association of *BIXLAL* with the comparison class argument we end up with a scalar alternative to p , which is weaker than it, and hence with a scalar implicature, as seen in (38):

- (38) *Danny is pos C tall and Yosi is BIXLAL pos [C₂]_F tall*
 $= \exists d \text{ tall} (Danny, d) \wedge d \geq \text{standard} (C, \text{tall}) \wedge \exists d \text{ tall} (Yosi, d) \wedge d \geq \text{standard} (C_2, \text{tall})$
 Where $\text{standard} (C_2, \text{tall}) > \text{standard} (C, \text{tall})$ (given the scalar presupposition of *BIXLAL*)
 SI: \neg *Danny is pos C₂ tall*
 $= \neg \exists d \text{ tall} (Danny, d) \wedge d \geq \text{standard} (C_2, \text{tall})$

³³ For Katzir (2014) the important feature of this example is that what substitutes *warm* in the first sentence is the longer and more complex *a little bit more than warm*, which seems to constitute an argument against the complexity ban on alternatives Katzir argues that this ban does not hold when contextually salient material is present. This feature is not crucial here, since in our case both predicates are equally complex, differing only in the comparison class.

Assuming, then, the presence this scalar implicature, Yosi is indeed taken to be taller than Danny.

Deriving the scalar implicature in (38), though, requires more understanding as to the obligatoriness of such an implicature³⁴, and as to whether or not it should be grammaticalized (using an *exh* operator, as in Chierchia et al 2011), or derived using Gricean mechanisms. Such questions, however, are not limited to the specific construction with *BIXLAL* we are dealing with here. They are relevant for (37) as well, and for (39) and (40) with overt *even*, where we seem to get the same inference as with *BIXLAL* in (20), namely that Yosi is taller than Danny:

(39) A: *Danny is tall, and what about Yosi?*

B: *He is even VERY tall (Implicature: Danny is not very tall. So Yosi is taller than him)*

(40) A: *Danny is tall with respect to the local basketball team, and what about Yosi?*

B: *He is even tall with respect to the national basketball team (Implicature: Danny is not tall with respect to the national basketball team. So Yosi is taller than him)*

Thus, we believe that whatever mechanisms necessitate the scalar implicatures in (37), (39) and (40), they are equally operative with (38) with *BIXLAL*. The only difference is that the scalar alternatives with *BIXLAL* are based on covert material, and not on overt ones. But this is not a feature which is supposed to affect the presence or absence of scalar implicatures. We leave, then, further examination of these general mechanisms to future research, and continue to concentrate on what is specific to *BIXLAL*, namely its association with covert material, and consequently, its operation over ‘covert-based’ alternatives.

3.6 Support for the proposal

The proposal above is supported by several observations. First, *BIXLAL* is very natural in conversations like (41), with explicit reference to standards determined by different comparison classes:

(41) (Context: *Danny and Yosi are two 10-year-old twins*)

A: *Danny gavoha yaxasit le-gilo. Ve-ma im Yosi?*

Danny tall relative to-his-age. And-what with Yosi

“Danny is tall compared to his age. And what about Yosi?”

B: *hu BIXLAL gavoha. Hu gavoha, afilu yaxasit le-bney 13.*

He BIXLAL tall he tall even relative to-age 13.

³⁴ Crnić (2012) (2014) argues for cases where the presence of overt *even* triggers obligatory exhaustivity. However, this does not seem to explain the scalar implicature in (38), which is triggered in the previous sentence.

“He is very tall / even taller. He is even tall compared to 13-year-old kids”

Second, if *BIXLAL* can only operate on ‘covert-based’ alternatives, then we can predict that in a case where such alternatives are not available, i.e. in case the semantic structure does not contain a covert element, like a comparison class, which can be focused and trigger alternatives, *BIXLAL* will be infelicitous. The prediction seems to be born out, as seen in (42), with the specific degree modifier *1.80m*. Crucially, the infelicity seems indeed to be due to the presence of *BIXLAL*, as other accented focus sensitive operators, like *LO* (‘not’), *BATU’AX* (‘surely’) and *KIM’AT* (‘almost’) are perfectly felicitous:

- (42) A: *Ani xoSev she-dani hu 1.80m. Ve-ma im yosi?*
I think that-Danny is 180m. and-what with Yosi?
“I think that Danny is 1.80m tall. And what about Yosi?”
 B: *hu LO / BATU’AX / KIM’AT / #BIXLAL 1.80m.*
he NOT / SURELY / ALMOST / BIXLAL 1.80m
“He is NOT / SURELY / ALMOST / #BIXLAL 1.80m tall”

Finally, the behavior of *BIXLAL* with negated predicates, as in (2) above (‘*Danny is not tall, and Yosi is not tall BIXLAL*’), where it is paraphrased as *at all*, further supports the proposal above. Assuming, as before, that *BIXLAL* scopes above negation in such cases, and that what it associates with is the covert comparison class (C_2), the scalar presupposition it triggers is seen in (43) and its assertion is (44):

- (43) Scalar presupposition of (2): *For all contextually relevant comparison class C_1 :*
Yosi is NEG pos C_2 tall) $>_c$ Yosi is NEG pos C_1 tall
 $= \neg \exists d \text{ tall}(Yosi, d) \wedge d \geq \text{standard}(C_2, \text{tall}) >_c \neg \exists d \text{ tall}(Yosi, d) \wedge d \geq \text{standard}(C_1, \text{tall}).$
- (44) Assertion of (2): $\neg \exists d \text{ tall}(Yosi, d) \wedge d \geq \text{standard}(C_2, \text{tall})$

Crucially, this time the presupposition is satisfied when the standard determined by C_2 in p is LOWER than the standard determined by any other contextually relevant alternative comparison class C_1 . This is supported by the naturalness of the conversation in (45):

- (45) A: *yaxosit le-yeladim bney gilo, dani lo gavoha. ve-ma im yosi?*
relative to-children his-age mates Danny not tall. And-what with yosi?
“Relative to his age mates, Danny is not tall. And what about Yosi?”
 B: *hu BIXLAL lo gavoha / hu lo govoha BIXLAL. Afilu lo yaxasit le-ce’irim yoter.*

He BIXLAL not tall / he not tall BIXLAL. Even not relative to-young more
“He is not tall at all. Not even relative to younger individuals”

3.7 A closer look at the evaluativity induced by *BIXLAL* and *even*, and their sensitivity to standards

We now want to take a closer look at another inference of *Yosi is BIXLAL tall* mentioned above, namely the evaluative inference that Danny, mentioned in A’s utterance, is tall as well. As noted above, this inference is indeed contributed by the presence of *BIXLAL*, as it is found not only in (20) when Danny is explicitly asserted by A to be tall (*Danny is tall and Yosi is BIXLAL tall*), but importantly also in conversations like (27) (*Danny is 1.75m tall and Yosi is BIXLAL tall*). Moreover, as we saw above, *BIXLAL* is infelicitous if the evaluative inference that Danny is tall is cancelled, as in (28) (*Danny is not tall / is just 1.75m tall. And yosi is (#BIXLAL) tall*).

In section 3.3.2 above we saw that this surprising behavior of *BIXLAL* makes it similar to *even* (as shown in (29)-(30) above), and different from intensifiers like *very / really*. These facts were thus used to support our conclusion that *BIXLAL* is indeed an *even*-like particle, and not an intensifier.

But now we also want to understand this tendency of *BIXLAL* to lead to evaluative inferences. To do so we will first review a recent suggestion (in Greenberg 2018a) to explain the parallel evaluative inferences found with *even*.

