Operating over (internal) 'covert-based' alternatives with scalar focus-sensitive particles: Evidence from Modern Hebrew[1]

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Abstract. This paper examines a range of readings found with the Hebrew focus sensitive particle *bixlal* and its accented version *BIXLAL* observed in Migron 2003, and in a series of works by Greenberg and Khrizman. Following ideas in these works the paper argues that *bixlal* is a member of the typology of *even*-like operators in Hebrew, along the unmarked particle *afilu*, and that the range of readings found with *BIXLAL* results from the fact that the same *even*-like operation is done over 'covert-based', and in particular degree-based and domain-based, alternatives. This parameter of variation is shown to be relevant for other scalar particles, both *even*-like and *only*-like, cross linguistically. The paper is finished by briefly examining another non-standard type of alternatives operated over by some scalar particles, namely speech act alternatives. The general conclusion is that 'type of alternatives' is a relevant parameter for scalar focus particles in natural language.

Keywords: *even*, *only,* scales, alternatives, focus, degrees, domains, gradable adjectives, multidimensional adjectives, NPIs, speech acts, typologies.

1. Introduction: Classical parameters of variations in typologies of *even*-like particles and the new parameter examined in this paper

The lexical entry of *even* is usually taken to be some version or other of (1) (cf. Horn 1969, Karttunen and Peters 1979, Rooth 1985, 1992, Herburger 2000, Guerzoni 2003, Chierchia 2013, etc.). In prose, (1) says that *even (C)(p)(w)* presupposes that *p* is stronger on a contextually given scale (e.g. it is less likely / more noteworthy) than all its distinct focus alternatives in C, and asserts that *p* is true:

(1) $||even||_{g,c} = \lambda C.\lambda p.\lambda w: \forall q \in C\ q \neq p \rightarrow p > C\ q.\ p(w) = 1$
Where $C \subseteq ||p||^F \wedge ||p||^O \in C \wedge \exists q\ q \neq p \wedge q \in C$

This entry has been very prominent in the literature on scalarity and polarity sensitivity, but it also raised discussions and debates. A significant contribution to these debates comes from typological research of languages where more than one *even*-like operator exists. Such research identified a number of parameters along which *even*-like operators may vary, concerning, e.g. the high vs. low position of prejacent in the scale in the scalar presupposition and the logical properties of the licensing environment for the *even*-like particle**,** the scopal properties of the particle, the nature of the scale, the presence of an existential presupposition in addition to the scalar one, etc. (See, e.g. Rullmann 1997, Giannakidou 2007, Gast and van der Auwera 2011, Crnič 2011 for reviews and suggestions).

[1] For helpful comments thanks to Elitzur Bar-Asher-Siegal, Gennaro Chierchia, Luka Crnič, Micky Daniels, Edit Doron, Danny Fox, Nirit Kadmon, Lena Miashkur, Dina Orenstein, Moria Ronen, Susan Rothstein, Galit Sassoon, Aldo Sevi, Malte Zimmermann, and especially Keren Khrizman. This research was supported by ISF grant 1655/16.

The main goal of the present paper is to argue for the existence of yet another relevant parameter of variation, not discussed so far in the literature on overt *even*-like typologies, namely the ability / inability of the particle to operate over what we will call 'covert-based' alternatives. The main empirical support for the linguistic relevance of this parameter is a range of differences between two members of the *even*-like typology in Hebrew: the default *even*-like particle, *afilu*, and the particle *bixlal*. We will concentrate on a number of readings found with the accented version of *bixlal, BIXLAL*, observed in Migron 2003, Greenberg and Khrizman 2012a,b, Greenberg 2014, 2016b, which can be paraphrased as *very, in general, at all,* etc. Inspired by ideas in these works we claim that these readings can be derived by assuming that *BIXLAL* still denotes the same *even*-like operation as *bixlal*, but that instead of operating over standard focus alternatives, it operates over 'covert-based', and more specifically, over domain-based and degree-based alternatives to its prejacent.[2] This kind of operation will be shown to be relevant also for some *only*-like particles. More generally, then, the (in)ability to operate over 'covert-based' alternatives seems to be a relevant parameter of variation for scalar focus particles cross linguistically.

The paper is structured as follows: Section 2 presents the basic data to be accounted for, namely the membership of *bixlal* in the typology of *even*-like particles in Hebrew (along with the unmarked form, *afilu*), and the challenge posed by the special readings of *BIXLAL*. Section 3 proposes that these special readings should be derived by assuming that *BIXLAL* is an *even*-like operator over degree-based and domain-based alternatives, and illustrates the advantages of this proposal in sentences with one-dimensional and multidimensional adjectives. Section 4 briefly considers, and rejects, an alternative, intensifier-based analysis of *BIXLAL.* Section 5 takes a wider perspective and looks at other overt and covert *even*-like as well as *only*-like operators over degree and / or domain-based alternatives. In section 6 we briefly examine the existence of apparently non-scalar readings of *bixlal*, which we propose to analyze as *even*-like operations over speech acts alternatives. Section 7 concludes and summarizes more generally potential specifications of the 'type of alternatives' parameter for some scalar focus particles.

2. The data

2.1. *Bixlal* is a member of the family of *even*-like particles in Hebrew

The standard, default *even*-like particle in Hebrew is *afilu*. We propose, however, that like many other languages (see e.g. Giannakidou 2007, Crnič 2011, Gast and van der Auwera 2011), Hebrew has more than one member in this typology. In particular, following Greenberg 2014, Greenberg and Orenstein 2016, we propose that besides *afilu* Hebrew has at least three more members in this family, namely the high register particle *af,* the 'NPI' *ve-lu* (similar to the English *so much as*), and the particle *bixlal*, which will be the main focus of this paper.

