COUNT/MASS NOUNS AND DEFINITENESS IN PALESTINIAN ARABIC HERITAGE SPEAKERS OF ENGLISH

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Abstract: Definiteness correlates to a cluster of cross-linguistic semantic scalar variables, among which is countability (count/mass nouns distinction). Count and mass nouns are distinguished by definiteness markers in English, but not in Arabic. Middleton et al. (2004) proved that countability is related to cognitive individuation of discrete bounded entities. Lucy and Gaskins (2001) demonstrated that the presence of count/mass distinction directly correlates with attention to the shape rather than the substance of individual entities. I analyze linguistic and cognitive effects of the Palestinian Arabic (PA) and English (EN) definiteness systems and cognitive individuation biases in 15 PA heritage speakers of English (PAHSEs, aged 18-25). Heritage speakers understand but cannot speak a familiar heritage language (Polinsky, 2018). PA is sociogeographically and cognitively peripheral in PAHSEs' world experience. Fifteen PA and EN native speakers (aged 18-25) represent control groups. Linguistic experiments (Liu and Gleason, 2002) tested definiteness grammar of nouns with different countability properties. Semantic and cognitive experiments (Iwasaki et al., 2010) tested effects of PA countability and individuation parameters in PAHSEs. PA definiteness does not significantly affect PAHSEs' grammatical competence. PAHSEs' semantic and cognitive results converge with those of the PA control group, showing bedrock effects of heritage PA.
Keywords: *Definiteness; Count/Mass Nouns; Heritage Language; Language-to-Cognition Correlation; Palestinian Arabic.*

1. Introduction

Universally present, definiteness varies greatly across languages in terms of the reasons for it and manifestations (Lyons, 1999). Definiteness has been explored within various schools of thought in connection to specificity (Von Heusinger, 2002), uniqueness (Roberts, 2003), identifiability (Chen, 2004), ellipsis/reference tracking (Nariyama, 2003), and anaphoricity/ information triggering (Reinhart, 1983). Chesterman (2005) theorized definiteness/ indefiniteness as linguistically 'encoded' and psycholinguistically 'decoded' on the basis of a cluster of physical properties such as quantity/inclusiveness, genericity/extensivity, and countability/concreteness, all scalar properties that very cross-linguistically. Interestingly, considerations of quantity, generality, and concreteness are all semantically proximal within the bedrock of countability.

Danon (2001) observes that the use of the definite article with generics varies cross-linguistically in a way that has no possible effect on interpretation. Arabic uses definite

articles with non-count generics, unlike English. Example (1) shows that the word 'fire' has a different status of definiteness in each language, albeit the same degree of genericity, i.e., indefinite in English but definite in Palestinian Arabic (PA):

(1) When fire starts to burn, it starts to spread

(1a) *lam tabda n-naar bil-ifti*ʕ*āl, innaha tanfur*.

Languages either allow or require nouns to appear with an overt in/definite article or allow bare nouns to appear without an article. Arabic is in the first category, i.e., it is a determiner language that requires noun phrases in argument position to be preceded by a determiner. English is a mixed type, allowing singular proper nouns and abstract, plural, and mass nouns in argument position with no determiner. Singular common, concrete, countable nouns require a determiner (definite article, classifier, number, measure). Mass nouns necessitate the use of measure phrases that contain a classifier to be countable, while count nouns do not (Chierchia, 1998). English definite and indefinite singular count nouns, bare plural count nouns, and bare mass nouns can convey genericity, while definite plurals are not allowed to express generic meaning except in the case of names of nationalities. Arabic, in classical, standard forms and most dialects, only allows definite (singular, plural, and mass) noun phrases to express generic meaning, without any difference between well-established and less well-established types and noun-level and sentence-level genericity (Krifka et al., 1995). In Arabic "the milk is good for you", has both a generic and a specific meaning.

I address here the cognitive effects of the PA definiteness system in PA heritage speakers of English (PAHSEs). In PA and English some nouns can be counted by numerals, while others need classifiers. Count nouns are perceived as possessing properties that allow them to be counted. Referents of mass nouns are considered not easily countable. Count/mass properties may vary cross-linguistically in reference to the same entity. In English, apples, biscuits, and sandwiches are usually considered countable, but wine, soup, water, pasta, and corn are not (they need a classifier to be counted, e.g., three bottles of wine).

