

Count-mass Distinction in the Acquisition of English Articles by Persian Learners of English

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Abstract

Articles in general and definite articles in particular can create problems even long after all other aspects of English have been mastered. The present article investigated the learnability problems related to the acquisition of count-mass distinction of English nominals by Persian L2 learners. The theoretical underpinning of the study is the interpretability hypothesis (Tsimpli & Dimitrakopoulou, 2007) arguing that the features which are semantically interpretable can be acquired. To this end, 50 learners constituted the participants of the study and completed a forced-choice elicitation task requiring the use of articles. The results of the study substantiated the interpretability hypothesis. Nonetheless, the advanced L2ers showed a conservative behavior in the mass context. They significantly opted for *a/an* in wide scope indefinite non-referential de/re context. The findings reveal that article suppliance creates more learnability problems in the plural and indefinite mass contexts compared to the count singular ones.

Keywords: Definite and Indefinite Article, Count and Mass Nouns, Acquisition, Persian

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1. Introduction

The choice of articles can be a serious obstacle on the way to the mastery of English for many L2 learners. The definite article poses a challenge both to learners whose L1 lacks articles and to those whose L1 licenses article use (WonHo Yoo, 2009). Additionally, L2 learners would have difficulty selecting the correct article due to the type of context, i.e., anaphoric (1), encyclopedic (2) or associative (3).

(1) A: *I am looking for my keys.*

B: *You are so absent-minded. You just put **the keys** in your rucksack.*

(2) A: *What did you learn in your science class today?*

B: *We learned that some scientists have travelled to **the moon**.*

(3) A: *I thought all the flights to Paris were full.*

B: *I booked **the ticket** three months in advance.*

Chierchia (1998) proposes that languages fall into 3 types in relation to nominals:

(i) Those wherein NPs can be merged directly in argument positions in syntactic expressions without the need for a determiner (Japanese, Chinese). A Japanese example is given in (4) where the bare noun *ringo* could have different functions.

(4) *Taroo-ga ringo-o katta*

Taro-Nom apple-Acc buy-past

Taro bought *an apple/the apple/apples/the apples*

(ii) Those where NPs can never be merged directly in argument positions, but require a determiner to license them as arguments (French):

(5) *Un garçon/*garçon a acheté **du** beurre/*beurre*

a boy has bought PART butter

A boy bought butter.

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(iii) Mixed languages where count plural and mass NPs are argumental and do not need to be licensed by a D, while count singular nouns require licensing (English):

- (6) a **(A/the) boy bought *(a/the) book*
b *Boys worked with clay during the art lesson*

Persian can be considered as the third category as the definite NPs are argumental whereas the singular indefinite nouns require licensing.

Chierchia suggests that these 3 types are the 3 faces of a *nominal mapping parameter*. NPs which do not require determiners are ‘argumental’. NPs which require determiners are ‘predicative’ - the determiner licenses the appearance of a predicative NP in syntactic expressions. Languages differ, then, parametrically in whether all NPs are argumental, like Japanese, all NPs are predicative, like French, or count singular NPs are predicative and count plural and mass NPs are argumental, like English. In English, bare plural nouns and bare mass nouns can act as arguments but bare singular nouns cannot.

The distinction between count-mass nouns is among the properties inherent in the process of acquiring English article system. L2 learners would encounter a learnability problem in considering such nouns as argumental or predicative.

The theoretical underpinning of the current study is the Interpretability Hypothesis (Tsimpili & Dimitrakopoulou, 2007) according to which interpretable grammatical features do not pose any learnability problems at the conceptual level (LF) even though such a feature may lack a phonetic manifestation (PF) in L1. Interpretable features are accessible to the L2 learners while uninterpretable features are difficult to identify and analyze in the L2 input due to persistent L1 effects on adult L2 grammar. At the

conceptual level, definiteness is interpretable in both English and Persian; however, such a feature has a phonological representation (i.e., *the*) in English but not in Persian.

2. Count-mass Distinction in English and Persian

Mass nouns, unlike count nouns, refer to a substance which is not differentiated. Mass nouns have some subparts but with no atomic members. In the example “*Topsy likes caviar*” the word *caviar* is a mass noun which can have a generic interpretation. In English, mass nouns appear without any articles. They are not considered as countable unless they are associated with a measure or classifier phrase.

Middleton, Wisniewski, Trindel and Imai (2004) state that the conceptual basis of count and mass nouns is based on the principle of ‘cognitive individuation’ in which the referents of count entities is conceptualized as a distinct individual while that of mass nouns is conceptualized as ‘non-individuated’ entities.

