Restrictions on the type of internal argument in gradable adjectives in Turkish

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1. Introduction**

In Turkish the internal argument of a gradable adjective (GA, hereon) is limited to a quantificational one in comparative constructions. A referential internal argument such as a measure phrase (MP) is ungrammatical in the positive form of the adjective (e.g. Zidani-Eroğlu 2006). Surprisingly, though, this restriction is not observed for minimum absolute GAs. I propose a Zero Degree Mapping Hypothesis which maps the beginning value of the MP onto the lower bounded end of the scale denoted by the minimal GA as point zero, giving rise to a derived zero point value. Additionally, I propose a Zero Degree Mapping Parameter to capture crosslinguistic variation.

1.1. Background

The classification of adjectives as gradable or non-gradable goes as far back as Seuren (1973, 1978), Cresswell (1976), Hellan (1981), von Stechow (1984), and Kennedy (e.g.1997, 2005), among others. GAs such as 'tall' denote relations between individuals and degrees on a scale with the property denoted by the adjective in question. According to Kennedy (1997, 2005), following Unger (1975) GAs come in two types: First, relative GAs such as *big, tall, high, low, long, large* have a standard of comparison that is contextually determined. In other words, the degree to which something is considered expensive, for instance, varies with the assumed standard as to what counts as expensive in a given context. The second subcategory of GAs, the absolute GAs, comes in two varieties depending on the degree to which the property denoted by the adjective is present. Minimum/minimal GAs such as *spotted, bumpy, bent, impure, wet, open, awake*, "...simply require their arguments to possess some minimal degree of property they describe." (Kennedy 2005). (2) illustrates Turkish examples.

(1) a. The gold is impure. b. The table is wet.
c. The door is open. d. The rod is bent. (Kennedy 2005)

(2) a. *Masa ıslak.* b. *Kapı açık.* c. *Boru eğik.*
Table wet Door open Pipe bent
'The table is wet.' 'The door is open.' 'The pipe is bent.'

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** This paper is a condensed and modified version of the talk I presented at the conference. I thank the audience for their valuable comments. Abbreviations in text are as follows: ABL-ablative; LOC-locative; POSS-possessive; GEN-genitive.

The arguments of the minimum GAs in (2a-c) are required to possess only some degree of wetness, openness, and bentness to qualify as wet, open and bent, respectively. In comparison, maximal GAs "...require their arguments to posses a maximal degree of the property in question." (Kennedy 2005: 29). These are adjectives such as *full, straight, pure, dry, closed* and *plenty*. (4) has Turkish examples.

(3) a. The platinum is pure. b. The floor is dry.
c. The door is closed. d. The rod is straight. (Kennedy 2005)

(4) a. *Masa kuru.* b. *Kapı kapalı.*
table dry door closed
'The table is dry. 'The door is closed.'

All GAs appear with comparative structures as shown in (5) for English, and (6) for Turkish.

(5) John is taller than Mary.

(6) *Eren Can'dan daha uzun.*[1]
Eren Can-ABL more tall
'Eren is taller than Can.'

English (7) and Turkish (8) show GAs with degree denoting expressions such as *very, slightly, extremely*.

(7) John is very / slightly / extremely tall.

(8) *Eren fevkalade / oldukça / çok* uzun.
Eren extremely /fairly / very tall
'Eren is extremely / fairly / very tall.'

Other instances of Turkish GAs include: *sıcak* 'warm', *ağır* 'heavy', *zengin* 'rich'. Non-gradable adjectives such as *married* lack any sign of degree. The paper is organized as follows: Section 2 presents the semantic restriction on the internal argument. Section 3 reports on previous analyses on the ungrammatical use of a MP with GAs (e.g., Bresnan 1973, Seuren 1978, Winter 2001, Beck et al 2004 and 2010, for Turkish Zidani-Eroğlu 2006). Also, I present new data showing that a MP may only co-occur with minimal GAs in Turkish. Section 4 presents an analysis for the lack of such co-occurrence restriction by proposing the Zero Degree Mapping Hypothesis. I also propose the Zero Degree Mapping Parameter to cover the mapping possibilities across languages. The section ends with concluding remarks.