Unlike PA and other Arabic varieties, English uses its definiteness system (the/a/0) to mark countability properties (mass/count distinction), as shown by the distribution of the definite article in examples 2 and 3:

(2) water is good for the health(2a) *il-mā mufīd l-as-siḥḥa*;

(3) bread sells well every day (3a) *il-xubz byitbīʕ kaṯīr kull yōm*.

At the deep semantic level, countability correlates with contiguous properties such as extensiveness, inclusivity, and genericity, which all surface in grammatical and syntactic definiteness (Chesterman, 2005), so that *lightning*, *mankind*, *evidence*, and *furniture* are also grammatically processed as mass nouns (Iwasaki et al., 2010):

(4) dogs bark (4a) *il-klāb btinbaḥ*

(5) uranium is a heavy element (5a) *il-yurānyum ʕunṣur ṯqīl;*

(6) apples are too expensive (6a) *it-tiffāḥ kṯīr ġāli*.

Countability properties are related to the cognitive ability of individuation and decision making concerning discrete bounded entities (Middleton et al., 2004). Lucy and Gaskins (2001) demonstrated that the presence of an inherent semantic distinction between count vs. mass nouns, such as it appears in English, directly correlates with focusing on the shape of individual entities rather than on their substance. In contrast, Yucatec Mayan speakers, who resort to classifiers to determine the status of an entity as mass or countable in context, focus their attention more on materials than on shapes of discrete entities.

On the basis of previous studies on Arabic count/mass distinction strategies (Fassi Fehri and Vinet, 2007), the cognitive behavior of PA speakers is expected to be more similar to that of Yucatec Mayan speakers than that of English speakers. Notably, count/mass values are cultural variables and vary impressively across Arabic varieties. Most edible entities and foods are mass nouns in PA and require classifiers (*ḥabbeh* for many fruits and grains, *kurrah* for meat balls, *qitʕ* for candies, *mlaffeh* or *ʕilbeh* for most traditional pastries). Due to the differences between PA and English, the semantic and cognitive responses of PAHSEs are of particular interest here.

From a linguistic point of view, PAHSEs' definiteness system reflects full mastery of the English rules of mass/count distinction, without influences from PA, which the PAHSE informants ceased to acquire at an early age (three/four), so that their experience with the language remained limited to partial comprehension and the use of some brief/routine speech productions (greetings, thanking formulas, expressions of affection or disappointment, some nouns). Yet, assuming that language does not entirely reflect cognitive endowment and experience, I hypothesized some cognitive similarities in count/mass and shape/material distinctions between PA speakers and PAHSEs. Such similarities would prove the existence of deep linguistic relativity effects and show that despite the late development of definiteness in children (Liu & Gleason, 2002), cognitive semantic features in its background are already established within the third/fourth year of age, when PA heritage language acquisition ceased among the informants of this study.

2. Definiteness and Countability in Arabic

Studies on Arabic definiteness have mainly focused on classic and standard varieties, with a few exceptions concerning dialectal data (Dickins, 2013; Testen, 1998) that focused on grammar of nunation (*tanwīn*) and the definite article *ʔal-* (plus allomorphic variants), considering them definiteness/indefiniteness markers (Holes, 1995; Badawi et al., 2004), state markers (Lyons, 1999; Retsö, 2010), or information triggers (Jarrah, 2016). According to the Arab grammatical tradition (Sakaedani, 2019; Sartori, 2019) and modern scholars (Al-Rawi 2005; Hawas 1986, Jaber, 2014) definiteness is not expressed only by *ʔal ʔat-taʕrīf*, nor does *ʔal* express only definiteness: *ʔams* 'yesterday'/*ʔal-ʔams* 'a day in the past' (Kashgary 2015). Definiteness is also acquired through annexation in construct state nominals (Shlonsky, 2004). *ʔAl-* can be: 1. nominal (*ʔism mawṣūl*); 2. definite (*ʔal- ʔat-taʕrīf*, including *ʔal ʔaḏ-ḏihniyya* for familiarity, *ʔal ʔal-ḥuḍūriyya* for contextuality, *ʔal ʔaḏ-ḏikriyya* for anaphoricity, and *ʔal ʔal-jinsiyya* for 'non-referential' definiteness (Abu-Melhim, 2013); or 3. augmented *ʔal zā'ida*, attached to demonstrative nouns, time adverbial 'now,' days of the week, singular proper names, or otherwise generally nunated. The situation is different among dialects in relation to the classic language, as nunation is absent or residual, local strategies other than *ʔal-* can be prefixed to nouns (Jarrah, 2016), and the obligatory definiteness agreement (Danon, 2008) is often violated (as in the *yom ha-šišiy* syndrome; Borg, 2000; Pat-El, 2009). However, the article system does not correlate to considerations of count/mass oppositions, genericity, and inclusiveness.