The claim that *bixlal* is an *even*-like operator is not trivial, though, as it is never mentioned in dictionaries or traditional Hebrew grammars as a translation of *even,* along *afilu*. The reason seems to be that the most prominent uses of this particle are found in its accented version, *BIXLAL*, which, as discussed below, is not translated as *even* but as *very, in general, at all,*

[2] In Greenberg 2014 such alternatives are called 'internal', rather than 'covert-based'.

etc.[3] Nonetheless, as originally observed in Migron 2003, *bixlal* CAN be translated as *even*, and substituted by *afilu*. An example is (2):

(2) Context: Discussing Danny's and Yosi's great success in the competition:
Dani zaxa be-medalyat kesef, ve-yosi **afilu** / **bixlal** zaxa be-[zahav]$_F$/ #[bronza]$_F$
Danny won in-medal silver and-Yosi afilu / bixlal won in-gold bronze
"Danny won a silver medal, and Yosi even won [gold]$_F$ / # [bronze]$_F$"

In such sentences *bixlal* behaves like *afilu* and *even* in indicating that *p* is stronger than its alternative (*Yosi won gold* $>_c$ *Yosi won silver*). Moreover, like *even* and *afilu, bixlal* is infelicitous when *p* is weaker than its alternative (*Yosi won bronze* $<_c$ *Yosi won silver*).

Another property that *bixlal* shares with *afilu* is its scopal behavior with respect to surface negation: unlike English *even,* and just like Hebrew *afilu*, *bixlal* can scope either above a negated predicate, or below such a predicate, but not between negation and the predicate:[4]

(3) A: dani lo rakad ba-mesiba. ve-ma im yosi?
Danny not danced in-the-party and-what with Yosi
"Danny didn't dance in the party. And what about Yosi?"
B: a. hu **afilu**/**bixlal** lo shar b. hu lo shar **afilu**/**bixlal** c. hu lo #**afilu**/#**bixlal** shar
he afilu/bixlal not sang he not sang afilu/bixlal he not afilu/bixlal sang
"He even didn't sing" "He didn't sing even" "He didn't even sing" (intended)

Finally, there are cases where the only way to translate English *even* to Hebrew is by using *bixlal* (not *afilu*). Such cases are found when the particle associates with whole questions, as in Iatridou and Tetevosov's (2016) examples of 'our *even*' in (4) and (5):

(4) A: Let's meet at Oleana's for dinner. B: What do they even serve / serve even?

(5) A: Did Olivia get the Fields Medal? B: Is Olivia even a mathematician?

Iatridou and Tetevosov propose that in such cases *even* does not associate with any focused constituent inside the prejacent (e.g. with the accented *mathematician* in (5)). Rather, it associates with the entire question, and indicates that the prejacent question (e.g. *What do they serve in the restaurant? / Is she a mathematician*) is the least likely to be ignorant about, or to be asked. Moreover, they propose that in languages like Russian and German the choice between 'garden variety *even*' and 'our *even*' over questions is lexically encoded, so that some *even*-like particles (Russian *daže* and German *sogar*) can only function as 'garden variety' *even,* whereas others (*voobšče* and *überhaupt*, respectively) operate over questions.[5]

Now crucially, in Hebrew only *bixlal*, not *afilu* can be used as 'our *even*' over questions:

[3] In addition, *bixlal* has another, apparently non-scalar reading, translated as *actually* by Migron 2003. We briefly discuss this reading in section 6 below.
[4] For space reasons, we do not attempt to explain this pattern here.
[5] Iatridou and Tetevosov's (2016) analysis of *überhaupt* as an *even*-based operator thus differs from e.g. Anderssen's (2006) analysis of this particle as a general domain widener and Rohas-Esponda's (2014) analysis as marking a move to a higher QUD. We adopt their analysis for *bixlal* as well. See also section 6 for a brief discussion of *voobšče* and *überhaupt*.

(6) A: Let's meet at Oleana's for dinner
B: ma hem **bixlal / #afilu** magishim?
what they bixlal / afilu serve
"What do they even serve?"

(7) A: "Did Olivia get the Fields Medal?
B: Olivia **bixlal / #afilu** matematikait?
Olivia bixlal / afilu mathematician
"Is Olivia even a mathematician?"

Given this data, then, *afilu* is similar to German *sogar* and Russian *daže,* in being able to function only as 'garden variety' *even.* In contrast, *bixlal* seems more flexible, as it can denote both an *even*-like operation over whole questions, like German *überhaupt* and Russian *voobšče*, as well as function as 'garden variety' *even* (as in (2)).

The conclusion at this stage, then, is that *bixlal* is indeed a member of the Hebrew *even*-like family, alongside the default particle, *afilu*, and it shares with *afilu* and *even* the same lexical entry, namely (1) above.

2.2. The challenge: a variety of readings with *BIXLAL*

A challenge to the *even*-like analysis of *bixlal* is the fact that when it is accented (as *BIXLAL*) it induces a variety of readings which make it different from both *even* and *afilu.* As originally observed by Migron 2003, the most prominent of these readings is found when *BIXLAL* combines with negated predicates, and is paraphrased as *at all*, as in (8). Migron emphasizes, however, that *BIXLAL* is different from English *at all* in that it is not an NPI, since it can appear in matrix sentences or in Upward Entailing contexts, as in (9), where it is paraphrased as *in general*. Greenberg and Khrizman 2012a,b observe that in such contexts *BIXLAL* can be also be paraphrased as *very* (10), or *completely* (11):

(8) A: dani lo gavoha. ve-yosi? B: hu **BIXLAL** lo gavoha/ hu lo gavoha **BIXLAL**
Danny not tall and-Yosi he BIXLAL not tall / he not tall BIXLAL
"Danny is not tall. And Yosi?" "He is not tall at all"

(9) A: dani xaxam be-xeshbon. ve-yosi? B: hu **BIXLAL** xaxam.
Danny smart at-math and-Yosi he BIXLAL smart
"Danny is smart at math. And Yosi?" "He is very smart / smart in general"

(10) A: dani gavoha. ve-yosi? B: hu **BIXLAL** gavoha.
Danny tall and-Yosi he BIXLAL tall
"Danny is tall And Yosi?" "He is very tall"

(11) A: le-dani ein shum maxala. ve-yosi? B: hu **BIXLAL** bari.
to-Danny there is no disease and-Yosi he BIXLAL healthy
"Danny has no disease. And Yosi?" "He is completely healthy"

How should such readings be analyzed? It is possible, of course, to suggest that *BIXLAL* is many-way ambiguous, and that its semantics when accented is completely distinct from the *even*-like semantics we suggested that its unaccented version has. In the next section, however, we take another route. Based on preliminary suggestions in Migron 2003, Greenberg and Khrizman 2012a,b and Greenberg 2014, 2016b, we propose a more unified analysis of *bixlal* and *BIXLAL* where it denotes the same *even*-like operator in all its uses just like *even* and *afilu*, but varies in the type of alternatives it can operate over.

