

Testing the noun-to-measure development path

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Abstract

The experiment described herein tested unit words (e.g. *bunches*, *heaps*, *lots*) in various contexts thereby testing theories of how their use evolves. Participants rated the naturalness of naturally occurring sentences with *bunches*, *heaps*, and *lots* and sentences created by swapping the unit words in the original sentences (e.g. *lots* replaced with *heaps*). Swapping unit words across naturally occurring sentences allows testing the hypothesis that unit words grammaticalize from noun to measure, assuming *bunches* is a noun denoting objects, *lots* is a nominal denoting a unit of measure, and *heap(s)* is used in both ways. Superficially, our results support the idea of a uni-directional development path, but linear models fail to support this hypothesis, so further work is necessary.

Keywords: measures, pseudo-partitives, development path, grammaticalization

Introduction

Partitive structures like *a lot of the land* are said to grammaticalize over time (e.g. Koptjevskaja-Tamm 2001). In particular, it has been said that unit words follow a specific path in their evolution, namely from denoting concrete objects like portions of land (e.g. *lot*), piles of a certain size/shape (e.g. *heap*), or a kind of closely-oriented cluster (e.g. *bunch*) to eventually denoting a measure unit of large quantity (e.g. *I drank heaps/lots/bunches of coffee*). Crucially, this is argued to be a one-directional path meaning that a word will go from primarily concrete use, to mixed use, and finally to primarily measure use; once a unit word loses its concrete object denotation and only has measure uses, it will not develop concrete uses again (Brems 2011, 2012). While corpus studies support a one-way path (Brems 2011, 2012) the acceptability of ‘backward’ change has not been tested on this particular grammaticalization path. What follows describes a test of this path. The results appear to support a unidirectional path, but the possibility of backwards change cannot be ruled out.

Experimental design

In a dialect simulation experiment, participants are told they are rating the acceptability of sentences that come from a particular dialect. The difference in judgments between experimental conditions is assumed to be representative of the diachronic development of the phenomenon investigated (Gergel et al.

2021). This paradigm was used to test the directionality of the noun-to-measure development path.

Sentences in (1) and (2) exemplify concrete unit uses of *bunches* and *heap*, where *dense* and *low* respectively indicate the status of these units as nouns: the bunch is dense and the heap is low so the unit words must be nouns rather than measures. (3) and (4) exemplify measure uses of *heaps* and *lots*, given *bake* and *eat* respectively indicate the status of these units as measures—e.g. the pumpkin is not baked in a heaps, rather an amount equal to heaps is baked.

- (1) Dense bunches of pollen grains cling to each other in gnarled clumps.
- (2) The thief considered the low heap of gems on the table.
- (3) We bake heaps of pumpkin and freeze it to have on hand.
- (4) People are eating lots of fruits and vegetables.

The sentences in (1)-(4) were collected from the Corpus of Contemporary American English and edited minimally to be complete sentences with clear contexts. These original items were then used to make modified items: each unit nominal was swapped across contexts, yielding sentences like (5)-(16). “#” marks sentences as “odd” and “##” as “very odd.”

- (5) A dense heap of pollen grains cling to each other in gnarled clumps.
- (6) #Dense heaps of pollen grains cling to each other in gnarled clumps.
- (7) #Dense lots of pollen grains cling to each other in gnarled clumps.

- (8) The thief considered the low bunches of gems on the table .
- (9) #The thief considered the low heaps of gems on the table.
- (10) #The thief considered the low lots of gems on the table.

- (11) ##We bake bunches of pumpkin and freeze it to have on hand.
- (12) ##We bake a heap of pumpkin and freeze it to have on hand.
- (13) We bake lots of pumpkin and freeze it to have on hand.

- (14) ##People are eating bunches of fruits and vegetables.
- (15) ##People are eating a heap of fruits and vegetables.
- (16) People are eating heaps of fruits and vegetables.

Brems (2011, 2012) shows that *bunches* is primarily used as a noun, *lots* as a measure, and *heap(s)* is one or the other depending on number. *Bunches*, *heap(s)*, and *lots* therefore exemplify a noun-to-measure development path. Brems (2011, 2012) predicts one-way change from (concrete) noun to (abstract) measure. We assume that when concrete units are swapped (i.e. *bunches* and *heap*), they will receive relatively high acceptability ratings; the same is expected