3. Definiteness and Countability in English

The English article system includes the indefinite article a(n), the definite article the, and the zero (null) article. Many have attempted to find explanations for definite/indefinite noun phrases and the semantic features beyond this distinction (Haspelmath, 1999). I embrace here Abbott's classification of definiteness semantic parameters (2004):

1. Uniqueness (Russell, 1905): "The student arrived" (+), "A student arrived" (-);
2. Inclusiveness (Hawkins, 1978: totality of entities or matter to which the descriptive content applies): "The students arrived" (+), "The sand is white" (+), "Some students arrived" (-);
3. Familiarity (Bolinger, 1977): "The same people spoke" (+), "Other people spoke" (-);
4. Strength (Milsark, 1977, quantifiers in existential sentences): "There are most/all wolves at the door" (+), "There is every/each wolf at the door" (+), "There are two/some/several/many/few wolves at the door" (-);
5. Specificity (Haspelmath, 1997: whether or not the referent of the indefinite is known to the speaker): the sentence "John would like to marry a girl his parents don't approve of" [Partee, 1972] under effect of scope ambiguity can be (+ specific), if John has already chosen his girl and it happens to be the case that his parents do not like her, or (- specific), if John apparently wants to offend his parents by finding someone they disapprove of to marry.

Parameters 1 and 2 clearly correlate with countability properties.

4. Linguistic Definiteness, Semantic Countability, and Cognitive Individuation

PA and English definiteness systems diverge, determining different usages of definite/indefinite articles, singular/plural, verbal tenses, adverbs, and deictic and pronominal elements. Semantic countability is expressed by the definiteness system in English, but not in PA. PA and English definiteness systems interfere with Arabic native speakers' acquisition of English as a second language (Harb, 2014; Husni and Newman, 2015). There is strong evidence of the effects of Arabic countability properties in their errors (in which countability significantly interferes with abstractness as well) (Aboras 2020; Alenizi 2013, 2017; Al-Malki et al. 2014; Naim-Bader 1988). Arabic learners of English overuse the definite article in idioms, with abstract and uncountable nouns, and in generic plural noun phrases:

(7) *the value of the time (8) *he sell the apples at the crossroad

(9) * the milk is nutritious to the body(10) *I went to the bed

(11) *you cook the rice(12) *the horses are useful animals.

The fact that Arabic-speaking learners of English find it so difficult to decide whether referents are countable (Butler, 2002; Master, 1987) implies that the count/mass opposition is language-specific and non-conceptual, i.e., to some extent arbitrary. Definiteness grammar influences the cognition of countability. The correspondence between the grammatical property (count vs. mass) and conceptual properties (e.g.,

individuation of discrete bounded entities vs. non-individuation) has been demonstrated by Middleton et al. (2004), Wierzbicka (1988), and Wisniewski et al. (2003). Several studies have investigated the effect of the numbering system (count/mass distinction) on English speakers' cognition through behavioral experimentation. Lucy and Gaskins (2001) studied the relationship between the number marking system and speakers' classifications of objects vs. substance. They argue that English speakers associate the unit of individuation with count nouns and as a result classify entities based on their shapes, which are the best indicators of individuated entities, while speakers of Yucatec Maya (an indigenous classifier language spoken in southeastern Mexico) pay habitual attention to the material composition of entities rather than their shapes.

5. Heritage Speakers

The term "heritage speakers" (HSs) has only recently gained importance in experimental linguistics, acquisition studies, and psycholinguistics. It refers to second-generation immigrants, the children of original immigrants, who live in a bilingual environment from an early age. HSs' dominant language is the language of the host country, but some aspects of the family language may still affect their linguistic abilities from the periphery of their linguistic consciousness. HSs vary widely in the degree of their receptive and productive command of the heritage language (Polinsky, 2018). The HSs considered here were born to PA-speaking parents in England. PA was heard only at gatherings of family and friends, early on becoming of lesser importance than English, which was considered necessary for education and perceived as an instrument of social integration and individual advancement. None of the PAHSEs tested here were proficient in PA and all possessed only oral comprehension abilities and basic communicative competence (beginner level).