3. The proposal: An *even*-like operator over degree-based and domain-based alternatives

3.1. The core proposal

We suggest that *even, afilu* and *bixlal / BIXLAL* all have the semantics in (1) above, presupposing that their prejacent, *p,* is stronger on the relevant scale than all its contextually supplied focus alternatives, *q,* in C, and asserting that *p* is true. However, whereas given the data above, *even* and *afilu* can only operate over standard, 'Roothian' focus alternatives, *BIXLAL* can operate over 'covert-based', and in particular degree- and domain-based alternatives when it is accented.[6]

Operating over 'Roothian' alternatives is done in the standard manner: the alternatives to *p* are identical to it, besides an overt, focused element (which is usually accented), which is substituted by another overt element of the same semantic type. For example, in (2) above, where *p* is *Yosi won [gold]$_F$,* the alternatives are derived by substituting the overt focused element 'gold' with other overt elements of the same semantic type, yielding e.g. *Yosi won silver, Yosi won bronze,* etc.

In contrast, 'covert-based' alternatives are derived by letting the operator associate with a covert element in *p*. In such cases the alternatives to *p* differ from it by the identity of this covert element, while crucially, all overt material in *p* stays fixed in *q*. This leads to a situation where the alternatives to *p* differ from it only in their interpretation, though on the surface, i.e. in terms of their overt material, they seem identical to it.

3.2. Illustrations with one-dimensional adjectives

To illustrate the proposal, consider first the way *BIXLAL* is interpreted in (10), with the one-dimensional adjective *tall*. We suggest that in this case both the prejacent of *BIXLAL, p* and the contextually salient alternative, *q,* are of the form: *Yosi is POS tall*, which, following, e.g. Kennedy and McNally 2005 has the interpretation in (12), saying that the degree to which Yosi is tall is at least as high as the standard of tallness:

[6] An obvious question is why the operation over covert-based alternatives is found only with the accented version of the particle, *BIXLAL*. Based on ideas in Egg and Zimmermann 2011, and in Greenberg and Khrizman 2012a,b, Greenberg 2014, Greenberg 2016b suggests an information-structure based explanation for this pattern. But describing this explanation is beyond the scope of this paper.

(12) $p = \exists d\,[d \geq \boldsymbol{stand}_{tall} \wedge tall(Yosi,d)]$
$q = \exists d\,[d \geq \boldsymbol{stand}_{tall} \wedge tall(Yosi,d)]$

This, of course, raises an immediate question: If p and q are identical, how can the scalar presupposition ($p >_c q$) of the *even*-like operator *BIXLAL* be met? The answer, we suggest, is that the covert ***stand*** variables in p and q are assigned two different values.[7] In q we get $\boldsymbol{stand}_{default}$ – constructed based on the value to the standard variable in the preceding sentence *Danny is POS tall*. In contrast, in p we assign ***stand*** a higher value, $\boldsymbol{stand}_{high}$, such that $\boldsymbol{stand}_{high} > \boldsymbol{stand}_{default}$. This allows p to end up being stronger than q, as required in the scalar presupposition, and as seen in (13). The effect is intuitively paraphrased in (14):

(13) $\exists d\,[d \geq \boldsymbol{stand}_{high,tall} \wedge tall(Yosi,d)] >_c \exists d[d \geq \boldsymbol{stand}_{default,tall} \wedge tall(Yosi,d)]$

(14) A: Danny is tall relative to the contextually default standard, $\boldsymbol{stand}_{default}$, and what about Yosi?
B: He is even tall relative to the higher standard, $\boldsymbol{stand}_{high}$,

(10), as well as its intuitive paraphrase in (14) lead to the inferences that Yosi is very tall, and that he is taller than Danny. To derive these inferences we suggest that, since in the salient sentence (*Danny is POS tall*) the relevant standard being used is the lower one, $stand_{default,}$ and since, a higher standard, $stand_{high}$ is made salient in the prejacent of *even,* the proposition $\exists d[d \geq \boldsymbol{stand}_{default,tall} \wedge tall(Danny,d)]$ raises the scalar implicature that the stronger alternative, $\exists d[d \geq \boldsymbol{stand}_{high,tall} \wedge tall(Danny,d)]$, is false. We end up then, with the understanding that Danny is tall relative to the default standard, but not relative to a higher standard. Hence, Yosi, who is taken to be tall relative to the higher standard (due to the scalar presupposition of *BIXLAL*), is understood to be taller than Danny, as well as 'very tall'.

Turning now to the *at all* reading of *BIXLAL* in (8), found with a negated predicate, in this case we take both p and q to be of the form in (15), asserting that it is not the case that the degree to which Yosi is tall is at least as high as the standard of tallness. Then, to satisfy the scalar presupposition of *BIXLAL* ($p >_c q$), we assign the standard variable in p a LOWER value, $\boldsymbol{stand}_{low}$, than the salient standard in q, $\boldsymbol{stand}_{default}$. We thus end up with the presupposition in (16), and with the intuitive paraphrase of (8) in (17):

(15) $p = \neg\exists d\,[d \geq \boldsymbol{stand}_{tall} \wedge tall(Yosi,d)]$
$q = \neg\exists d\,[d \geq \boldsymbol{stand}_{tall} \wedge tall(Yosi,d)]$

(16) $\neg\exists d\,[d \geq \boldsymbol{stand}_{low,tall} \wedge tall(Yosi,d)] >_c \neg\exists d\,[d \geq \boldsymbol{stand}_{default,tall} \wedge tall(Yosi,d)]$

(17) Danny does not reach the contextually salient standard of tallness, $\boldsymbol{stand}_{default}$, Yosi does not even reach a lower standard, $\boldsymbol{stand}_{low}$., i.e. he is not tall at all.

[7] See Greenberg (to appear) for a more detailed analysis, where *BIXLAL* associates with the covert comparison class argument of *POS*.