1 The standard of comparison in (6) is morphologically marked with ablative in Turkish. I consider the free morpheme *daha* 'more' to be the comparative head corresponding to the suppletive form *-er* or comparative '*more*' in English.

2. Semantic nature of the arguments of gradable adjectives

GAs may take either a referential external argument as in (9a), or a quantificational one as in (9b).

(9) a. John is tall. b. Every athlete is tall.

(10) a. *Ali uzun / boylu.*
Ali tall
'Ali is tall.'

b. *Her sporcu uzun / boylu.*
every athlete tall
'Every athlete is tall.'

(External arguments are underlined)

As for internal arguments (in italic below), Heim (2000), contra Kennedy (1997), maintains that the degree argument DegP can be syntactically realized either as referential (11a), or quantificational (11b).

(11) a. John is *170 cm* tall. b. John is *more than 170 cm* tall.

In contrast, Turkish GAs disallow a referential internal argument as shown in (12a,b) but freely allow a quantificational one with the comparative construction as in (13a, b), as observed in Zidani-Eroğlu 2006.

(12) a. *Ali *170 cm* uzun/boylu.
'Ali is 170 cm tall.'

b. * Bu masa *3 metre* uzun.
'This table is 3 meters long.'

(13) a. Ali *170 cm-den daha* uzun/boylu.
'Ali is taller than 170 cm.'

b. Bu masa *3 metre-den daha* uzun.
'This table is longer than 3 meters.'

(11b) and (13) illustrate examples of comparisons of degrees, which serve as a diagnostic whether a language exhibits the phenomenon of degree of abstraction. Such phenomenon supports the existence of degrees as part of the composition of adjectives in a language (cf. Beck et al 2010, for instance). Another diagnostic constitutes differential comparatives, which describe the difference in degree between the target and standard of comparison (cf. Beck et al 2010). Consider (14) below:

(14) Can Ali-den 3 cm daha uzun/boylu.
Can Ali-ABL 3 cm more tall
'You are 30 cm taller than Ali.'

There is an ordering relation of two degrees here. (14) says that the degree *d* to which Can is tall is greater than the degree *d'* to which Ali is tall and that the difference between the two degrees *d* and *d'* is 3 cm.

Restrictions on the referential internal argument of GAs in the positive form have been noted in the literature before (more recently cf. Kennedy 1997, Beck et al. 2004 and

2010, among others). Bresnan (1973) notes the same phenomenon for adjectives *short* and *fast* as in "* five feet short" and "*30 mph fast". Similarly, Seuren (1978) cites the ungrammaticality of "* ...20 degree warm" and " *...3 years young". Winter (2001) notes that a MP might be acceptable with a GA, but not necessarily with its negative counterpart such as in "The box is ten cm wide/*narrow" and "The well is one meter deep/*shallow". Moreover, some GAs rule out the use of MPs in both the positive and negative use:

(15) a. *This car goes 100 km/h fast/slow.
b. *This parcel is two pounds heavy/light.
c. *This pen is five dollars expensive/cheap. (from Winter 2001)

These ungrammatical examples parallel Turkish GAs when they occur with MPs. This restriction is fairly systematic in Turkish, which (19) further illustrates with GAs other than *boylu/uzun* 'tall'.

(16) a. *...saatte 30 kilometre hızlı.
'...30 kilometers per hour fast.'

b. *Bu paket 80 kilo ağır.
'This package is 80 kilos heavy'

c. *Ali 150 cm kısa.
'Ali is 150 cm short.

d. *Bu oda 42 derece sıcak.
'This room is 42 degrees warm.'

e. *Bu yol 2 kilometre uzun.
'This road is 2 kilometers long.

f. *Bu kalem 50 kuruş ucuz.
'This pen is 50 (Turkish) cents cheap.'

g. *Bu pencere 10 cm kapalı.
'This window is 10 cm closed.'

h. *Bu şişe 2 litre dolu/boş.
'This bottle is 2 literes full/empty.'