for measure units (i.e. *heaps* and *lots*). However, swapping across category (e.g. *bunches* and *lots*) should result in relatively low ratings. At the same time, going from concrete unit to measure unit should be more permissible than vice versa, so the former should be less marked in the latter context than vice versa. For example, *heap* is still largely a concrete unit so using it to replace *bunches*, which is also a concrete unit, should be acceptable in (5). Because *heaps* and *lots* are largely and entirely measure units respectively, they should not be acceptable replacements for *bunches* in (6) and (7). The same should be true when *bunches* replaces *heap* (8) and *heaps* and *lots* replace *heap* (9) and (10). Conversely, when the measure unit *heaps* is replaced with the concrete units *bunches* (11) and *heap* (12), this should be the most marked, but when *heaps* is replaced with the measure unit *lots* (13) this should be acceptable. The same should be true when the measure unit *lots* is replaced with the concrete units *bunches* (14) and *heap* (15)—i.e. this should be the most marked—but when *lots* is replaced with the measure unit *heaps* (16), the sentence should be acceptable. Summarizing, (1)–(4) should be the most acceptable, because they are original items. (5), (8), (13), and (16) should have similarly high acceptability since they are made by swapping unit nominals of similar kind, (6), (7), (9), and (10) should be marked because they are made by swapping unit nominals of different kinds albeit along the diachronic path, and (11), (12), (14), and (15) should be the most marked because they are made by swapping unit nominals of different kinds in the opposite direction of the diachronic path.

Given three nominals are swapped across each others' contexts, we have a 3x3 Latin Square design where the factor MODIFIER has three levels (*bunches*, *heap_s*, and *lots*) and the factor CONTEXT has three levels (concrete, flexible, and abstract). Importantly *heap(s)* is in the process of change: *heap* is more concrete in use and *heaps* is more abstract in use. Because of *heap(s)*' status, in the experiment they are treated as a single MODIFIER (*heap_s*) that naturally occurs in a single CONTEXT (flexible). In practical terms, this means that half of the *heap_s* items will be singular (concrete) and half will be plural (abstract), and when *heap_s* is used in the *concrete* CATEGORY—i.e. in the *bunches* sentences—half will be *heap* and half will be *heaps*. Given the differences in acceptability predicted across all categories, a linear mixed effects model of sentence ratings should show effects of UNIT, CONTEXT, and MODIFIER*CONTEXT interaction. 60 native English participants were recruited via Prolific, given a similar study with 53% power had that many (Erbach & Gergel, forth).

Results

Most predictions were borne out: original sentences (*bunches*-concrete, *heap_s*-flexible, *lots*-measure) were generally rated highest in modifier categories, though not for *bunches*, which is unexpected. Backwards steps in the

development path were all rated lower than the present stage (heap_s-concrete < heap_s-flexible, lots-concrete < lots-flexible < lots_measure), and, for *bunches*, the first step on the path, flexible, was rated higher than the second step, measure. Results were analyzed in R with a linear mixed effects model using MODIFIER and CONTEXT as fixed effects, and PARTICIPANT and ITEM as random effects. Despite the results generally being in line with predictions, linear models compared with ANOVA did not indicate any effect of MODIFIER ($p = 0.1738$), CONTEXT ($p = 0.3237$), or MODIFIER*CONTEXT interaction ($p = 0.2924$). This may be due to the low power of the experiment (35%), which suggests that more participants or items are necessary. In summary, while the results appear to be in line with the developmental path of unit modifiers from noun to measure, the ANOVA between a linear models do not show the robustness of these results. Therefore, backwards change cannot be ruled out and further work is needed.

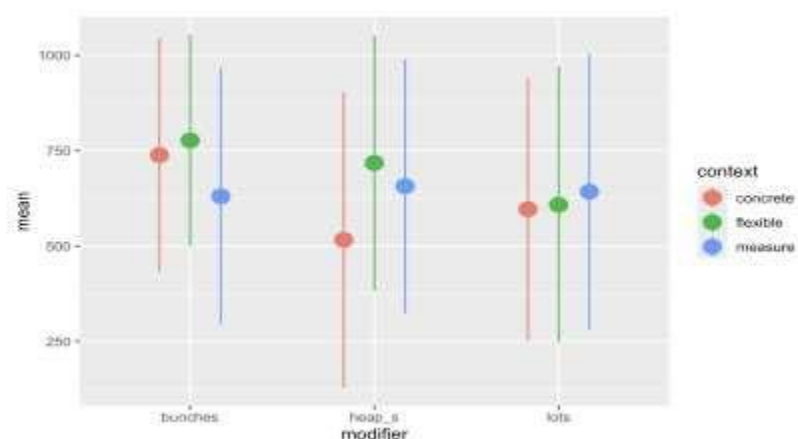


Figure 1. Average rating (point) and SD (line) of items grouped by modifier*context.

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