There are two commonly-cited semantic criteria for count-mass distinction in English. The first criterion is that mass nouns possess cumulativeness of reference. It implies that if a mass term such as *salt* is true of each of the two items, it can be true of those two items in aggregate. The second criterion is the divisibility of reference implying that any part of something denoted by a mass noun can have the properties of the given mass noun. If we accept the semantic distinction between count and mass nouns, it implies that count nouns denote discrete entities while mass nouns denote substances.

How can we explain the above properties in Persian? Unlike Lazard (1992) who describes Persian as a language lacking count-mass distinction,

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Ghomeshi (2003) argues in favor of such a dichotomy although it is not manifested for bare singular nouns in direct object positions.

The distinction between count and mass nouns has certain morpho-syntactic criteria as follows. Comparing English and Persian, we can see that parts *a* through *d* are shared in the two languages whereas parts *e* and *f* find their morphological realization only in English.

- a. Unlike mass nouns, count nouns show a singular-plural contrast (*water vs. drops*).
 - b. Unlike mass nouns, count nouns can be modified by cardinal numerals (*several books*).
 - c. Count nouns can be modified by certain quantifiers such as *many* and *few* while mass nouns are modified by *much* and *less*.
 - d. Count nouns, unlike mass nouns, can take the antecedent *one* (7a-b)
- (7) a. *John sent his brother a postcard and he sent me one too.*
b. *John sent his brother perfume and he sent me some/*one too.*
- e. Count nouns can be preceded by an indefinite article, but mass nouns cannot (a book BUT *an advice).
 - f. Singular count nouns must be used together with a determiner, quantifier or numeral whereas such a morphological property is lacking in mass nouns.

In line with Ghomeshi (2003), the existence of such a lexical distinction is adopted here. Ghomeshi further provides three reasons for the distinction. The first reason is that, like English, count and mass nouns in Persian are associated with different quantifiers. The quantifier *har* (8) and *ye zarre* (9) are used for count and mass nouns, respectively.

(8) *Har machin*

Each car

(9) *Ye zarre namak*

one bit salt

A bit of salt

Secondly, mass nouns in English and Persian are always singular. Finally, mass nouns in English and Persian do not appear with indefinite article (10).

(10) **a water*

* a:b-i

water-*indef*

Relying on the above three reasons, Ghomeshi (2003) claims that there is a lexical distinction between count and mass nouns in Persian.

Nonetheless, the grammatical distinction between count and mass nouns is not at the same projection level in Persian and English. As Ghomeshi (2003) suggests, the distinction is at NumP in English while it is at the classifier level in Persian. This idea is elaborated on in the next section.

A further distributional property of Persian NPs is that nouns are not grammaticalized on the basis of countability. Persian numerals must appear with singular nouns. In order to make a mass noun countable, Persian requires classifiers. In other words, numerals and classifiers should co-occur to be considered acceptable. In (11), the word *se* is a numeral while *estekan* is a classifier (*CL*).

(11) *Se estekan chae*

Three CL-cups tea

Three cups of tea

Given the above distributional properties, an idiosyncrasy of English language is that mass nouns can potentially be used with a plural marking or an indefinite article. However, such nouns will be interpreted as taxonomic in nature or carry a quantitative interpretation. Similarly, when count nouns can appear bare, they will receive a mass interpretation (12).

(12) *Monster is a huge animal.*

3. Definiteness in English and Persian

Non-generic nouns can be discussed in terms of their identification by the interlocutor. If the interlocutor knows the reference, it is considered as definite, otherwise it should be regarded as indefinite. On the other hand, specificity is defined in relation to the speaker not the hearer. It shows the speaker's intention to refer to some individual possessing a noteworthy property (See Rezai & Jabbari, 2010, for more details).

Standard English has two articles, *the* and *a* instantiating the semantic feature of definiteness as in [+definite] and [-definite] contexts, respectively. English definiteness markers are determined by the semantic feature of countability. While *the* is used in both singular and plural [+definite] contexts (13a, b), *a* is used only in singular [-definite] contexts (14a).

- (13) a. *I saw the monster.*
b. *I saw the monsters.*
- (14) a. *I saw a monster.*
b. *I saw monsters.*

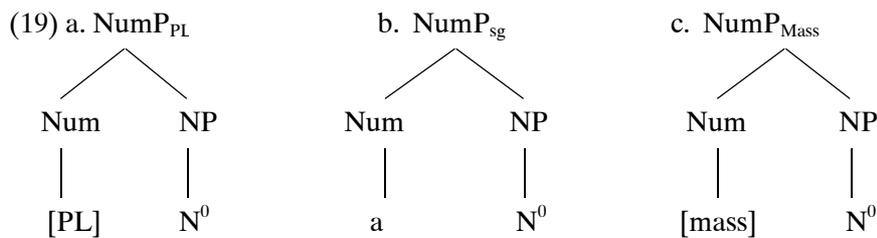
In English, however, mass nouns lack an overt article which is the counterpart of the indefinite article *a* (15). Such a distinction is lacking in definite nouns in Persian where both count and mass nouns are devoid of any morphological markers (16 & 17). In fact, the definite marker, unlike English, is not morphologically instantiated in Persian.