Even though the restrictive use of MP with a GA to varying extents across languages and within a language is robust, it has remained puzzling nonetheless. The next section presents previous accounts.

3. Previous Analyses

3.1. Co-occurrence restrictions

Seuren (1978) citing G. W. Klooster (1972) proposes a ban of redundancy to account for the noted restriction: "When a language has both a gradable adjective and a semi-copula

and when both occur in the same expression where both express precisely the same parameter, then the adjective will never be able to take a MP." (Seuren 1978: 338). Examples in (17) show the ban against the doubling of precision:

(17) a. *This pen is five dollars dear.
b. *That parcel is two pounds heavy. (from Seuren 1978)

(17) contrasts with (18) with the MP but without the adjective introducing the scalar property:

(18) a. This pen costs five dollars.
b. That parcel weighs two pounds. (from Seuren 1978)

The copula construction fails to support the expression of the same parameter more than once. This sort of ban on redundancy, though, stems from sources external to the GA, the MP, and their interaction. Turkish exhibits the same pattern. Examples in (19) correspond to (17), the ones in (20) to (18).

(19) a. *Bu yol 2 kilometre uzun.
'This road is 2 kilometers long.'

b. *Bu paket 40 kilo ağır.
'This package is 40 kilos heavy.'

c. *Bu kalem bir lira ucuz.
'This pen is one lira cheap.'

d. *Bu oda 40 derece sıcak.
'This room is 40 degrees warm.'

(20) a. Bu yol 2 kilometre(dir).
'This road is 2 kilometers.'

b. Bu paket 40 kilo(dur).
'This package is 40 kilos.'

c. Bu kalem bir lira(dır).
'This pen is one lira.'

d. Bu oda 40 derece(dir).
'This room is 40 degrees.'

Similarly, Bresnan (1973) rules out the co-occurrence based on lexical restriction. Such selective restriction must allow for semantic variation within the same category.

3.2 Parametric approach

Beck et al.'s (2004, 2010) parametric approach invoking lexical, syntactic and syntax-semantic interface provides tremendous insight into the study of degrees and comparatives crosslinguistically. Their approach predicts cross-linguistic variation for the presence and manipulation of degree expressions. Beck et al.'s (2004) Degree Abstract Parameter (DAP)

states whether or not a language has binding of degree variables in the syntax. If a language, like English, shows negative island effects (21a), allows subcomparatives (21b), and MPs, but lacks variability in acceptability of depending on the degree predicate (also cf. Ishii 1991), then the language is said to have a positive value for the [DAP].

(21) a. *John bought a more expensive book than anybody did.
b. The door is taller than the table is wide. (from Beck et al. 2004)

Beck et al. (2010) claim that Japanese is a [-DAP] language because it contrasts with English regarding these diagnostics. Turkish, like Japanese, disallows MPs, and subcomparatives as in (22). But it patterns with English in lacking variability in acceptability.[2]

(22) a. *Kapı [masa]-dan geniş daha uzun.
door table-ABL wide more long
Intended: The door is taller than the table is wide.

b. *Kapı [masa geniş]-ten daha uzun
door [table wide-ABL more tall
Intended: The door is taller than the table is wide.[3]

Beck et al. (2010) conclude that Turkish, like English, is [+DAP]. It seems, though, that fixing the value of [DAP] does not predict the occurrence of a cluster of related grammatical phenomenon. We have seen [+DAP] Turkish to behave like [-DAP] Japanese. Beck et al. (2010) add two more parameters: (i) Degree Semantics Parameter (DSP), which states whether a language has degree predicates; and (ii) Degree Phrase Parameter (DegPP), which states whether the degree argument position of a gradable predicate may be overtly filled. English is [+DSP] and thus has expressions such comparison of degrees and differential comparatives, which refer to degrees and combine with a degree operator. Since (13) shows comparison of degrees and (14) shows a differential comparative, Turkish qualifies as [+DSP].