3.7.1 The ‘stronger than’ relation in the scalar presupposition of *even*: Challenges for the ‘likelihood’-based’ view

Consider again the scalar presupposition of *even* in the classical entry in (1) above:

$$(1) \quad \llbracket even \rrbracket^{g,c} = \lambda C_F. \lambda p. \lambda w: \forall q \in C_F \ q \neq p \rightarrow p >_c q. p(w) = 1$$

What is the nature of the ‘stronger than’ relation, $>_c$ between p and its alternatives in (1)? A popular answer in the literature on *even* is that $>_c$ is based on unlikelihood (e.g. Karttunen and Peters 1979, Rooth 1992, Lahiri 1998, Chierchia 2013). (1), then, is usually rewritten as (46), according to which *even* (C)(p)(w) presupposes that p is less likely than all relevant focus alternatives q :

$$(46) \quad \llbracket even \rrbracket^{g,c} = \lambda F. \lambda p. \lambda w: \forall q \in F \ q \neq p \rightarrow p <_{likely} q. p(w) = 1$$

This popular characterization of $>$, though, did not remain undebated. First, the felicity of *even* in examples like (47)-(49) has been brought up to argue that unlikelihood of p relative to its alternatives is not really a necessary condition for the felicity of *even p*:

- (47) *It is more for aesthetic reasons that leather seats in automobiles are mainly colored dark grey, indeed mostly even black.* (Gast and van der Auwera 2011: 6)
- (48) *Seller to client: Both tools are strong. This one is made of strong aluminum, and that one is even made of [steel]_F.* (Greenberg 2016:6)
- (49) *My hat got stuck on a branch. I wonder whether John or Bill can help me fetch it.*
 a. *The branch is 2.50m high. Neither John nor Bill can fetch the hat. John is 1.70 m. tall. He is definitely too short for that. And Bill is even [shorter]_F*
 b. *The branch is 1.50m high. Both John and Bill can fetch the hat. John is 1.70m tall. He is definitely tall enough for that. And Bill is even [taller]_F* (Greenberg, 2015, 2018)

Gast and van der Auwera 2011 note that *even* is felicitous in (47) although “it is... stated that leather seats in automobiles are MOSTLY black, and there is no reason to assume that black is, in any way, a less likely color for a car seat than dark gray” (p. 6). Greenberg 2016 points out that *even* is felicitous in (48) although, given our knowledge about what working tools are usually made of, ‘The blue tool is made of steel’ is not less likely but rather more likely than its focus alternative ‘The blue tool is made of strong aluminum’. Finally, Greenberg (2015, 2018) observes that to explain the felicity of *even* in both (49a) and (49b) we will have to take ‘Bill is shorter than 1.70m’ to be less likely than ‘Bill is 1.70m’ in (49a)) and ‘Bill is taller than 1.70m’ to be less likely than ‘Bill is 1.70m’ in (49b). These two opposite likelihood judgments seem unmotivated given that they depend on accidental factors, namely the height of the branch. Comparative unlikelihood, then, does not seem necessary for the felicity of *even p*.

In addition, Greenberg 2015, 2018 points out that comparative unlikelihood requirement is not sufficient for a felicitous use of *even* either. For example, the felicity contrast in (50) is unaccounted for since p (*She gave birth to a boy / a girl*) asymmetrically entails and is less likely than q (*She gave birth*), so *even* is wrongly predicted to be felicitous in both cases:

- (50) Context: Any princess who gives birth can stay in the palace. If she gives birth to a boy she also becomes a queen (i.e. on average 50% of those who give birth get to be queens):
 A: *What’s happening with Princess Jane?*
 B: *She gave birth. She (even) gave birth to [a boy]_F / # [a girl]_F*

The final challenge for the comparative likelihood approach to *even*, pointed out by Greenberg 2015, 2018, is most relevant to us. As seen in (29) above (*Danny is 1.75m tall and Yosi is even taller / even 1.80m*), the presence of *even* leads to an evaluative inference for both Danny and Yosi, so both of them are entailed to be tall, i.e. have a degree of tallness which is at least as high as the standard. We saw that if this inference is rejected *even* is infelicitous (see (30) above). This sensitivity of *even* to standards is not accounted for by merely requiring that *p* is less likely than *q*.³⁵

3.7.2 A revised ‘gradability-based’ scalar presupposition for *even* with hardwired sensitivity to standards

Given these challenges for the ‘likelihood-based’ view, Greenberg (2015, 2018) suggests a revised, ‘gradability-based’ scalar presupposition for *even*. The suggestion is based on an idea in Rullmann 2007, that *even* ranks the alternatives by “correlating them with a graded property which is salient in the context” (p. 11), and on Beck’s analysis of comparative correlatives like (51) as comparative conditionals, intuitively interpreted as in (52):

(51) *The better Otto is prepared, the better his talk is*

(52) *In all accessible worlds w_1, w_2 where Otto’s maximal degree of preparation in $w_2 >$ his maximal degree of preparation in w_1 , his degree of success in $w_2 >$ his degree of success in w_1*

Inspired by these ideas, Greenberg proposes that *even* (C_F) (*p*) (*w*) is defined iff given a contextually supplied gradable property *G*, and an entity *x*, denoted by some non-focused / contrastive topic constituent in *p* (e.g. *that tool* in (48), *Bill* in (49)), the following holds:

(53) *For all contextually relevant focus alternatives to p, q in C_F distinct from p :*

$$\begin{aligned} &\forall w_1, w_2 [w_1 R w_0 \wedge w_2 R w_0 \wedge w_2 \in p \wedge w_1 \in [q \wedge \neg p]] \rightarrow \\ &[the\ max\ (\lambda d2.G(d2)(x)(w_2)) > \\ &the\ max\ (\lambda d1.G(d1)(x)(w_1)) \wedge the\ max\ (\lambda d1.G(d1)(x)(w_1)) \geq\ standard_G] \end{aligned}$$

In prose, *Even* (C_F) (*p*) (*w*) is defined iff for all distinct alternatives *q* in C_F the following two conjuncts hold: (a) *x* is more *G* (e.g. physically stronger / suitable for fetching the hat, etc.) in all accessible *p* worlds than in all accessible *q-and-not-p* worlds (the worlds where the exhaustified alternative holds), and

³⁵ Nor is this sensitivity to standards accounted for by other suggestions for capturing the ‘stronger than’ relation in the scalar presupposition of *even*, e.g. that *p* is more informative than *q* (Kay 1990), more noteworthy than *q* (Herburger 2000), etc. See Greenberg 2018a for further discussion.

(b) in the *q-and not-p* worlds *x* is considered to have *G* (i.e. *x*'s degree of *G* is at least as high the salient standard of *G*). To illustrate how this presupposition works, consider first the minimal pair in (54)-(55):

(54) *John won the silver medal in the competition. Bill even won [gold]_F*

(55) *John won the gold medal in the competition. Bill (??even) won [silver]_F*

Assume that with the felicitous (54) we are measuring Bill's degree of success, i.e. ***x=Bill*** and ***G=successful***. We then get the presupposition in (56):

(56) *For all contextually relevant focus alternatives to p, q in C_F, distinct from p:*

$\forall w1, w2 [w1 R w0 \wedge w2 R w0 \wedge w2 \in \text{Bill got gold} \wedge w1 \in [\text{Bill got silver} \wedge \neg \text{Bill got gold}]] \rightarrow$
 $[the \max (\lambda d2. \text{SUCCESSFUL } d2)(\text{Bill})(w2)) > the \max (\lambda d1. \text{SUCCESSFUL } (d1)(\text{Bill})(w1)) \wedge$
 $the \max (\lambda d1. \text{SUCCESSFUL } (d1)(\text{Bill})(w1)) \geq standard_{\text{SUCCESSFUL}}]$

In prose: (a) Bill is more successful in the accessible worlds where he got gold, than in those where he got silver-and-not-gold, and (b) his degree of success in the accessible worlds where he won silver-and-not-gold is at least as high as the salient standard of successfulness (i.e. he is still considered successful). Since both conjuncts are easily met, the felicity of (54) is accounted for.

In contrast, assuming again ***x=Bill***, ***G=successful*** as above, the first conjunct in the presupposition of (55), requiring that Bill is more successful in the accessible worlds where he got silver, than in those where he got gold-and-not-silver, is not met, thus correctly predicting the infelicity of *even*.

One may wonder whether the ability to accommodate any *G* does not lead to an over generation risk. For example, wouldn't accommodating *G* with a reversed scale, measuring degrees of *UNsuccessfulness*, wrongly predict the infelicitous (55) to become felicitous? The answer seems negative, as can be seen in (57):

(57) $\forall w1, w2 [w1 R w0 \wedge w2 R w0 \wedge w2 \in \text{Bill got silver} \wedge w1 \in [\text{Bill got gold} \wedge \neg \text{Bill got silver}]]$
 $\rightarrow [the \max d2(\lambda d2. \text{UNSUCCESSFUL } d2)(\text{Bill})(w2)) > the \max d1 (\lambda d1. \text{UNSUCCESSFUL}$
 $(d1)(\text{Bill})(w1)) \wedge the \max d1 (\lambda d1. \text{UNBSUCCESSFUL } (d1)(\text{Bill})(w1)) \geq standard_{\text{UNSUCCESSFUL}}]$

What is crucial here is the sensitivity of *even* to standards: Although the first conjunct is now true (Bill is indeed more unsuccessful in the accessible worlds where he got silver, than in those where he got gold-and-not-silver), the second one is false. It requires that Bill's degree of being 'unsuccessful' in the

accessible worlds where he got gold-and-not-silver is at least as high as the standard of unsuccessfulness. But this cannot be met since winning gold is maximally successful.³⁶

The gradability-based presupposition can also explain cases, like the ones in (48)-(50) above, where what determines the felicity of *even* is not the relative likelihood of the alternatives, but the relative degree of the tool's physical strength or suitability for this work in (48), Bill's degree of (un)suitability for fetching the hat' in (49a)-(49b), and princess Jane's degree of happiness or importance in (50).