3.3. Illustrations with multidimensional adjectives

We would now like to derive the readings found when *BIXLAL* appears in sentences with multidimensional adjectives, e.g. with *smart* and *healthy*, as in (9) and (11) above.

To do that we start by following Sassoon 2013, 2016 in assuming that multidimensional adjectives (*healthy, ill, smart,* etc.) involve cardinality measurement of 'respects' or 'dimensions' (e.g. *healthy / ill w.r.t. blood pressure / sugar level, John is smart w.r.t. math / humanities*, etc.). Each of the dimensions is itself a gradable property, introducing its own scale and standard degree, similarly to the standard degree used for one-dimensional adjectives like *tall*. We will henceforth call this standard degree $\boldsymbol{stand_d}$, to distinguish it from another standard operative with multidimensional adjectives, namely $\boldsymbol{stand_n}$**.** This latter standard is taken by Sassoon to be the standard number of dimensions required to be satisfied with each multidimensional adjective. This standard number, $\boldsymbol{stand_n}$, is sometimes lexically determined: for example, Sassoon argues that by default, to be healthy is to reach the standard degree of health in ALL relevant dimensions, e.g. blood pressure and sugar level and heart condition etc. In contrast, to be ill is to reach the standard degree of illness is at least SOME dimension. *Healthy* and *ill*, then, can be classified as 'universal' and 'existential' multidimensional adjectives, respectively. In other cases, the standard number of dimensions is contextually determined. For example, to be smart is to be smart relative to a contextually determined number of dimensions (e.g. math, history, linguistics, etc.).

Given these ideas, then, we can assume that in the 'positive form' of a sentence like *Yosi is A* (where A is a multidimensional adjective) there is a covert *POS,* as in (18), and that such a sentence is interpreted as in (19):

(18) *Yosi is POS A* (where *A* is a multidimensional adjective)

(19) $\exists n\,[n \geq \boldsymbol{stand_{n,A}} \wedge |\lambda G.G \in \mathrm{Dim}_A \wedge G \in \boldsymbol{D} \wedge \exists d\,[d \geq \boldsymbol{stand_{d,G}} \wedge G(Yosi,d)]| \geq \mathrm{n}\,]$

In words, such a sentence is true iff there is a number, *n*, of gradable dimensions G which are relevant dimensions of A (i.e. members of the domain **D**) for which Bill's degree exceeds the standard degree, namely $\underline{\boldsymbol{stand_d}}$. And this number ***n*** exceeds the standard number of dimensions, namely $\underline{\boldsymbol{stand_n}}$, in the domain of relevant dimensions for A**.**

The important point for us now is that (19) has three contextual covert variables, namely the underlined $\underline{\boldsymbol{stand_d}}$, $\underline{\boldsymbol{stand_n}}$ and $\underline{\boldsymbol{D}}$. Since we take *BIXLAL* to be an *even*-like operator over covert-based alternatives, we predict that when it is present each of these three covert variables can be in principle exploited to create such 'covert-based' alternatives.

The prediction is indeed borne out. To illustrate that consider first (9) above. Here we can exploit the variability of either $\underline{\boldsymbol{stand_d}}$ or $\underline{\boldsymbol{stand_n}}$. This gives us (at least) three possibilities. First, the alternatives can vary w.r.t. the value of $\underline{\boldsymbol{stand_d}}$, assigning a higher value to this variable in *p* than in *q*. The resulting interpretation is that Danny is smart-w.r.t.-math relative to the contextually salient standard, and Yosi is even smart-w.r.t.-math relative to a higher standard. Hence Yosi is considered very smart (w.r.t.-math), e.g. his grades at math are higher. This reading can be intuitively paraphrased as in (20):

(20) A: Danny is smart (at math). He always gets an A in the math exams.
B: And Yosi is even VERY smart (at math). He always gets an A+ in these exams.

The alternatives can also vary w.r.t. the value of ***stand$_n$*** – assigning a higher value to this variable in *p* than in *q*. This can be achieved in two ways, and lead to two readings: first, Yosi can end up being smart with respect to an additional dimension (besides math), so the resulting interpretation is that Danny is smart-w.r.t.-one-dimension (i.e. smart-w.r.t.-math) and Yosi is even smart with respect to two dimensions, e.g. with respect to both math and history. Alternatively, Yosi can end up being smart w.r.t. all (relevant) dimensions, leading to the interpretation that Danny is smart-w.r.t.-one-dimension (i.e. smart-w.r.t.-math) and Yosi is even smart with respect to ALL (relevant) dimensions (math, history, art, linguistics, …). This option is what leads to the 'in general' use of *BIXLAL*. The two options can be now more intuitively paraphrased as in B's two answers in (21):

(21) (Context: Students in this college study math, biology, physics, history, philosophy and linguistics)
A: Danny is smart. He has great grades at math.
B1: And Yosi is even VERY smart. He is also great in history.
B2: And Yosi is even VERY smart. He is great in all fields, i.e. smart in general.

The third variable that can be exploited to yield covert-based alternatives with *BIXLAL* is the domain restriction variable, ***D***. Consider for example (11) above, with the 'universal' multidimensional adjective *healthy*, in the following context: we are organizing a challenging trip, and in order to join this trip, all candidates should be healthy, i.e. should have normal values along important medical parameters, namely blood pressure, sugar level and heart functioning. In this case we take *p,* the prejacent of *BIXLAL* (*Yosi is POS healthy*)*,* to be stronger than its apparently identical alternative *q* (which is again *Yosi is POS healthy*), similarly to what we did with the other cases in (8)-(11). Here, though, we cannot take *p* to be stronger than *q* due to a higher value assigned to ***stand$_d$***, since there is no specific dimension of health where Yosi's degree is claimed to be higher. Nor do we assign ***stand$_n$*** a higher value, since the value for this standard in A's utterance is already maximal, due to the default specification of this standard with adjectives like *healthy:* i.e. Danny is already considered healthy with respect to all relevant dimensions (blood pressure, sugar level and heart functioning). Instead, to make *p* stronger than *q* in this case we can assign the domain variable, ***D***, two distinct values: $D_{default}$ in *q,* D_{wide} in *p*, where $D_{default} \subset D_{wide}$. Given this suggestion, then, the intuitive paraphrase of (11) is as in (22):