To conclude, even though Turkish and Japanese have differing values for the [DAP], MPs cannot co-occur with GAs in these languages. On the other hand, if Turkish has degrees as part of its semantics where these degrees figure compositionally into computing meaning, thus making both Turkish and English [+DAP], it is mysterious as to why MP

2 I am leaving out examples involving scope interaction of the comparative with certain modals in main clauses (cf. Heim 2001) here due to space limitations, but my data show that Turkish patterns with English and not Japanese.

3 One can, though, get subcomparative readings if the predicate denoting the property of the scale in the than-clause is phrasal:

(i) *Kapı-nın uzunluğ-u* *[masa-nın genişliğ-in]-den* *daha fazla.*
Door-GEN length-POSS [table-GEN width-POSS]-ABL more much/many
'The length of the door is more than the width of the table.'/'The length of the door exceeds the width of the table.'

Note that the target of comparison and the standard of comparison have the same internal structural properties.

with GAs are grammatical in English, but ungrammatical in Turkish. Put differently, despite identical parametric values, it is not possible to measure the height of an individual on the height scale telling us exactly the interval it maps onto by using a MP in Turkish. In contrast, in English the expression *John is 6 ft tall* does tell us the lower bound and upper bound of John's height, i.e. the interval it maps onto.

3.3. Precisification

Pinkal (1995) argues that expressions with imprecise use can be forced to be used with precision as illustrated by the co-occurrence of a relative GA and a MP in (23). According to him, a sentence such as (23) can be used to talk about a rod that could actually be a tiny bit short of 10 meters or a bit beyond 10 meters. In contrast, even an approximation toward such precision is entirely absent in (24).

(23) The rod is 10 meters long.

(24) The rod is long.

It is possible to construct a context in which *10 meters long* clearly distinguishes between objects based on potentially very slight differences in length; i.e. the borderline cases can be eliminated. Such precision is not possible with just the adjective present, as in (24). Given that relative GAs do not occur with MPs in Turkish, we may conclude that they resist natural precisification.

Furthermore, Pinkal claims that absolute GAs lead to precisification, which predicts that they would be compatible with MPs. This is borne out in Turkish. The adjectives in (25, 26) are minimal absolute GAs.

(25) a. Bu boru eğik.
'This pipe is bent.'

b. Bu boru 45 derece eğik.
'This pipe is 45 degrees bent.'

(26) a. Bu kapı açık.
'This door is open.'

b. Bu kapı 10 cm açık.
'This door is 10 cm open.'

In (25b) the entire bentness of the pipe is 45 degrees. In (26b) the entire stretch of openness of the door is 10 cm. Note that the absolute versus relative property of GAs constitutes the minimal difference between grammatical (25b, 26b) and the ungrammatical (27b) with the relative GA *sıcak* 'warm' (similar to other relative GAs cited in text).

(27) a. Bu oda sıcak.
'This room is warm.'

b. *Bu oda 45 derece sıcak.
'This room is 45 degrees warm.'

The interpretation of (25b, 26b) is analogous to the English relative GA 'tall' in *John is 6 ft tall* in that John's total height is from zero to 6 ft as denoted by the MP. The observation is that Turkish absolute minimal GAs pattern with English relative GAs when co-occurring with a MP.

3.4 Boundedness of scales

The above observation is curious since relative GAs and absolute GAs differ in the boundedness of their respective scales. According to Kennedy 2007 (cf. also Rotstein and Winter 2004, Kennedy and McNally 2005), relative GAs have an unbounded scale whereas absolute GAs have a bounded scale. More precisely, minimal GAs have a bounded lower end whereas maximal GAs have a bounded upper end. If boundedness, regardless of whether it is the lower or the upper end, that is at play here, then we expect maximal GAs in Turkish to behave the same as their minimal counterparts. However, this is not borne out as the un-grammatical (b) examples of (28–30) show:

(28)	a.	Bu pencere kapalı. 'This window is closed.'	b.	*Bu pencere 10 cm kapalı. 'This window is 10 cm closed.'
(29)	a.	Bu şişe dolu. 'This bottle is full.'	b.	*Bu şişe 2 litre dolu. 'This bottle is 2 liters full.'
(30)	a.	Bu şişe boş. 'This bottle is empty.'	b.	* Bu şişe 2 litre boş. 'This bottle is 2 liters empty.'