6. Aim of this Study

I analyzed the cognitive effect of the PA parameter of countability in 15 PAHSEs aged 18-25. The parameter of countability surfaces differently in PA and English in the grammar and syntax of definiteness. I expected PAHSEs to show full mastery of the English definiteness markers in tasks entailing different countability values in the linguistic experiments and to produce the same results as the EN native speakers' control group (15 informants, aged 18-25). On the other hand, I hypothesized that PAHSEs' cognitive responses would be closer to those of the PA speakers' control group informants. In particular, I expected PAHSEs to classify known and novel objects by material and not by shape. All groups (PAHSEs, EN speakers, PA speakers) were tested using the same linguistic and cognitive tests.

7. Methodology

Fifteen PAHSEs aged 18 to 25, born and raised in England, took part in linguistic and cognitive experiments. Fifteen PA and fifteen EN native speakers aged 18 to 25 represented

the control groups and took part in the same experiments. As for the linguistic experiment, EN speakers and PAHSEs were requested to reply in English, and PA speakers in PA.

7.1. Preliminary Grammar Tests

Grammatical tests consisted of the following:

1. a fill-in-the-blank task,
2. an error correction task,
3. countability judgments of nouns in isolation,
4. countability judgments of nouns in context.

Each test included 20 entries, all elaborated *ad hoc* based on the model of Liu & Gleason (2002). These entailed countability-based oppositions that correlated with abstractness, genericity (Behrens, 2000; Dahl, 1975), extension, and inclusiveness (Carlson, 1977; Fiengo, 1987) under different conditions of numbers, tenses, existentiality, and argument structure. The EN control group and PAHSE informants received the test in English, while the PA control group received the same test to be performed in PA in order for me to be able to judge eventual PA influences in PAHSEs' performances.

7.2. Semantic Similarity Test

A semantic test was employed to determine whether the count/mass distinction has consequences for semantic representation in that words that share count or mass status are more semantically similar than words that do not share count/mass status (Vigliocco et al. 2005). The test was based on the error induction design. Speakers were first asked to name 40 high-resolution color pictures in their respective native language using either a count phrase ('a__') or a mass phrase ('some__'), to check their agreement on the property attributed to each entity. Next, I grouped the pictures in blocks of eight, subject to the constraint that each picture could occur no more than once within a block, and could not occur as the last item in one block and the first item of the next. Each picture appeared 20 times in the course of the experiment, following Vigliocco et al. (2005). Each speaker was asked to name food pictures aloud in his or her native language using single words (or a name such as 'green bean') as they appeared on the computer screen. Once the practice session was completed, the experimental blocks were presented at increasing speed. The sequences of eight pictures appeared in randomly selected positions on the screen. I analyzed only lexical errors (i.e., cases in which the word produced for a target was another word). EN speakers', PA speakers', and PAHSEs errors were analyzed according to the proportion of errors that preserved the count/mass status of the target label.

7.3. Spot the Odd One Out

In this experiment, speakers were asked to make semantic judgements on 12 triads of words (translation equivalent in the two languages). Their task was to spot the odd one out and

cross out the word less similar to the other two in terms of meaning (Garrard et al. 2004). If count/mass status affects English speakers' semantic representations, EN speakers and PAHSEs should show a greater tendency to select words that share count/mass than PA speakers. Twelve words were selected and combined in all possible triadic combinations and the order of the three words in each triad was randomized. Participants completed the task using paper and pencil.

7.4. Match by Similarity

A non-linguistic experiment from Lucy and Gaskins (2001) was replicated. It consisted of asking the informants to observe an original object and decide which of two alternative objects was more similar to it. One had the same shape as the original object, while the other had the same material composition. Each informant underwent six such tests, four with known objects and two with novel objects. According to the hypothesis that linguistic properties of countability affect cognition, EN speakers were expected to prefer the shape alternative and PA speakers the material alternative. The choices of the PAHSEs were the objects of the experimental question.