(22) Danny is healthy with respect to all dimensions of health relevant for the trip, i.e. all dimensions in $D_{default}$, and Yosi is even healthy w.r.t. additional, less relevant dimensions, i.e. all dimensions in the wider domain, $D_{wide.}$

To support this proposal, we can remind ourselves what is independently known about domain widening in other constructions. Following e.g. Kadmon and Landman 1993 ideas on *any* (as in *I don't have any potatoes*), we take domain **restriction** to be used in order to exclude 'irrelevant' entities (e.g. small or rotten potatoes). Domain **widening** thus typically indicates that such entities can be now considered relevant. This seems to be exactly what happens in (11) as well. This sentence can be very naturally be continued with "He doesn't even

have a mild cold". In contrast, continuing (11) with "He doesn't even have cancer" will sound very odd, as predicted.

We can now also predict that with 'existential' multidimensional adjectives (like *ill*), *BIXLAL* will not yield domain widening. This is because such an operation will not make *p* stronger than its alternative (cf. e.g. discussions of Kadmon and Landman 1993, Krifka 1995, Chierchia 2013 on *any*). Indeed, unlike (11) with *healthy,* (23) with *ill* can be naturally continued with "He even has cancer", but continuing it with "he even has a mild cold" sounds very odd:

(23) A: dani xole, ve-yosi? B: hu **BIXLAL** xole.
Danny ill and-Yosi? he BIXLAL ill
"Danny is ill. And Yosi?" "He is very ill"

Notice also that *BIXLAL* can induce domain widening in the Hebrew correlate of the Kadmon and Landman's 1993 example in (24) with a negated predicate, yielding again an *at all* reading. In this case, too, we suggest that *BIXLAL* denotes an *even*-like operation over the covert domain variable, ending up with the intuitive paraphrase in (25):

(24) ein li tapuxey adama BIXLAL
not-have to-me potatoes BIXLAL
"I don't have potatoes at all"

(25) I don't have potatoes in $D_{default}$, and I don't even have less relevant potatoes in D_{wide}.

To summarize so far, we argued that *BIXLAL* is an *even*-like operator, similar to English *even*, and Hebrew *afilu*, and that the range of readings found with it can be derived by assuming that it operates over a special kind of alternatives, namely 'degree-based' and 'domain-based' alternatives. What all these cases have in common is an abstract / structural property: the ability to apply the *even*-like operation over 'covert-based alternatives' (cf. Erlewine 2014 on association with covert variables). Thus, wherever its prejacent contains a covert contextual variable, *BIXLAL* can exploit it by assigning this variable a distinct value which will make *p* stronger than *q*, as required by the scalar presupposition.

4. Rejecting an intensifier-based analysis of *BIXLAL*

Since many of the readings found with *BIXLAL* seem to lead to some sort of intensification, one might wonder whether, instead of claiming that this particle is a special *even*-like operator over special, covert-based alternatives, we can come out with a simpler analysis, namely that *BIXLAL* is a flexible intensifier. There are two reasons, however, why such an analysis cannot work, both have to do with properties that *BIXLAL* shares with *even / afilu* which set it apart from intensifiers. These are the scopal interaction of *BIXLAL* with negation and its sensitivity to standards of comparison.

Above we have already noted that the unaccented particle *bixlal* behaves like *afilu* with respect to surface negation. In particular, we saw in example (3) above, that both particles can precede surface negation, and can appear after the neg+predicate combination, but cannot ap-

pear between negation and the main predicate. As can be seen now in (26), *BIXLAL* behaves in exactly the same way. In contrast, the scopal behavior of Hebrew intensifiers with respect to surface negation is much more flexible. This can be seen, for example, in the behavior of *me'od* ('very') in (27):[8]

(26) A: dani lo gavoha, ve-yosi?
Danny not tall and-Yosi
"Danny is not tall. And what about Yosi?"
B: a. hu BIXLAL lo gavoha b. hu lo gavoha BIXLAL c. #hu lo BIXLAL gavoha
he BIXLAL not tall he not tall BIXLAL he not BIXLAL tall
"He is not tall at all"

(27) A: dani lo gavoha, ve-yosi?
Danny not tall and-Yosi
"Danny is not tall. And what about Yosi?"
B: a. hu ME'OD lo gavoha b. hu lo gavoha ME'OD c. hu lo ME'OD gavoha
he very not tall he not tall very he not very tall
"He is very not tall" "He is not very tall" "He is not very tall"

In addition, *BIXLAL* shares with *afilu*, as well as with English *even,* another interesting property which sets it apart from intensifiers. In (10) above, for example, ('*Danny is tall, and Yosi is BIXLAL* ("very") *tall*'), the presence of *BIXLAL* in B's utterance immediately leads to the inference that Danny, mentioned in A's utterance is tall as well. Crucially, this inference is present not only when Danny's tallness is explicitly asserted, as in (10), but also in (28), which immediately entails that being 1.75m tall is considered tall. This is indicated by the infelicity of the continuation "He is not that tall" in A's utterance. Indeed, when *BIXLAL* is absent this inference completely disappears, and the first sentence can be naturally continued with "He is not that tall":

(28) A: dani hu 1.75 (#hu lo gavoha), ve-yosi? B: hu **BIXLAL** gavoha
Danny is 1.75 he not tall and-Yosi he BIXLAL tall
"Danny is 1.75m tall (he is not tall), and Yosi?" "He is even VERY tall"

This makes *BIXLAL* different from intensifiers like English *very* and Hebrew *me'od*. For example, the mere presence of *me'od* ('very') or *mamash* ('really') in (29) does not lead to any inference that being 1.75m tall is considered 'tall', and A's utterence is perfectly compatible with the continuation "He is not tall':

(29) A: dani hu 1.75. hu lo gavoha, ve-yosi? B: hu MEOD / MAMASH gavoha
Danny is 1.75 he not tall and-Yosi he very / really tall
"Danny is 1.75m tall (He is not tall), and Yosi?" "He is VERY / REALLY tall"

Crucially, the unique inference found with *BIXLAL* in (28) makes it similar to English *even*, as observed in Greenberg 2015, 2018. Consider (30) and (31):

[8] The behavior of the intensifier *me'od* ('very') in this respect seems typical of Hebrew intensifiers in general, and found also with *mamash* ('really') or *le-gamrey* ('completely') (although the latter is limited to modify Upper closed adjectives, cf. Kennedy and McNally 2005).