Finally, and what is most relevant for us, the sensitivity of *even* to standards of comparison can also account for the evaluative inference triggered by *even* and seen in sentences like (29) (*John is 1.75m tall. Bill is even 1.80. tall*). Assuming that the accommodated gradable property G measures suitability of Bill for the basketball team, the scalar presupposition of *even* in this case is as (58):

$$(58) \quad \forall w1, w2 [w1 R w0 \wedge w2 R w0 \wedge w2 \in \text{Bill is 1.80m} \wedge w1 \in [\text{Bill is 1.75m} \wedge \neg \text{Bill is 1.80m}]] \rightarrow [\\ \text{the max } d2(\lambda d2. \text{SUITABLE}(d2)(\text{Bill})(w2)) > \text{the max } d1(\lambda d1. \text{SUITABLE}(d1)(\text{Bill})(w1)) \wedge \text{the} \\ \text{max } d1(\lambda d1. \text{SUITABLE}(d1)(\text{Bill})(w1)) \geq \text{standard}_{\text{SUITABLE}}]$$

In prose: Bill's degree of suitability (for the basketball team) is higher in the accessible worlds where he is 1.80m tall than in those where he is 1.75m (and not 1.80 m) tall, and in the latter kinds of worlds his degree of suitability for the team is at least as high as the standard of suitability (i.e. being 1.75m tall is still considered suitable for the team).

Since the degree of suitability for the team in this case depends on height, the presupposition is only met iff being 1.75m tall is considered tall enough for getting into the team, i.e. only if being 1.75m tall reaches the salient standard of tallness in the contexts. In case Bill's height is explicitly taken to be less than the salient standard of tallness, as in (30), the presupposition fails, thus causing infelicity. This is, then, the reason for the evaluative entailment regarding both John's and Bill's tallness.³⁷

³⁶ As shown in Greenberg 2018a, this explanation is supported by the fact that (i) is much better than (55):

(i) *I don't think Bill will win the gold medal. He is not that good. It is more probable that he will win the silver or even the [bronze]_F medal.*

Notice that the 'comparative unlikelihood' presupposition again makes the wrong predictions in this case: Winning bronze is more likely than winning silver, just as winning silver is more likely than winning gold, so the comparative likelihood presupposition fails for (i), just as it does for (55), wrongly predicting both to be equally infelicitous. In contrast, the gradability-based presupposition can be met with (i) (unlike what happens in (55)) if we accommodate a G scale with measures degrees of unsuccessfulness (or disappointment) and a new standard, where getting anything below gold can be considered unsuccessful or disappointing.

³⁷ As a reviewer points out, given the flexibility of the accommodated G and of the scale associated with it, this semantics of *even* predicts that we can find cases where John and Bill are both tall, and Bill is taller than John, but *even* is infelicitous. An example is a case where the salient scale is of suitability to be on a bobsleigh team, for which you have to be tall, but not too tall. Indeed, the prediction seems to be borne out, as can be seen in (i):

3.7.3 Explaining the sensitivity of BIXLAL to standards using the ‘gradability-based’ presupposition

We now suggest that the gradability-based presupposition developed to capture the ‘stronger than’ relation with *even* is the right one for *BIXLAL* as well. Thus, we reformulate the presupposition of (20) (*Danny is tall and Yosi is BIXLAL tall*) in (35) above as in (59), where *G* measures Yosi’s degree of suitability for the basketball team:

- (59) For all contextually relevant comparison classes C_1 in C_F , distinct from C_2 :
- $$\forall w1, w2 [w1 R w0 \wedge w2 R w0 \wedge w2 \in \exists d \text{ tall } (Yosi, d) \wedge d \geq \text{standard } (C_2, \text{tall}) \wedge w1 \in \exists d \text{ tall } (Yosi, d) \wedge d \geq \text{standard } (C_1, \text{tall}) \wedge \neg \exists d \text{ tall } (Yosi, d) \wedge d \geq \text{standard } (C_2, \text{tall})] \rightarrow [\text{the max } d2 (\lambda d2. \text{SUITABLE } (d2)(Yosi)(w2)) > \text{the max } d1 (\lambda d1. \text{SUITABLE } (d1)(Yosi)(w1)) \wedge \text{the max } d1 (\lambda d1. \text{SUITABLE } (d1)(Yosi)(w1)) \geq \text{standard}_{\text{SUITABLE}}]$$

In prose: (a) Yosi’s degree of suitability for the team is higher in the accessible worlds where he is at least as tall as the standard of tallness determined by C_2 , than in those worlds where this standard is determined by C_1 and not by C_2 . And (b) in the latter kind of worlds Yosi is suitable for the team (i.e. his degree of suitability for the team is at least as high as the salient standard of suitability).

As in the simpler version of the presupposition of *BIXLAL* in (35) above, where *p* is required to be stronger than *q*, here the first conjunct is met if the standard of tallness required for getting accepted to the team, determined by C_2 , is higher than the one determined by C_1 . What is new here is the requirement expressed in the second conjunct in (59), namely that in the accessible worlds where Yosi is at least as tall as the lower standard, determined by C_1 , he is still considered tall enough to be suitable for the team. This, in turn, requires that the salient comparison class *C* with respect to which Danny, in A’s utterance, is evaluated, should make Danny tall enough for the team as well, since this comparison class is included³⁸ in C_1 by virtue of being salient. Since Danny is indeed explicitly asserted to be tall by A, the presupposition is easily met.

-
- (i) Context: To be suitable for a bobsleigh team one has to be at least 1.60m tall, but not taller than 1.78m.
 A: John is suitable. He is 1.75m tall. And what about Bill?
 B: He is (#even) 1.80m

Indeed, whereas the *even*-less version of (i) is perfectly fine, the presence of *even* renders it infelicitous. In this case, the exhausted alternative *q*, (you being 1.75m but not 1.80m tall) ranks one higher on the pertinent scale than the prejacent (you being 1.80m tall), leading to failure of the ‘gradability-based’ presupposition, and hence correctly predicts the infelicity of *even*.

³⁸ Or, given the discussion in section 3 above, identical to C_1 .

Moreover, we can now also derive the inference that Danny is tall in cases like (27) above (*Danny is 1.70m tall, and Yosi is BIXLAL tall*). While here too the prejacent of *BIXLAL*, *p*, is *Yosi is pos C tall*, the alternatives *q* seem to be constructed differently. In particular, given the salient degree modifier in A's utterance (*Danny is 1.70m tall*) we will assume that *BIXLAL* associates with the degree modifier *pos C* in *p*, so *q* ends up as *Yosi is DEG tall*, for all relevant degree modifiers *DEG*.³⁹ In this case the gradability-based presupposition makes the following two requirements: First, that for all relevant degree modifiers *DEG*, Yosi's degree of suitability for the team is higher in the accessible worlds where he is at least as tall as the standard of tallness determined by *C*, than in the worlds where he is *DEG* tall (and not at least as tall as the standard of tallness determined by *C*). Second, that in the latter kind of worlds Yosi is suitable for the team (i.e. his degree of suitability is at least as high as the salient standard of suitability for the team).

Since 1.70m is a member of the set of relevant degree modifiers *DEG*, due to being a sub-constituent in A's salient sentence⁴⁰, then for this presupposition to be met being 1.70m tall must make one suitable for the team, i.e. tall enough relative to the team's standard of tallness. Hence Danny, who is asserted by A to be 1.70m tall must be considered tall enough as well. This will be felicitous, for example, in a context where we consider a basketball team for kids. If this requirement is not met, i.e. if 1.70m tall is not considered tall enough for the team, as in (28) above, the second conjunct in the presupposition fails and we end up with infelicity.

The potential flexibility of the contextually supplied property *G* and of the scale associated with it leads to some interesting predictions.⁴¹ For example, if the contextually supplied scale measures suitability to be drafted into the army, for which you don't have to be tall (you may well be short, though perhaps not too short), a sentence like (27) (*Danny is 1.70m tall, and Yosi is BIXLAL tall*) is predicted to be felicitous although Danny is NOT considered tall relative to the overall standard in the population. It is enough that he is tall enough for the army (i.e. at least as tall as required by the standard of tallness for the army). This is borne out in reality, as *BIXLAL* is indeed felicitous in such a case.

3.8 Section summary

In this section we looked at the effects of *BIXLAL* in sentences with one dimensional adjectives (like *tall*). We saw that although *BIXLAL* seems to have an intensification effect in such sentences (and is paraphrased as *very* / *-er than*), it differs from 'real' intensifiers and is similar to the Hebrew *even*-like

³⁹ Cf. Breheny et al 2016 for a similar proposal.