8. Results

The results of the EN speakers' and PAHSEs' grammar tests confirm that count/mass noun judgments strongly correlate with competence in definiteness rules in English. The grammatical tests will not be discussed here since the linguistic count/mass nominal parameters of PAHSEs are identical to those of EN speakers. PAHSEs indeed demonstrated native competence in English. The present analysis is therefore restricted to examining deeper influences of heritage PA countability parameters on PAHSEs' semantics and cognition. In the semantic similarity test, under increasing time stress, all groups produced a higher number of naming errors. Errors produced by the EN control group involved the count/mass distinction, so that nouns were mistakenly attributed within the same category (mass: "water" for "juice," "rice" for "corn," "flour" for "sugar," "oil" for "honey"; count: "biscuits" for "candies," "chocolates" for "meatballs," "pastries" for "meat rolls"). Only two of 23 errors violated the mass/count boundary. Interesting, despite the fact that all entities (mostly edible, processed or raw) were presented in bowls in order for shape not to interfere with categorization, the errors produced by EN speakers also involved shape-related boundaries. In line with the hypothesis, the errors produced by PA informants often crossed the count/mass distinction (in 14 of 26 errors). Thus, I obtained, for example: "rice" (*ruzz*/mass) for "eggs" (*bayḍāt*/count), "meat and rice balls" (*kafta*/mass) for "biscuits" (*baskwīt*/count), and "candies" (*ḥulwa*/mass) for "pastries" (*muʕjaneh*/count). Notably, seven of the 27 errors produced by PAHSE informants, mainly those related to nouns of processed food types, crossed the count/mass boundary. These results may depend on cultural factors that interfere with linguistic choices in PAHSEs. Indeed, PAHSE informants live in an English linguistic environment, yet food is part of the home and family

routine, being prepared, measured, served, and discussed according to inherent PA cultural criteria, influenced by mass concepts and related classifiers.

The odd-one-out triads showed similar results, with PAHSE data showing intermediate values between EN and PA. For example, given the triad showing water/rice/biscuits, 12 EN speakers spotted the water (the liquid), while 14 PA informants spotted the biscuits (the only count noun). Out of 180 triads for each group, EN speakers violated the count/mass boundary in 13 cases, PA speakers in 79 cases, and PAHSEs in 54 cases and, most interestingly, not only in food-related items. For example, in the English triplet "parquet" (mass)/"tile" (count)/"brick" (count), 12 EN speakers pointed to "parquet," the only mass noun, while PAHSEs were much less count/mass- oriented (four pointed to "parquet," six to "tile," and five to "brick"). The PA triplet was *barkē* (mass)/ *balāṭa* (count)/*qarmīd* (mass), and PA speakers did not show specific effects of count/mass distinctions. Similar results were obtained for the triplet "soap/*ṣabūn*" (mass)/"shampoo/*šambū*" (mass)/"sponge/*sfinjeh*" (count). EN speakers generally pointed to "sponge," while PAHSEs and PA speakers made different choices, not oriented by any count/mass bias.

The cognitive tests confirmed the data yielded by previous experiments conducted by Lucy and Gaskins (2001) on EN speakers in which this group opted mainly for matching the objects with the same shape (84 of 90 responses). PA speakers were more oriented toward matching objects made of the same material (78 of 90 responses). PAHSE informants produced an intermediate result; 52 of 90 responses matched objects by material and 32 by shape.

9. Conclusions

Semantic and cognitive similarities between PAHSEs and PA speakers are striking considering that PAHSEs speak only English fluently and their competence in PA is only passive and restricted to a scanty vocabulary and set of communicative tasks. PA definiteness grammar, which does not mark count/mass distinctions, does not affect PAHSEs' linguistic production. English definiteness markers are associated with countability and the expression of countability relies on their distribution. The article is one of the most frequent recurring elements in English linguistic production, so its rules are deeply embedded in the linguistic thinking of the speakers via frequency. Therefore, I expected PAHSE informants, who are native speakers of English, to have stronger biases toward the semantic count/mass opposition and cognitive individuation by shape. The lability of the count/mass opposition among PAHSEs echoes the PA semantic profile and PAHSEs' cognitive bias toward matching objects by shape is in line with PA speakers' cognitive decisions.

To sum up, the data elicited and discussed in the present study show that despite the fact that definiteness is acquired at a late age compared to other areas of grammatical competence, semantic and cognitive parameters related to it are ready to use at a very early age (three–four), when PAHSEs' acquisition of PA structures begins its decline in favor of English. Furthermore, cognition and language are not expressions of the same underlying structures; rich experience of thinking categories are stored in cognition yet are often silent or recessive in language. So, a "thinking for speaking" activity does exist (Slobin, 1992),

and it represents a small part of the whole cognitive potential of an individual. Language is not the only factor that affects cognition; PAHSE informants' life experience demonstrates that mental habits and attitudes leading to specific judgements, evaluations, and decisions are also transmitted via cultural practices. Preparing food in certain quantities and shapes and serving and consuming it in certain containers and with certain utensils can affect cognition as much as the language in which we think.

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