(30) A: Danny is 1.75m tall.
B1: and Yosi is taller.
B2: and Yosi is even taller.

(31) A: Danny is 1.75m. tall
B1: and Yosi is 1.78m.
B2: and Yosi is even 1.78m.

It is well known that comparatives based on relative adjectives, as in B1's answer in (30), do not entail the positive form of the adjectives they are based on, for neither the source nor the target of the comparison (e.g. Kennedy and McNally 2005). Indeed, *Yosi is taller than Danny* does not entail or even imply that Yosi or Danny is tall, and can be naturally continued with … *but both are short.* The interesting thing happens in B2's answer, with *even*: here, Greenberg 2015, 2018 observes, the presence of *even* leads exactly to these entailments. Indeed, continuing *Yosi is even taller* with *... but both are short* leads to infelicity.[9] As can be seen in (31) this effect is not limited to comparatives. Here too the presence of *even* in B's utterance entails that being 1.75m as well as being 1.78m are considered tall. Hebrew *afilu* yields exactly the same effects as *even* in such cases.

Based on such data, Greenberg 2015, 2018 proposes that for *even p* to be felicitous, both *p* and its alternatives *q* must intuitively 'lead to' a degree of a scale associated with a gradable property G, which is at least as high as the standard for this gradable property. This observation is not accounted for by the traditional semantics for *even*, according to which *p* should be only required to be stronger (less likely / more noteworthy) than *q*. Combining this observation with several other pieces of data which pose challenges for the popular 'comparative likelihood' view of *even* (see, e.g., Greenberg 2016a, 2018 for discussion), Greenberg offers a revised, 'gradability-based' semantics for *even*, which is sensitive to standards of comparison along a contextually supplied scale. Reviewing this proposal in detail is beyond the scope of this paper. The important point at this stage is that in terms of sensitivity to standards, *BIXLAL* seems to behave exactly like *even* and *afilu*, and unlike intensifiers. This, together with its behavior with surface negation, further supports the analysis of *BIXLAL* as an *even*-like particle, as suggested above.

5. Some cross-linguistic / cross-constructional support for the linguistic reality of the operation over 'covert-based' alternatives

We proposed that *BIXLAL* is not an intensifier, but an *even*-like operator, which unlike English *even* and Hebrew *afilu* operates over 'covert-based', namely degree-based and domain-based alternatives. More generally, we take the data in sections 3 and 4 to indicate that the ability / inability to operate over such 'covert-based' alternatives is a relevant parameter for *even*-like operators in Hebrew. But is Hebrew the only language where operation over such 'covert-based' alternatives is possible? Clearly our proposal would be more convincing if we find more manifestations of this parameter. Luckily, the answer seems to be positive.

[9] Umbach 2009 notes a similar effect with German *noch*. We believe, however, that the mechanism involved is different.

One type of candidate is the covert *even* operator argued to be involved in the semantics of some NPIs, as in Krifka 1995 and Chierchia 2013. For example, Chierchia 2013 takes minimizers like *give a damn* to involve the covert *even*-like operator *E*. *Give a damn*, according to Chierchia's proposal, expresses the property of caring to the most minimal degree, namely $\lambda x \exists s\ care(x,s,d_{min})$, and it obligatorily triggers degree-based alternatives of the form $\lambda x \exists s\ care(x,s,d')$, where $d' > d_{min}$. Similar considerations apply to expressions with *at all*,[10] which also triggers degree-based alternatives. These obligatorily triggered alternatives must be operated upon ('exhaustified'), and Chierchia argues that what operates over them is the covert *even*-like operator *E*, which requires its associate to be stronger (e.g. less likely) than all alternatives. Chierchia shows how such an operation is only licensed in Downward Entailing contexts, hence the NPI-hood of *give a damn* and *at all*.[11]

In addition to this covert *even*-like operator over covert degree-based alternatives with *at all,* Chierchia proposes that some NPIs, e.g. *any,* involve a covert operator over domain-based alternatives as well, namely the *only*-like operator *O* (or *exh*). For example, a sentence like *I don't have any potatoes* has a similar assertion to that of *I don't have potatoes,* namely $\neg\exists x\ Potato\ (x) \wedge D(x) \wedge Have\ (I, x)$, but it obligatorily triggers subdomain alternatives of the form $\neg\exists x\ Potato\ (x) \wedge D'(x) \wedge Have\ (I, x)$, where $D' \subset D$. These alternatives then must be 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.* We can see, then, that in Chierchia's 2013 theory the covert *only*-like and *even*-like operators are allowed to operate over covert domain-based and degree-based alternatives, namely the type of alternatives Hebrew *BIXLAL* operates over, given the analysis developed above.

In addition to these covert operators we can also find potential candidates for being overt operators over such covert-based alternatives. One such particle is the Hindi *bhii.* Lahiri 1998 argues 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 2013 reinterprets this observation and proposes that in this case *bhii* expresses an *even*-like operation over domain-alternatives, similarly to what we proposed above for *BIXLAL*.

The Russian *voobšče* is another potential candidate for being an overt *even*-like operator over covert-based alternatives. Above we already saw Iatridou and Tetevosov's 2016 claim that *voobšče* expresses an *even*-like operation over questions. But Iatridou and Tetevosov 2016 mention in a footnote that it can yields an *at all* reading with negated predicates, as in (32). Moreover, *voobšče* seems to also yield a *very / -er than* reading in UE contexts (cf. Miashkur 2017a,b), as in (33):

[10] According to Chierchia 2013, though, *at all* involves 'scale reversal' as well.