⁴⁰ Or is the only alternative degree modifier.

⁴¹ Thanks to a JOS reviewer for pointing up this prediction.

particle *afilu* in its interaction with surface negation, and is also similar to *even* in being sensitive to standards of comparison, thus leading to evaluative inferences. To explain these observations, we proposed that *BIXLAL* is an *even*-like operator which differs from other such particles in that it associates with covert elements. In the sentences with gradable adjectives we considered in this section this tends to be the covert comparison class argument of *POS* (and in some cases *POS* itself). This association indirectly leads to a situation where *p*, the prejacent of *BIXLAL* is evaluated with respect to a higher standard degree (e.g. of tallness) than its alternatives, *q*.

To capture the evaluative inferences triggered by *BIXLAL* regarding salient material outside the prejacent, we analyzed it using an independently made proposal to account for the parallel behavior of English *even* (the ‘gradability-based’ presupposition), with a hardwired requirement that a non-focused element in both the *p* and the (exhaustified) *q* worlds has a degree which is at least as high as the standard on a contextually provided scale *G*.⁴²

We now turn to look at the effects of *BIXLAL* with multidimensional adjectives, which are more varied than with one dimensional ones, and examine whether the proposal can account for these as well.

4. *BIXLAL* as an *even* over ‘covert-based’ alternatives: Cases with multidimensional adjectives

4.1 A wider range of readings

In the previous section we looked at the way *BIXLAL* contributes to the meaning of sentences with adjectives like *tall*, which in e.g. Sassoon’s (2013, in progress) terminology, are ‘one dimensional’ i.e. they measure the degree of an individual *x* on a single scale (e.g. height). In this section we will examine the contribution of *BIXLAL* to sentences with multi-dimensional adjectives. As we will see, *BIXLAL* yields a wider range of readings with such adjectives, and such sentences can be judged true in more situations. As a first illustration consider the following attested examples with the multidimensional adjective *tov* (‘good’):

⁴² The analysis here is based on the gradability-based semantics for *even*, which although independently motivated, is also, admittedly, rather complex. One may wonder whether it would not be simpler to derive the sensitivity of *even* and *BIXLAL* to standards, from some version or other of an additivity presupposition of *even/bixlal* e.g. from a requirement like (i) (thanks to a reviewer for pointing out this direction):

(i) There is a salient comparison class *C* such that there is an individual that is *pos(C)*(tall). However, adopting (i) depends on first clarifying the validity of an additive requirement for *even*, and for its Hebrew correlates, *afilu*, *bixlal* and *BIXLAL*, and supplying some independent motivation for it. This is not a simple matter, as arguments against similar requirements in the semantics of *even* have been raised in the literature (cf. Rullmann 1997, 2007, Lahiri 2007, Wager 2014, Greenberg 2016), and Greenberg & Orenstein 2016 show that they hold for *afilu* and *bixlal* as well. We postpone, then, an in-depth investigation of this direction to future research.

- (60) (Context: A discussion of the way to watch movies of a certain brand in the computer);
Etsli haya tsarix le-hatkin kobets librtem.dll be-axat ha-sifriyot. ze BIXLAL tov
for-me was necessary to-install file librtem.dll in-one the-folders this BIXLAL good
le-adxken oto midey pa'am – meshaper et ha-bitsu'im shel kol ha-tosafey video⁴³
to-update him sometimes improves acc the-performance of all the-software video
"In my computer it was necessary to install a librtem.dll file in one of the folders. It is in general
good to update it every now and then – it improves the performance of all the video softwares."
- (61) (Context: The way to earn money when opening a hamburger stand is the toppings. After all.)
Mi lo same'ax le-hosif la-hamburger bacal metugan, kama prusot gvina, beykon ze
Who not happy to-add to-the hamburger onion fried some slices cheese bacon is
BIXLAL tov⁴⁴
BIXLAL good
"Who wouldn't be happy to add to the hamburger fried onions, a few slices of cheese, bacon is
even better / very good."
- (62) (Context: A discussion of a fashion shop which uses its income for donation)
Ha-xanut nishma'at magniva le-gamrey ve-ha-uvda she-zo truma ze BIXLAL tov⁴⁵
The-shop sounds cool completely and-the-fact that-this donation is BIXLAL good
"The shop sounds completely cool, and the fact that this is a donation is even better"

As can be seen from the glosses, *BIXLAL tov* in (60) can be paraphrased as *good in general*. Intuitively, (60) is defined if installing 'librtem.dll' is good not only for the specific add-on discussed in the forum, but for all (standard) video add-ons, i.e. for video add-ons in general. This is a reading we cannot get with one dimensional adjectives as in *BIXLAL tall* (as in (20) and (27) above

In contrast, in both (61) and (62) *BIXLAL tov* is paraphrased as *even better / very good*, which seems similar to what we found with *tall*. Notice though, that there is a subtle difference between the two sentences: In (61) adding bacon is taken as better than cheese and fried onions since we end up with a higher degree on a single dimension (namely, the one measuring how tasty the hamburger is). In contrast, in (62) buying in this shop is understood to be good with respect to one additional dimension, namely the fact that it is a donation (besides being cool). Again, this is not a reading we find with *BIXLAL tall*.

Crucially, then, and similarly to the situation with one dimensional adjectives discussed in the previous sections, none of these uses of *BIXLL* is directly translated as *even*. Here too, though, we will

⁴³ <http://www.hometheater.co.il/vp1935268.html>, found on Google 21.5.2016.

⁴⁴ <http://doctor-food.blogspot.co.il/2014/11/bbb.html>, found on Google 21.5.2016.

⁴⁵ <http://themaayan.com/archives/221>, found on Google 21.5.2016.

insist that *BIXLAL* is an *even*-like particle associating with covert material. To understand how the interaction of *BIXLAL* with multidimensional adjectives derives the wider range of readings relative to the case with one dimensional adjectives, we will first briefly look at the semantics of these adjectives, mainly following ideas and suggestions in Sassoon (2013, in progress).

4.2 The semantics of multidimensional adjectives

Sassoon (2013, in progress) argues that unlike one dimensional adjectives, multidimensional ones potentially involve measurement along multiple dimensions (or ‘respects’). Thus, for example, Mary can be ill with respect to blood pressure, but not with respect to diabetes, or she can be ill with respect to both, or with respect to other dimensions. Mary can be smart with respect to math, but not with respect to humanities, or with respect to both, etc. Importantly, each such dimension or respect is gradable, and the dimensions are integrated using quantification over dimensions, specifying the number of relevant dimensions in which an individual has to reach the standard degree (e.g. the standard degree for smartness at math, the standard degree for health with respect to blood pressure, etc.)⁴⁶ In contrast, one dimensional adjectives are associated with a unique dimension (in the case of *tall*, for example, this would be height).

To formally capture these intuitions, Sassoon takes adjectives to be ambiguous between a reading which measures the degree of *x* along a specific dimension, and one which measures the number of dimensions in which the individual reaches the standard degree. Given this view, for example *smart* would be ambiguous between e.g. *smart-qua-math*, as in in (63) and a truly multidimensional entry as in (64), where Dim_{SMART} is the set of degree relations *G* denoted by relevant dimensions of the adjective *smart*, i.e. those which are in the domain *D* of relevant smartness dimensions (including, for example, *smart-qua-math*, *smart-qua-history*, *smart-with-people*, etc.):⁴⁷

$$(63) \quad \lambda d. \lambda x. smart_{qua-math}(d)(x)$$

$$(64) \quad \lambda n. \lambda x. Smart(n)(x) = \lambda n. \lambda x. / \lambda G. G \in Dim_{SMART} \wedge G \in D \wedge \exists d[d \geq standard(G, C) \wedge G(x, d)] \geq n$$

⁴⁶ Sassoon further argues that for some adjectives a default choice of this quantification over dimensions is lexically determined. For example, by default, *healthy* and *sick* seems to involve universal and existential quantification over dimensions, respectively, so being healthy means being healthy in ALL (relevant) respects, and being sick means sick in SOME relevant respect. For other adjectives, like *smart*, *stupid* or *optimistic*, there is no default number of relevant dimensions, and the standard number is contextually determined. In this paper we will focus on adjectives of this latter type (but see footnote # 49 for a comment concerning *BIXLAL healthy*).

⁴⁷ The entry in (64) has been slightly modified to fit the present framework, where standards are determined using comparison classes, and where *pos* is type $\langle\langle d, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$. In addition, we explicitly represent Sassoon’s intuition that the dimensions must be ‘relevant’, by requiring them to be members of a domain *D*.