In (28b), for instance, the reading where the stretch of closedness from point zero to 10 cm, which is the precise interval depicted by the MP, is not successfully mapped onto the scale introduced by the maximal absolute GA. Hence the intended reading is not available. We observe that a MP may co-occur with a minimal GA, but not a maximal one in Turkish. Why is precisification so precisely restricted?

4. Proposed analysis and conclusion

Considering the facts presented thus far, I take into consideration the concept of parametric variation and the boundedness of scales in my analysis. We observe that relative GAs and maximal GAs do not co-occur with MPs in Turkish. Recall that relative GAs lack lower or upper boundedness. In other words, an inherently fixed degree value imprinted on the scale they introduce, hence qualifying the boundedness, is not present; the standard is contextually supplied and hence variable. Also recall that maximal absolute GAs have upper boundedness but no lower boundedness. In terms of the boundedness of their scales, maximal absolute and relative GAs seem alike: they both lack an inherently fixed discrete degree value, qualifying boundedness, on the lower end of their scale. In contrast, minimal absolute GAs do not. A rough sketch is provided in (31) and (32). (31a) depicts the scale of a relative GA and (31b) the scale of a maximal absolute GA.

(31) a. ---------- > b. ----------|

depicts the scale of a minimal GA with an inherently fixed discreet minimum value qualifying boundedness:

(32) |---------- >

For Turkish, I claim that when the GA introduces a scale with lower boundedness, it allows another expression with a precise beginning and ending point such a MP to map itself on the scale in a particular way. More precisely, it allows the beginning zero value of a MP to map onto the inherently fixed discrete minimum degree value as zero point value. The sketch in (33) illustrates the point.

(33) a MP mapping onto a scale in (32); (example of default discrete mapping)
|--------| = **MP**
|---------- > = (32)

The mapped zero point value, i.e. derived zero point, is not to be understood as synonymous with the inherently discrete zero value of a scale, rather it is an imposed and, until further understanding, a derived point of zero value mapped at any juncture of the scale. Conceptually, it is an open question as to whether the beginning point of a MP, or other expressions with a beginning point for that matter, must always map exactly onto the inherently fixed discrete point of boundedness; i.e. the derived zero point coincides with the inherently discrete zero value of the scale. Let's call this the 'default discrete mapping' scenario. Alternatively, MPs can map their beginning point anywhere on the scale provided they are compatible in the lower end boundedness where the derived zero point does not coincide with the inherently discrete zero value of the scale. Let's call this the 'variable discrete mapping' scenario.

(34) a MP mapping onto a scale as in (32); (example of variable discrete mapping)
|---------|------|---------- >
MP

Turkish, then, is a language that allows derived zero point value mapping on scales of minimal GAs with lower boundedness. (35) is intended to capture the possibility of such mapping in natural language.

(35) **Zero Degree Mapping Hypothesis (ZDMH)**: An expression with a beginning and ending point (e.g., MP) maps onto the scale of a lower bounded gradable expression, creating a derived zero point value.

Turkish and English exemplify the results of such mapping since a MP may occur with a minimum GA. However, there are other languages like Japanese, which reportedly do not. Perhaps upon closer examination of absolute GAs, Japanese might turn out to be similar to Turkish in not being exceptionally restrictive across the board. It is plausible, though, that Japanese remains different from Turkish in its mapping, hence solidifying language variation. Such state of affairs would call for an approach to capture mapping possibilities cross-linguistically on one hand, and the possibilities among the three types of GAs on the other hand. Toward that end, as initial approximation toward a broader and unified coverage of this kind of mapping, consider (36):

(36) **Zero Degree Mapping Parameter (ZDMP)**: A language {does/does not} allow a derived zero point value mapping on scales of GAs with lower boundedness. {English [+] Turkish [+] Japanese [?]}

Turkish and English would be [+ZDMP] languages. If a language is [-ZDMP], then a MP and a minimal GA with lower boundedness should be ungrammatical. If one could draw any conclusion based on Turkish and English in (36), it would seem that a positive value for [ZDMP] does not imply the same mapping possibility with the other types of GAs. This conjecture is supported considering the empirical differences in English and Turkish in this regard. If Japanese turns out to disallow MPs with minimal GAs, then a negative value for [ZDMP] would further imply the nonexistence of any mapping of this nature for that language. Due to space limitations I will not elaborate on the remaining GA types.