[11] Our analysis of *BIXLAL* above thus makes two contributions to this analysis of *at all*: on the one hand, it supports the general line of an *even*-based analysis of *at all:* in particular, since *BIXLAL*, which is independently analyzed above as an *even*-like operator, is the only way to express *at all* in Hebrew, we have overt evidence that the semantics of *at all* indeed involves an *even*-like semantics. On the other hand, our analysis of *BIXLAL* seems to show that there are maybe two strategies for deriving *at all* readings cross linguistically: in contrast to Chierchia's 2013 analysis of English *at all,* Hebrew *BIXLAL* as *at all* is NOT taken as the alternative-triggering expression which then necessitates a covert *even*-like operator to operate over these alternatives. Instead, the Hebrew *at all,* i.e. *BIXLAL,* is the (overt) *even*-like operator itself.

(32) Lev **voobšče** ne čital "Devida Kopperfil'da"
Lev voobšče NEG read.PST David Copperfield
"Lev did not read 'David Copperfield' at all" (Iatridou and Tetevosov 2016)

(33) A: Džon 1.85m. A Bill? / Čto nasčet Billa?
John 1.85m but Bill / what on account of Bill
"John is 1.85m. And what about Bill?"
B: On **voobšče** vysokij.
he voobšče tall
"He is even very tall / taller"

These readings are not available with the standard *even*-like operator in Russian *daže,* and they can be analyzed in a similar fashion to the operation over degree-based alternatives with *BIXLAL* proposed above. Notice also that German *überhaupt*, which was analyzed as 'our *even*' over questions in Iatridou and Tetevosov 2016, has been reported to yield *at all* and *in general* readings too (cf. Anderssen 2006, Rojas Esponda 2014). Given our analysis of *BIXLAL* above we propose to analyze these uses of *überhaupt* too as involving an *even*-like operation over covert-based alternatives.[12]

Finally, there seem to also be attested overt *only*-like operators over 'covert-based' alternatives, for example, the Hebrew exclusive particles *be-sax ha-kol* and *STAM*, discussed in Orenstein and Greenberg 2014, Orenstein 2016, and Greenberg and Orenstein 2016. We will concentrate here on *be-sax ha-kol*, which can express both a regular exclusive reading, similar to the default *only*-like operator, *rak*, as well as an 'approximative' reading, similar to that found with *more or less*. Compare, for example, *rak* and *be-sax ha-kol* in (34a,b):

(34) Context: John and Mary booked a room in a hotel and asked that the room will be clean, large, with view to the sea. After John checks the room he tells his wife:
a. ha-xeder **rak** naki
the-room rak clean
"The room is only clean"
b. ha-xeder **be-sax ha-kol** naki
the-room be-sax ha-kol clean
"The room is only / more or less clean"

In (34a), with *rak* we get a regular scalar reading of exclusives, rejecting standard, 'Roothian' focus alternatives which are stronger than the prejacent, similarly to what we get with English *only* or *just* (cf. Coppock and Beaver 2014). This yields the intuitive paraphrase in (35a). In contrast, with *be-sax ha-kol* we can also get a new 'approximative' reading, intuitively paraphrased in (35b). Orenstein and Greenberg 2012, 2014, Orenstein 2016, Greenberg and Orenstein 2016 argue that under this approximative reading *be-sax ha-kol* is still an exclusive operator, but that what is rejected is a degree-based alternative. In particular, the proposal is that both the prejacent of *be-sax ha-kol, p,* and the alternative *q* are of the same form: *The room is POS clean,* namely, $\exists d[d \geq \textbf{\textit{stand}}(clean,C) \wedge clean(the\ room,d)]$, but the standard variable in

[12] Notice, though, that the range of interpretations *überhaupt* induces is more limited than with both *bixlal* and *voobšče*. A full analysis of these particles is beyond the scope of this paper (but see Miashkur 2017a,b for a fuller picture of *voobšče* vs. *daze*).

p is assigned a lower value than the default value in *q,* which is the maximal degree of cleanness. The resulting interpretation is that the room is not clean relative to the maximal standard, but clean relative to a lower standard, similarly to *more or less clean*.

(35) a. The room is only clean and not more than that: not clean and large, not clean with view to the sea, etc.
b. The room is only more or less clean, and not more than that: it is not maximally clean.

The operation over 'covert-based' alternatives, then, can be added to the list of parameters along which *only*-like particles vary (cf. Tomaszewicz 2012, Coppock and Beaver 2014, Orenstein and Greenberg 2014, Orenstein 2016, Greenberg and Orenstein 2016). More generally, the analysis of Hebrew *BIXLAL* as an *even*-like operator over covert-based alternatives, can be positioned in a wider cross linguistic and cross constructional context. The emerging picture is that the (in)ability of scalar operators to operate over 'covert-based' alternatives should be taken as a relevant parameter of variation in this wider typology.

6. A direction for further research: Scalar operators over a range of speech acts alternatives

A challenge to our *even*-like analysis of *bixlal* and *BIXLAL* is the existence of some uses of *bixlal*, originally pointed out by Migron 2003, which on the surface do not seem scalar at all. Consider, for example, (36):

(36) A: Rina carfatiya?
Rina French
"Is Rina French?"
B: lo. Hi bixlal britit
no she bixlal British
"No way. She is actually British." (cf. Migron 2003)

In (36) *bixlal* is not translated as *even*. Moreover, the prajacent of *bixlal*, *She is British*, does not stand in any scalar relation to the salient alternative, *She is French*. In particular, (36) does not seem to indicate that being British is 'stronger', e.g. less likely or more noteworthy, than being French. Indeed, Migron takes this use of *bixlal* to be translated as *actually,* and to merely indicate the shift from one alternative to the other in an unordered set of alternatives.

Given this data one can take *bixlal* to be simply ambiguous between a scalar and a non-scalar reading (cf. also Kadmon and Sevi 2014 for a suggestion). But perhaps we can still analyze this use of *bixlal* under the *even*-like semantics proposed above. The crucial observation we would like to make in this connection, following Greenberg and Khrizman 2012b, Greenberg 2014, 2016b, Greenberg and Orenstein 2016, is that the presence of *bixlal* in (36) indicates a correction speech act, which crucially involves strong / significance denial. Intuitively, in (36) we take the proposition that Rina is British to correct and as part of this correction to strongly deny the proposition that Rina is French. This effect makes this 'corrective' use of *bixlal* different from that of *actually* (which indeed seems to merely indicate a shift of one proposition in the discourse to an alternative one).