Assuming that type *n* is a special case of type *d* (numbers are cardinality degrees), *smart* has the same type in both readings, namely $\langle d, \langle e, t \rangle \rangle$. Given (63) *smart*_{qua-math} parallels one dimensional adjectives like *tall*, discussed above. In contrast, given the true multidimensional entry in (64), *smart* denotes a relation between numbers *n*, namely degrees on a cardinality scale, and individuals *x*, which holds iff the intersection between the set of properties *G* which are relevant dimensions of smartness and the set of degree relations for which *x*'s degree exceeds the standard degree for *G* (determined the comparison class *C*) is of at least the size *n*.

We will assume, then, that in a sentence like *Bill is smart* the adjective *smart* combines with the null degree modifier *pos*. Given the lexical entry for *pos* above and Sassoon's line of thought, we can now define a flexible *pos* operator which denotes a relation between a comparison class *C*, an adjective *A* and an individual *x*, as in (65), where *d* can cover both degrees on scales associated by adjectives like *tall*, as well as numbers *n*, namely cardinality degrees, measuring the number of dimensions in *A*:

$$(65) \quad \|\text{pos}\|^{\langle g, c \rangle} = \lambda C. \lambda A. \lambda x. \exists d [d \geq \text{standard}(A, C) \wedge A(x, d)]$$

Bill is Pos(C)(A), then, where *A* is a multidimensional adjective, interpreted as in (66). To make the reading more transparent, we mark the standard **number** of *G* properties as *standard_n*, as opposed to *standard_d*, namely the standard **degree** of having a property *G*:

$$(66) \quad \exists n [n \geq \text{standard}_n(A, C) \wedge |\lambda G. G \in \text{Dim}_A \wedge G \in D \wedge \exists d [d \geq \text{standard}_d(G, C) \wedge G(\text{Bill}, d)]| \geq n]$$

For example, *Bill is pos C smart* is true iff the number of relevant dimensions of *smartness* (e.g. smart at math, smart at history, smart with people, etc.) such that Bill's degree exceeds the standard degree, *standard_d*, determined by the comparison class *C* for each of these dimensions, is at least as high as the standard number of dimensions, *standard_n*, for *smart* (determined by *C* as well).

The comparison class, *C*, in such sentences, then, can affect two components, namely the standard degree per dimension (*standard_d*) and the standard number of relevant dimensions (*standard_n*). To illustrate, consider sentences of the form *Bill is pos C smart*, with two comparison classes, that of students in Harvard, *C_{Harvard}*, and that of a small and unambitious college *C_{college}*. First, the standard degree of smartness with respect to, e.g. math, *standard_d*, will be higher given *C_{Harvard}* than given *C_{college}*. In addition, the standard number of dimensions, *standard_n*, can be affected by the comparison class as well, since given *C_{Harvard}* an individual is likely to be required to be smart with respect to more relevant dimensions than given *C_{college}*.

We will now see how this richer semantic structure of multidimensional adjectives relative to one dimensional ones can help explaining the wider range of readings *BIXLAL* induces with such adjectives.

4.3 Accounting for the effects of *BIXLAL* with multidimensional adjectives.

Consider (67):

- (67) A: *Danny xaxam. hu kibel 90 be-matematika. ve-ma im yosi?*
Danny smart. he got 90 at-math and-what with Yosi
“Danny is smart. He got 90 at math. And what about Yosi?”
 B: *hu BIXLAL xaxam.*
He BIXLAL smart
“He is smart in general / very smart”

Similarly to what assumed above for one dimensional adjectives, here too we assume *BIXLAL* associates with the covert comparison class argument C in its preadjacent. However, there are differences in the effects of *BIXLAL* between the two cases. Above we saw that the presence of *BIXLAL* with one dimensional adjectives, as in (20) (*Danny is tall. Yosi is BIXLAL tall*) indirectly leads to a higher degree of tallness of Yosi (relative to Danny). In contrast, the presence of *BIXLAL* in (67) has at least three different effects, exemplified by the three felicitous continuations in (68):

- (68) (...Yosi is *BIXLAL* smart)
 a. He got 100 at math
 b. He is also great at sciences and history
 c. He is great in general, in all fields

Given the first continuation, (68a), Yosi is taken to smart with respect to the same dimension as Danny, i.e. on the *smart-qua-math* dimension. Following Sassoon’s ideas reviewed above then, *smart-qua-math* is treated as a one dimensional adjective, similarly to *tall*, i.e. as in (69):

- (69) $\exists d [d \geq \textit{standard}_a(\textit{smart-qua-math}, C) \wedge \textit{smart-qua-math}(d, \textit{Yosi})]$

Similarly to what proposed above for (20) (*and Yosi is BIXLAL tall*), the scalar presupposition of *BIXLAL* here is met iff the standard degree of smartness-qua-math determined by the comparison class C_2 is higher than the one determined by the contextually salient comparison class C_1 .⁴⁸

But the more interesting cases are those where the adjective is truly interpreted as multidimensional, i.e. where no one dimension is specified, as in (68b,c). In this case, the prejacent is interpreted as in (70), and, given the variation between the comparison classes the scalar presupposition is as in (71):

$$(70) \quad \exists n [n \geq \textit{standard}_n(\textit{smart}, C) \wedge \lambda G. G \in \textit{Dim}_{\textit{SMART}} \wedge G \in D \wedge \exists [d \geq \textit{standard}_d(G, C) \wedge G(\textit{Yosi}, d) \mid \geq n]$$

$$(71) \quad \exists n [n \geq \textit{standard}_n(\textit{smart}, C_2) \wedge \lambda G. G \in \textit{Dim}_{\textit{SMART}} \wedge G \in D \wedge \exists d [d \geq \textit{standard}_d(G, C_2) \wedge G(\textit{Yosi}, d) \mid \geq n] >_c \\ \exists n [n \geq \textit{standard}_n(\textit{smart}, C_1) \wedge \lambda G. G \in \textit{Dim}_{\textit{SMART}} \wedge G \in D \wedge \exists d [d \geq \textit{standard}_d(G, C_1) \wedge G(\textit{Yosi}, d) \mid \geq n]$$

In this case, for p to be stronger than q , the change in the comparison class between p and q can have an effect in two places, namely \textit{stand}_d and \textit{stand}_n . This can be met in one of the following situations (or in some combination of these): Yosi can be smart relative to a higher standard degree in the relevant dimensions of smartness (e.g. he can get higher grades in the relevant fields of study). In addition, Yosi can be smart with respect to a higher standard number of relevant dimensions of smartness. For example, while Danny is smart relative to one dimension, Yosi is smart relative to two, or three relevant dimensions. Finally, Yosi can be smart relative to all relevant dimensions of smartness, leading to a ‘smart in general’ paraphrase of (67).⁴⁹

⁴⁸ For simplicity we use here the simpler form of the presupposition, as in (1) and (8) above, and not the ‘gradability-based’ one.

⁴⁹ An interesting pattern is seen with *healthy*. Consider (i)

(i) Context: All candidates for the trip should be healthy, i.e. should have normal values along important medical parameters (blood pressure, sugar level, heart functioning and normal breathing capacities etc.). We are discussing whether Danny and Yosi can join the trip:
A: *Danny yaxol le-hitsaref. hu bari.* B: *ve-yosi BIXLAL bari*
Danny can to-join. he healthy *And-Yosi BIXLAL healthy*
“Danny can join. He is healthy” *“And Yosi is very healthy”*

(iB) can mean that Yosi is healthy with respect to a higher standard degree along one health dimension, e.g. along the heart functioning parameter. In principle, though, one could also take B’s utterance to mean that Yosi is healthy with respect to more health dimensions than Danny, as seen in the continuation in (ii):

(ii) Danny’s health is fine with respect to all central dimensions. And Yosi is BIXLAL healthy. He doesn’t even have a mild cold!

On the surface, such a continuation seems challenging given Sassoon’s theory, which takes the default standard number of dimensions with adjectives like *healthy* to be equal to the whole domain D , so one is healthy with respect

4.4 Section summary

In this section we examined the wider range of effects *BIXLAL* yields in sentences with multidimensional adjectives (compared to the situation with one dimensional adjectives). We maintained the idea that *BIXLAL* is an *even*-like particle over associating with covert material, and specifically with the covert comparison class argument in the positive form of such adjectives. Following ideas in Sassoon (2013, in progress) about the richer semantic structure of such adjectives relative to one dimensional ones, we proposed that taking the comparison argument to be focused and to introduce alternatives, the prejacent of *BIXLAL* *p* can be considered stronger than its relevant focus alternatives *q* (with a salient comparison class) if we end up with a higher standard degree along a specific dimension, or with a higher standard number of relevant dimensions, and used this variability to derive the range of readings induced by *BIXLAL* in such cases.