Analyzing the crosslinguistic data in light of the ZDMH with the outcome of a derived zero point value appears to straightforwardly account for the Turkish data. One puzzle that has persisted here, as it has in previous works cited here and elsewhere, is why some members of the same GA type do not fit the pattern: recall likes of *fast*, and *warm*. What is at work here that falls outside the bounds of the parameter?

My hunch is that it is some kind of a gap in the language because even though the expression in (37a) is possible in English, the expression in (38) is not.

(37) John is 6 ft tall.

(38) *John is /has 6 ft tallness.

Along the same lines, even though an expression such as (39) is ungrammatical in Turkish, an expression with the nominal counterpart of the adjective occurring with a MP in (40) is grammatical.

(39) *Eren 170 cm boylu.

(40) Eren 170 cm boy-un-da.
Eren 170 cm height-POSS-LOC
'Eren is 170 cm tall./ Eren has a height of 170 cm./ Eren is at a height which is 170 cm.'

(38) and (40), both the nominal counterpart of the relative GA *tall*, are structurally totally different from the nominal examples in (41).

(41) a. John's height is 6 ft. b. Eren-in boy-u 170 cm.
Eren-GEN height-POSS 170 cm
'Eren's height is 170 cm.'

The co-occurrence of the MP with the nominal counterpart of the relative GA is systematic in Turkish:

(42) a. Bu paket 80 kilo ağırlığın-da.
This package 80 kilo weight-LOC
'This package is 80 kilos heavy. / This package has the weight of 80 kilos. / This package weighs 80 kilos.'

b. Oda 42 derece sıcaklığın-da.
room 42 degree heat-LOC
'This room 42 degrees C warm. / The room has a temperature of 42 degrees C.'

First note that in (41b) we are measuring Eren's height upward from a discrete lower bound just like we do in *John is 6 ft tall.* It is possible that the scale of adjectives is different from the one of their nominal counterparts in that the latter introduce a measurement system of degrees in discrete points whereas the adjectives introduce a scale of intervals of degrees (cf. Schwarzschild 2005 and references therein). Such a conceptual distinction in degrees straightforwardly captures some (non)availability of predicted readings with adjectives and nominals. For instance, (43) is ungrammatical on the reading where the length of the cable is 30 cm, but grammatical on the reading where the length of the cable differs from the length of some other object, presumably an assumed standard, by 30 cm; i.e. the differential comparative reading.

(43) Bu kablo 30 cm uzun.
this cable 30 cm long
'This cable is 30 cm long.'

(44) Bu kablo 30 cm uzunluğun-da.
this cable 30 cm length-LOC
'The length of this cable is 30 cm. / This cable is 30 cm long.'

In contrast, (44) is grammatical on the reading where the length of the cable is 30 cm but is ungrammatical on the differential comparative reading. I leave the role of the locative on the scales of nominal gradable expressions for future research.

To sum up, I proposed a Zero Degree Mapping Hypothesis to allow an expression with a beginning and ending point to map onto a lower bounded gradable expression creating a zero derived point value that enters the computation for interpretation. The Zero Degree Mapping Parameter attempted to capture the distribution of minimum GAs occurring with MPs across languages, and particularly in Turkish. Such a parameter had implications regarding mapping possibilities with relative and maximum GAs in other languages. Finally, I surmise that a gap in the language might be responsible for the non-occurrence of a MP with relative GAs since the nominal counterparts of these adjectives do occur with MPs in Turkish. In English, it is the relative GAs, not their nominal counterparts, which occur with MPs. The difference in possible readings with adjectival versus nominal expressions might be rooted in the way their degrees are structured internally to their scales.

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