As a support of this observation, notice that if the denial is explicitly marked as being minor, the use of *bixlal* is infelicitous. For example, in (37) *bixlal* is only felicitous if the speaker takes having turquoise eyes as being significantly different from having blue eyes:

(37) A: le-dani yesh einaym kxulot
to-dani there-is eye blue
"Danny has blue eyes"
B: #lo be-diyuk / mamaS lo. yesh lo bixlal eiynam be-ceva TURKIZ
not precisely really not there-is to-him bixlal eyes in-color turquoise
#Not precisely / Absolutely not. He actually has TURQUOISE eyes"

As a preliminary proposal, then, we suggest that *bixlal* in (36) and (37) is another manifestation of discursive-*even*, similar to 'our *even*', *voobšče, überhaupt,* and *bixlal* over questions, discussed in Iatridou and Tetevosov 2016 and in section 2 above. The difference is that instead of operating over questions alternatives, in the cases discussed here we get an *even*-like operation over denials, indicating that the denial is 'stronger' on the relevant scale than alternative denials. Thus, (36)-(397) can be paraphrased as (38)-(39), respectively:

(38) Not only is Mary not French, she is even British!

(39) Not only does John not have blue eyes, he even has turquoise eyes!

Interestingly, we find parallel behavior of Russian *voobšče*, expressing an *even*-like operation over denials as well, as in (40) (K. Khrizman, and O. Miashkoor p.c.):

(40) A: ty kak istinnyj gruzin dolzhen ocenit' eto vino
you as real Georgian must appreciate this wine
"Being a genuine Georgian, you should be able to appreciate this wine"
B: ty chto??? kakoj ja gruzin… ya voobšče tatarin
you what what I Georgian I voobšče a Tatar
"What's wrong with you? I am not Georgian, I am a Tatar."

Moreover, in addition to these *even*-like operators over speech acts, it seems that there are also *only*-like particles which can operate over speech act alternatives. First, similarly to 'our *even*' the exclusive *only* seems to be able to operate over questions, as in (41), where it indicates that the question "When will he arrive?" is the only (relevant) thing the speaker is ignorant about. In addition, Greenberg and Orenstein 2016 point out that exclusives like *only / just* seem to be able to operate over denial speech acts, as in (42), indicating that the only thing to deny in the statement that Mary is a great teacher is that she speaks very quietly. In both cases the exclusive gives a similar effect to the adversative particle *but.* Finally, Wiagand 2016 discusses an 'unexplanatory' use of *just,* as in (43), indicating that the speaker does not know the reason or cause for the fact that the lamp broke (beyond a minimal reason or cause), and analyzes it as operating over speech act alternatives as well:

(41) When John is here we will go to the movies. Only when will he exactly arrive?

(42) Mary is a great teacher. She just speaks so quietly.

(43) I was sitting here and the lamp just broke (Wiagand 2016)

An important task, then, is to find ways to capture the data concerning both the *only*-like and the *even*-like operations over the full range of speech acts alternatives in a precise and systematic way. For space reasons we leave this task for further research (cf. Iatridou and Tetevosov 2016, Wiagand 2016 and Daniels 2018 for suggestions).

7. Summary

The starting point of this paper was a range of readings found with the Hebrew particle *bixlal* and its accented version *BIXLAL*, originally observed and discussed in Migron 2003 and in a number of works by Greenberg and Khrizman. Inspired by the intuitions in these works, we argued that (a) the unaccented *bixlal* is a member of the typology of *even*-like operators in Hebrew, along the unmarked particle *afilu*, and that (b) the range of readings found with *BIXLAL* results from the same *even*-like operation done over 'covert-based', namely degree-based and domain-based alternatives. We supported this analysis of *bixlal* and *BIXLAL,* and rejected an intensifier-based analysis, by pointing out the similar scopal behavior of these particles to *afilu* relative to surface negation, and the unique sensitivity of *BIXLAL* to standards of comparison, independently observed also for English *even* (Greenberg 2015, 2018). The behavior of *bixlal* and *BIXLAL* was then located in a wider set of observed facts concerning other overt and covert *even*-like and *only*-like particles which can be taken to operate over covert-based alternatives. We also discussed another non-standard type of alternatives operated over by some scalar particles, namely speech act alternatives.[13]

The emerging picture, then, points to the existence of a general parameter of variation for scalar, *even*-like and *only*-like particles, namely the type of alternatives that the particle can operate over (cf. Orenstein 2016, Greenberg and Orenstein 2016). A description of the different specifications of this parameter, and the manifestation of some of the scalar particles discussed above along these specifications, are schematically given in the following table:

The 'Type of alternatives' parameter for scalar (*even*-like and *only*-like) operators[14]		
	***Even*-like particles**	***Only*-like particles**
Can operate over standard 'Roothian' focus alternatives:	*even, afilu, bixlal, sogar, daze,* covert *E*	*only, just, merely, rak, be-sax ha-kol,* covert *O* (*exh*)
Can operate over 'covert-based' (e.g. degree-based and domain-based) alternatives:	*bhii, BIXLAL, voobšče*, *über-haupt,* covert *E*	*be-sax ha-kol, STAM,* covert *O* (*exh*)
Can operate over 'Speech act' alternatives (e.g. questions, denials, explanations)	*even, überhaupt, bixlal, voobšče*	*just, only, rak*

[13] Cf. Wiagand 2016, who takes the operation over speech act alternatives to be a special case of operation over 'covert-based' alternatives (which, following the terminology of Greenberg 2014, she calls 'internal' alternatives).

[14] Cf. Liu 2016, who considers a 'type of alternatives' parameter as well, for Chinese *even*-like and *only*-like particles. Liu's parameter, however, seems to me more similar to the 'type of scale' parameter, discussed in Coppock and Beaver 2014, Orenstein and Greenberg, 2014, Orenstein 2016, Greenberg and Orenstein 2016.

We hope that future research will contribute to the understanding of this picture, by examining the variation of additional scalar particles along this 'type of alternative', parameter both within and across languages, by refining the theoretical tools used to capture this parameter, and by examining the interaction of this parameter with other more well studied parameters along which *even*-like and *only*-like operators can vary.

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