5. Other cases of operations over ‘covert-based’ alternatives, NPI-hood and prosody issues

5.1 *BIXLAL* is not alone: Other scalar operators, over other types of ‘covert-based’ alternatives

The proposal presented in sections 3 and 4 of this paper, according to which *BIXLAL* is an *even*-like operator over ‘covert-based’ alternatives, will be less convincing if this turns out to be the only attested particle operating over such alternatives. Are there other *even*-like or, more generally, other scalar focus-sensitive operators which have been analyzed, or which can be analyzed in a parallel fashion?

to *all* relevant health dimensions. If Danny is considered healthy with respect to all health dimensions, how can the presence of *BIXLAL* strengthen its prejacent so Yosi is taken to be healthy with respect to more dimensions?

Notice, though, that we CAN end up with a stronger multidimensional interpretation with *healthy* if we take into consideration the default domain of relevant health dimensions, i.e. if Danny is healthy with respect to all health dimensions in the default domain *D*, whereas Yosi is healthy with respect to all dimensions in a wider domain of dimensions *D'*. In this case we can assume that Yosi is also healthy with respect to minor health dimension, e.g. he doesn't even have a minor cold (cf. Kadmon & Landman on domain widening with *any*).

There are several potential ways to derive such a domain widening effect in our system. If we continue to assume that *BIXLAL* associates with the covert comparison class, we can propose that since both comparison classes and domains are keyed to the context, a change of the former can indirectly affect also the latter. For example, a context where consider a comparison class of professional travelers can lead to considering a wider set of health dimensions are considered relevant (so even having a minor cold counts). An alternative direction is to assume that in such cases *BIXLAL* does not associate with the comparison class argument anymore, but with a covert domain restriction argument over relevant dimensions. This, however, will require taking such domains to be syntactically represented in the semantics of multidimensional adjectives, which is not assumed in Sassoon's original work, and which requires independent theoretical and empirical motivation. We leave further examination of these, and possibly other options to future research.

The answer to this question seems positive. Let us start with Chierchia’s 2013 characterization of the covert operators *E* and *O*, which to a large extent inspires the present proposal on *BIXLAL*. Chierchia discusses the way these operators are involved in the semantics of Negative Polarity items (NPIs), and one of his main claims is that NPIs are expressions which obligatorily trigger alternatives. Crucially, according to Chierchia, once such alternatives are triggered, they must be operated upon (or ‘exhaustified’) by either a covert operator similar to *only*, namely *O* (which correspond to the *exh* operator discussed in, e.g. Chierchia et al 2011), or one similar to *even*, namely *E*. What is interesting for us are cases where Chierchia takes *O* and *E* to associate with covert material. In particular, Chierchia suggests that *O* involved the semantics of the NPI *any* operates over sub-domain alternatives. For example, a sentence like *I don’t have any potatoes* has a similar assertion to that of *I don’t have potatoes*, namely $\neg \exists x \text{ Potato}(x) \wedge D(x) \wedge \text{Have}(I, x)$, but it obligatorily triggers subdomain alternatives of the form $\neg \exists x \text{ Potato}(x) \wedge D'(x) \wedge \text{Have}(I, x)$, where $D' \subset D$. These alternatives are then exhaustified by the covert *only*-like operator *O*, which rejects all stronger alternatives. This is only licensed in Downward entailing contexts, hence the NPI-hood of *any*.

The covert *even*-like *E*, on the other hand, is claimed to operate over degree-based alternatives with ‘minimizer’ NPIs like *give a damn* or *at all*. For example, Chierchia takes *give a damn* to express the property of caring to the most minimal degree, namely $\lambda x \exists s \text{ care}(x, s, d_{\min})$, which obligatorily triggers degree-based alternatives of the form $\lambda x \exists s \text{ care}(x, s, d')$, where $d' > d_{\min}$. Similar considerations apply to expressions with *at all*. Again, degree based alternatives must be operated upon, this time by the covert *even*-like operator *E*, which requires its associate to be stronger (e.g. less likely) than all alternatives. Chierchia, again, shows how such an operation is only licensed in Downward entailing contexts, hence the NPI-hood of *give a damn* and *at all*.

Are there also **overt** *even*-like particles over ‘covert-based’ alternatives reported in the literature? Here again the answer seems to be positive. Chierchia 2013 examines the focus particle *bhii* in Hindi, originally analyzed in Lahiri’s 1998 work as an overt *even*-like operator. Lahiri suggested that when *bhii* combines with the numeral *ek* (‘one’) it yields numeral-based alternatives (e.g. *one, two three*), whereas when it combines with the indefinite *koi* it seems to associate with the ‘contextually weakest predicate’. Chierchia reinterpret this by taking *koi bhii* to express an *even*-like operation over domain-alternatives (which are ordered by probability), resulting from association with a covert domain restriction argument.⁵⁰

Another relevant overt particle is the Russian *even*-like particle *voobščē* (Iatridou & Tetevosov 2016, Miashkur 2017, to appear). Iatridou & Tetevosov 2016 point out in a footnote that in addition to its

⁵⁰ Cf. also Erlewine 2013 on overt focus sensitive operators associating with covert traces.

‘discursive’ function as operating over whole questions, mentioned in section (2.2) above, *voobšče* can yield an *at all* reading as well:

- (72) *Lev voobšče ne čital “Devida Kopperfil’da”*
Lev voobšče NEG read.PST D. C.
Lev did not read “David Copperfield” at all” (Iatridou & Tetevosov 2016)

Moreover, *voobšče* can also give rise to a *taller / smarter* reading in UE contexts, similarly to what we saw with *BIXLAL* above (Miashkur 2017, to appear, and Keren Khrizman p.c), indicating that it can also associate with covert material and operate over ‘covert-based’ alternatives:

- (73) *A: Džon 1.85. A Bill? /Čto nasčet Billa?*
John 1.85. But Bill?/ What on account of Bill
“John is 1.85. And what about Bill?”
B: On voobšče vysokij.
he voobšče tall.
“He is even taller”
- (74) *A: U Džona diabet. A u Billa? /Čto nasčet Billa?*
(At) John diabetes. But(at) Bill?/ What on account of Bill?
“John has diabetes. And what about Bill?”
B: On voobšče bolen.
he voobšče sick.
“He is even more ill”
- (75) *A: Džon xoroš v matematike. A Bill? /Čto nasčet Billa?*
John good at math. But Bull?/What on account of Bill?
“John is good at math. And what about Bill?”
B: On voobšče umen.
he voobšče smart.
“He is even smarter / smart in general”

These observations may be taken as further indicating that *even*-like operators over ‘covert-based’ alternatives are attested cross linguistically.⁵¹

⁵¹ Tsirkin-Sadan’s 2015 diachronic study of *bixlal* points out the similarities between it and *voobšče* and suggest that they may result from the contact of Hebrew with Yiddish and Slavic languages.

Finally, the ability / inability to operate over ‘covert-based’ alternatives has been reported with some *only*-like particles as well. Orenstein & Greenberg, 2012, Orenstein 2016 and Greenberg & Orenstein 2016, for example, use the operation over such alternatives to derive some special readings of the Hebrew *only*-like particles *be-sax ha-kol* and *STAM*, and Wiagend 2016 applies these ideas to the analysis of ‘unexplanatory’ uses of *just* (as in *I was sitting here and the lamp just broke*).

Given these proposals, we conclude that the inability vs. ability to associate with covert elements, and to operate over ‘covert-based’ alternatives, is not just found with *even* / *afile* / *bixlal* vs. *BIXLAL*, but is found more generally, and should be thus added to the inventory of parameters along which focus sensitive scalar – *even*-like and *only*-like - particles vary both within and across languages.

5.2 BIXLAL operating over other types of covert-based alternatives

In the main part of this paper we concentrated on cases involving gradable predicates, where *BIXLAL* associates with a covert comparison class argument. But if indeed it is the ability of *BIXLAL* to associate with covert material which distinguishes it from *even*, *afile* and unaccented *bixlal*, we might expect to also find cases in which *BIXLAL* associates with other covert elements, and giving rise to other types of ‘covert-based’ alternatives. For example, in the section above we described Chierchia’s 2013 claims about overt and covert scalar operators operating over domain alternatives. Can *BIXLAL* operate over such alternatives as well?

The answer seems to be positive, as seen in (76a), inspired by examples in Kadmon & Landman’s 1993 paper on *any*, where *BIXLAL* gets an *at all* use, and (76b) where it gets an *in general* use:

- (76) a. *Le-dani ein tapuxey adama tovim. Ve-le-yosi ein BIXLAL tapuxey adama*
To-Danny not-have potatoes good and-to-Yosi not-have BIXLAL potatoes
“Danny doesn’t have good potatoes, and Yosi doesn’t have potatoes at all”
- b. *ba-xanut moxrim dgey yam, ve-dagim BiXLAL*
in-the-shop sell fish sea and-fish BIXLAL
“In the shop they sell sea fish and fish in general”

Maintaining our main assumption that *BIXLAL* is an *even* operator over covert-based alternatives, we can analyze such cases by taking *BIXLAL* to associate with a covert domain restriction argument of the existential quantifier. In these cases *p* is stronger than its alternatives since it involves a wider domain (the domain of both good and bad potatoes in (76a), and of both types of fish in (76b)).

Notice though, that unlike Kadmon & Landman's claims about *any*, and Anderssen's 2006 claims about German *überhaupt*, *BIXLAL* should NOT be analyzed as an inherent domain-widener, but rather as an *even*-like operator, which in cases like (76) uses domain widening as a strategy to satisfy the presupposition that *p* is stronger than its alternatives. Using Kadmon & Landman's terminology, the main function of *bixlal*, then, is strengthening, and widening the domain is one of the options which can be used with this particle to induce strengthening.⁵²

5.3 BIXLAL and NPI-hood: Two strategies for deriving *at all* readings

In addition to understanding how the variety of readings of *bixlal* and *BIXLAL* are generated in Hebrew, the proposal above has some potential implications concerning the ways *at all* readings can be derived.

Above we suggested that it is the *even*-operation of *BIXLAL* over 'covert-based' alternatives which yields the *at all* use with negated predicates (as in (45) above). This gives a novel kind of empirical support to existing analyses which take English *at all* to be based on a covert *even*-like operator (e.g. Krifka 1995, Chierchia 2013). Novel – since until now existing reports of NPIs based on overt *even*-like operators usually concern *even*+overt *one* expressions (cf. Gast & van der Auwera 2011, 2013 for a review). In contrast, as seen above, Hebrew *at all* is based on an overt operator over 'covert-based' alternatives.

On the other hand, it is interesting to note a difference in the way *at all* type NPIs are generated in English according to Chierchia 2013, and in Hebrew, according to the present proposal. As mentioned above, Chierchia 2013 takes *at all* to be a kind of degree modifier, which (a) indicates a minimal degree on a certain scale and (b) which obligatorily triggers alternative (higher) degrees on these scale. Then a covert *E(ven)* operator is triggered by the need to operate over these alternatives.

In contrast, the strategy described above for yielding the *at all* use of *BIXLAL* can be seen as the opposite: *BIXLAL* is not taken as the alternative-triggering expression, which then necessitates a covert *even*-like operator to operate over these alternatives. Instead, it is the *even*-like operator itself, which needs alternatives to operate on, and which seems to be specified for 'covert'-based' alternatives.⁵³ This

⁵² Thanks to Keren Khrizman for a discussion regarding this point. Indeed, as pointed out by two reviewers, the cases discussed in section 3 and 4 above where *BIXLAL* appears with gradable predicates can be analyzed as involving super-domain alternatives, where *p* involves a narrower domain, and not as inducing widening. For example, in discussing (20) (*Danny is tall, and Yosi is BIXLAL tall*), the alternatives to *p Yosi is pos C₂ tall* are propositions *q* of the form *Yosi is pos C₁ tall*, where *C₁* is a super-domain of *C₂* (e.g. the comparison class *C₂* has the tall people in *C₁*). Cf. Nicolae (2012b, 2012b) on super-domains used with positive polarity items.

⁵³ Another possible way to understand the distributional difference between English *at all* and Hebrew *BIXLAL*, though, is to hypothesize that unlike what is suggested in Chierchia 2013, English *at all* is similar to Hebrew *BIXLAL* (and Russian *вообще*) in being an overt *even*-like operator. Given this direction English *at all* can be taken to differ from *BIXLAL* in that it can only associate with 'weak' alternatives, at the minimal endpoint of the scale, and

difference in the strategies of deriving the *at all* reading is supported by the greater flexibility of *BIXLAL* relative to English *at all*, namely that it is not an NPI and can appear in both UE and DE contexts, associating with ‘high’ and with ‘low’ alternatives on the scale, respectively.

5.4 Issues of prosody

We saw that *BIXLAL* is not the only focus sensitive particle which can associate with covert elements and operate on ‘covert-based’ alternatives. Rather it is a member of a family of such operators cross linguistically. On the other hand, *BIXLAL* does seem to be unique in that the special readings found with it (paraphrased as *very*, *at all*, *in general*), which we analyzed above as resulting from its association with covert material, are only found in the accented version of the operator.

How can this accentuation of *BIXLAL* be explained? Notice, first, that accentuation in this case does not seem to indicate that *BIXLAL* is focused, i.e. that it itself triggers alternatives. Given the analysis above what is focused, and thus what triggers alternatives, is a covert element that *BIXLAL* associates with (e.g. a covert comparison class argument). Instead, we will consider here two potential reasons for the accentuation of *BIXLAL*. One reason, examined in Greenberg & Khrizman (2012a,b,c), Greenberg 2014, is that *BIXLAL* is accented due givenness and hence deaccentuation of the rest of the material in the sentence (cf. Wagner (2012), Rochemont (2013)). In such a case the accent shifts from the given element to the operator, similarly to what has been suggested in Egg & Zimmermann (2011) for accented *DOCH*, and Umbach (2009) for accented *NOCH*. Notice, though, that while this direction can be used to explain cases like (20) (*Danny is tall, and Yosi is BIXLAL tall*), where the adjective *tall* is indeed given in the previous sentence, it is less clear in cases like (27) (*Danny is 1.75m. Yosi is BIXLAL tall*).⁵⁴

A second potential explanation is that since focus must be prosodically realized somewhere, and since it cannot be realized on the covert associate of the operator (as covert elements are by definition prosodically null), accent lands on *bixlal*, turning it into *BIXLAL*.⁵⁵ Given this direction, though, we still need to explain why accent does not fall on the overt adjective instead (e.g. on *tall* in (20)). Moreover, we will have to understand why other operators which were taken to associate with covert material and

must scope above DE operators. That there are such *even*-like operators in a variety of languages is well known (cf. Giannakidou 2007, Crnić 2011, Gast & van der Auwera 2011). We leave a more thorough empirical and theoretical examination of this hypothesis about English *at all* to future research.

⁵⁴ The direction is also challenged by cases like (45) above (#*Danny is not tall, and Yosi is BIXLAL tall*), where *tall* is given, but *BIXLAL* is infelicitous (though this infelicity may be due to the sensitivity of *BIXLAL* to standards, as explained in section 3.7).

⁵⁵ Thanks to a JOS reviewer for pointing out this direction.

mentioned in section 5.1 are not accented as well. While accentuation is obviously impossible for the operators *E* and *O* examined in Chierchia 2013, which are themselves covert and hence cannot be prosodically marked, we will have to understand why the assumed association of the overt Hindi *bhii*, Russian *voobščē*, Hebrew *be-sax ha-kol* and English ‘unexplanatory’ *just*, mentioned above, does not result in accentuation.

An interesting particle to examine in this sense is German *überhaupt* and its accented version, *UBERHAUPT*, which has several parallel readings to *bixlal* and *BIXLAL*. Until now though, this particle has not been analyzed as an *even*-like operator over covert-based alternatives (cf. Anderssen (2006), Rojas Esponda (2014)).⁵⁶

More research, then, is needed for a better understanding of the correlation between association-with-covert-associates and accentuation found with *BIXLAL*, as well as further examination of whether similar correlations can be found with other particles cross linguistically.⁵⁷

6. Summary and directions for further research

Most of the discussion in the literature of the scalar, focus sensitive particle *even*, and on its cross-linguistic correlates concentrates on cases where such particles associate with an overt, usually accented focused element in their prejacent, and where they are easily translated as English *even*.

In this paper we looked at a particle which has a more challenging nature, namely *bixlal*. While in its non-accented version this particle is very similar to *even* and to the default *even*-like particle in

⁵⁶ Notice that the Hebrew *STAM*, which has been analyzed as associating with covert material in Orenstein & Greenberg 2010, Orenstein 2016, is accented as well, but this was taken to result from the givenness and hence de-accentuation of all other overt material in the sentence. This seems different from what we find with *BIXLAL*.

⁵⁷ An interesting question, pointed out by a reviewer, is whether the correlation found with *bixlal* is bi-conditional, i.e. whether or not we should also assume that whenever *bixlal* is accented (i.e. occurs as *BIXLAL*) we necessarily end up with an operation over covert-based alternatives. A potential counterexample for this assumption is (i), inspired by examples in Kadmon & Sevi 2014, Korat 2015. Notice that the unaccented *bixlal* can occur here as well, in which case it is *ga'on* (*genius*) which is accented:

(i) *Dani xaxam, ve-yosi BIXLAL ga'on / bixlal G'AON*
 Danny smart and-Yosi BIXLAL genius / *bixlal GINIUS*
 “Danny is smart, and Yosi is even a genius”

Notice, however, that this case involves an extreme adjective correlate (*genius*) of the adjective (*smart*), which share the same scale (cf. Morycki 2012). If this is not the case, as in (ii), *BIXLAL* cannot be accented:

(ii) (Context: contemplating who should we marry):
Dani ashir, ve-yosi #BIXLAL ga'on / bixlal G'AON
 Danny rich and-Yosi BIXLAL genius / *bixlal GINIUS*
 “Danny is rich, and Yosi is even a genius”

It may be, then, that the semantics of extreme adjectives involves a covert element that *BIXLAL* can associate with. Further research is needed for clarifying this direction, and more generally, for understanding whether the bi-conditional [*association-with-covert-material* ↔ *accentuation of the particle*] indeed holds for *BIXLAL*.

Hebrew, *afilu*, when it is accented, i.e. occurring as *BIXLAL*, it leads to a variety of readings paraphrased with *very* / *-er than* / *in general* / *at all* etc., which are not reducible to *even* in an obvious way.

Our main claim was that we can derive the full range of data with *bixlal* / *BIXLAL* from the interaction between the following minimal assumptions:

- (a) That both *bixlal* and *BIXLAL* have the same core semantics as *afilu* and *even*, i.e. as scalar, focus sensitive particles, presupposing that their prejacent is stronger than all relevant / salient focus alternatives (where ‘stronger than’ is characterized using Greenberg’s (2015, 2018) gradability-based scalar presupposition).
- (b) That *bixlal* operates over regular focus alternatives, similarly to *afilu* ⁵⁸
- (c) That in contrast, *BIXLAL* operates over ‘covert-based’ alternatives, by associating with a covert focused element in its prejacent. In sentences with gradable adjectives in the positive form this covert focused element tends to be the comparison class argument of *pos*, C.
- (d) That with one dimensional adjectives, variation of alternatives along the comparison class argument indirectly leads to interpreting *p* relative to a higher standard degree than the standard used in *q*. Whereas with multidimensional adjectives this can also lead to interpreting *p* relative to a higher number of relevant dimensions.

Beyond understanding the intricate distributional and semantic patterns with *bixlal* / *BIXLAL* in Hebrew, the paper has some more general contributions. It provides support for the claim that comparison classes arguments should be syntactically represented, and for theories which view (some kinds of) NPIs as involving an *even*-like operator. A more central contribution lies in a better understanding of the typology of *even*-like particles in natural languages. As mentioned in the introduction, the typological research has already identified a number of parameters relevant for the characterization of such particles. The present paper adds the (in)ability to associate with covert material, and to operate over ‘covert-based’ alternatives to the existing inventory of parameters along which even-like particles vary, both within and across languages. Finally, the (in)ability to operate over covert-based alternatives is reported for overt and covert *only*-like particles as well (cf. section 5.1 above). Together with other reports about shared parameters of variation (e.g. Grubic 2012, Tomaszewicz 2012, Charnavel 2017, Greenberg & Orenstein 2016, Liu 2017), the relevance of this parameter to both *even*-like and *only*-like particles supports viewing them as members of a wider family of scalar operators in natural language.⁵⁹

⁵⁸ Though, as we saw above, it can also operate over whole questions, similarly to several *even*-like particles examined in Iatridou & Tetevosov’s 2016, see also Daniels 2018 for a revision of Iatridou & Tetevosov’s analysis.

⁵⁹ Cf. Greenberg 2018b for a mirror imaged semantics for English *only* and *even*, which exploits these parallel parameters of variation.

The proposal still leaves several open issues concerning families of *even*-like operators, like the one in Hebrew, with members such as *afilu* and *bixlal* / *BIXLAL*. More research is needed to examine and account for other differences between them, besides the (in)ability to operate over ‘covert-based’ alternatives. We would like to end this paper by briefly mentioning several such differences.

First, all of the examples of *even* translated to Hebrew as *afilu* or *bixlal* above involve adverbials uses. In contrast, when *even* appears in pre-subject position, *afilu* is the only translation:

- (77) *Afilu* / #***bixlal*** *Danny higi’a la-mesiba*
Afilu / *bixlal* *Danny arrived to-the-party*
“Even Danny arrived to the party”

This may suggest that whereas *afilu*, like *even*, can be analyzed as a sentential operator as captured in (1) above, *bixlal* is more restricted and should be only analyzed as a predicate modifier.⁶⁰

A second difference concerns context dependency. Greenberg 2014 and Greenberg & Orenstein 2016 point out that whereas the alternatives for *p* can be easily accommodated with *afilu* (and *even*), with *bixlal* such alternatives need to be constructed based on salient material in previous discourse. Thus, similarly to *afilu* and *even*, *bixlal* is felicitous in (78), but unlike them, it is infelicitous in (79), when no salient material exists in the utterance context that can be used for constructing an alternative:

- (78) *The competition was really successful...*
Dani kibel medalyat kesef ve-yosi afilu / ***bixlal*** *kibel MEDALYA*
Danny got medal silver and Yosi afilu / *bixlal* *got MEDAL*
“Danny got a silver medal and Yosi even got a MEDAL”
- (79) *The competition was really successful....*
Yosi afilu / #***bixlal*** *kibel medalyat zahav*
Yosi afilu / *bixlal* *got medal gold*
“Yosi even got a gold medal”

⁶⁰ Such an analysis has been in fact suggested intuitively in Migron 2003, and more formally in Greenberg & Khrizman 2012, Greenberg 2014, Korat 2015.

This observation does not undermine the *even*-like nature of *bixlal*, but in fact supports it, as similar contrasts were reported about *even*-like particles like *-tak* and *-bhii* in Hindi, *hasta* and *incluso* in Spanish (Schwenter and Vasishth 2000) and *voobšče* and *daže* in Russian (Miashkur 2017).⁶¹

The behavior of *afilu* vs. *bixlal* in questions and in Downward Entailing contexts (beyond negation) should be also compared in future research. For example, in the antecedent of conditionals (80), or in questions (81), it is clear that *afilu* can associate with both ‘high’ and ‘low’ elements, similarly to what has been reported for *even*, but the judgements with *bixlal* are less clear:

- (80) *im dani afilu / **bixlal** yiftor et ha-beaya haxi kala / kasha, hu yitkabel*
If Danny afilu / bixlal will-solve acc. the-problem most easy / hard, he will-be accepted
“If Danny will even solve the easiest / hardest problem, he will be accepted”
- (81) *ha-im dani afilu / **bixlal** yiftor et ha-be’eaya haxi kala / kasha?*
The-weather Danny afilu / bixlal will-solve acc. the-problem most easy / hard
Will Danny even solve the easiest / hardest problem?

Finally, an interesting challenge raised by the proposal above concerns a discursive use of unaccented *bixlal* (cf. footnote #6), seen in (82), which was first discussed in Migron 2003:

- (82) *A: Rina carfatiya? B: lo. Hi **bixlal** / /??afilu britit*
Rina French No. she bixlal Brit
“Is Rina French?” “No way. She is actually British”

Here *afilu* is odd and *bixlal* is perfectly felicitous. On the surface, and unlike all other cases discussed above, there seems to be no scalar relation between the prejacent of *bixlal*, *Rina is French*, and the salient alternative *Rina is British*, which will allow the presupposition that *p* is stronger on a scale than *q* to be met. Indeed, Migron 2003 proposes a non-scalar analysis of such cases, where *bixlal* merely indicates that one alternative is replaced by another. However, Greenberg 2014, Greenberg & Orenstein 2016, Greenberg (in progress) suggest that it is possible to give a scalar analysis of this use of *bixlal*, as an *even*-like operation over a denial speech act, presupposing that the prejacent denial is stronger than alternative

⁶¹ To capture such contrasts one could rely on Fox & Katzir’s (2011), Katzir’s (2014) algorithm for constructing alternatives, and assume that particles such as *-bhii*, *incluso*, *daze* and *bixlal* are constrained in that they only operate over alternatives which are constructed using salient sub-constituents, as opposed to standard focus sensitive particles, which can also use the lexicon as a substitution source. Clearly more research is needed here.

denials (leading to the ‘No way!’ paraphrase). We leave a detailed explication of this suggestion to another occasion.^{62, 63}

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⁶² An indirect support for this proposal comes from Daniels 2018 analysis of ‘*bixlal*’ functioning as ‘our *even*’ in some questions (cf. section 2.2), as involving an *even* operator scoping above a question speech act operator.

⁶³ Greenberg (in progress) take this kind of proposal to subsume cases where *bixlal* seems to lead to presupposition cancelations, as in cases discussed in Greenberg & Khizman 2012c, Kadmon & Sevi 2014 and Francis 2018.

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