- (15) *I have salt in my diet.*
- (16) *Namak kharid-am.*
Salt buy-1st Sg. past
I bought salt.
- (17) *Keta:b kharid-am.*
book buy-1st Sg. past
I bought the book.

In English, numerals are projected at the level of cardinal projection (CARDP) above NumP because they precede it. The projection of the noun phrase *two lobsters* has the following configuration (18).

(18) [CARDP *two* [NumP [NP *lobster*]s]]

Diagram 19a below indicates that the specifier of NumP is plural. Therefore, the head noun is interpreted as plural. The specifier of NumP in diagram b is countable singular and the N⁰ is interpreted as singular; while that of diagram c refers to a mass noun such as *salt*.



(Adopted from Ghomeshi 2003, p. 54)

Diagram 19b shows that the indefinite article *a* is represented on the NumP node. The question which may arise is how the definite article *the* is projected. This article needs to be projected as the head of DP at a level higher than CARDP because it always precedes numerals:

(20) I saw the two lobsters.

The noun phrase *the two lobsters* has the following structure (21):

(21) [DP the [CARDP two [NumP [NP lobster]s]]]

Hence, as Ghomeshi (2003) argues, it can be concluded that the English noun phrases have three levels of projections. The head of NumP, i.e., NumP⁰ instantiates singular indefinite, mass nouns, and plural nouns whereas that of Cardinal projection represents numerals. Finally, the head of DP, i.e., D⁰ determines [+definite] feature.

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The difference between nouns in English and Persian is concerned with the absence of a NumP projection in Persian. That is, the bare singular noun can syntactically appear as an argument of a predicate without mass interpretation while its English counterpart is projected as NumP projection. In sum, the syntactic structure of a Persian noun contains just two levels: cardinal projection and quantifier/determiner projection while that of English requires an extra number projection.

4. Syntactic Account

Although Chierchia's (1998) account pointed out in the introduction section is concerned primarily with the semantics of nominals and the link between argumental status and the ability of NPs to refer to 'kinds' (generics), it has clear implications for syntactic representation. When NPs are 'predicative' there is a dependency between the NP and a c-commanding category which licenses the NP's appearance in syntactic expressions. In the spirit of the Minimalist Program (Chomsky, 1995, 2000, 2001), it is assumed that this dependency is expressed as an agreement relation between an uninterpretable feature of the N head of NP - [uF] - and an interpretable feature of a c-commanding category, namely [F]. Predicative NPs require a c-commanding category with an appropriate interpretable feature which values and deletes the uninterpretable feature of the N under the operation 'Agree'. We assume the definition of 'Agree' given in Adger (2003, p. 169):

(22) **Agree** (Adger 2003, p. 169)

In a configuration:

$X[F: \text{value}] \dots Y[uF :]$ or $X[uF :] \dots Y[F: \text{value}]$

where ... represents c-command, and F = a feature

F values uF

In languages like French where all Ns are predicative, all Ns have the uninterpretable [*uF*:] feature. In languages like Japanese where all Ns are argumental, [*uF*] has not been selected. The ‘mixed’ language English poses some interesting problems in relation to this account. Count singular Ns require a determiner of some kind; therefore, they must have the feature [*uF*:], which will be valued by an interpretable [F] in a c-commanding constituent, for example:

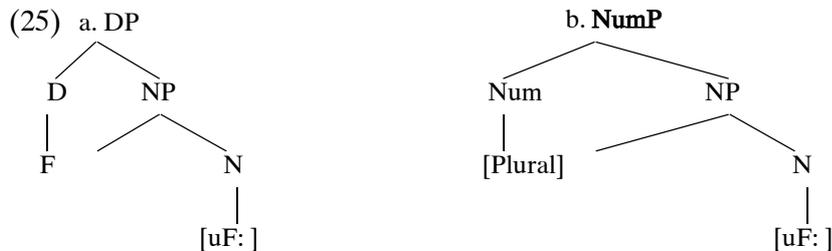
- (23) *The boy*
 [D, F] [N, animate, masc, 3p, *uF*:] →
 [D, F] [N, animate, masc, 3p, ~~*uF*~~:F]

Count plurals, however, do not require an article:

- (24) *Boys (from the local school) bought books (at the Wivenhoe bookshop)*

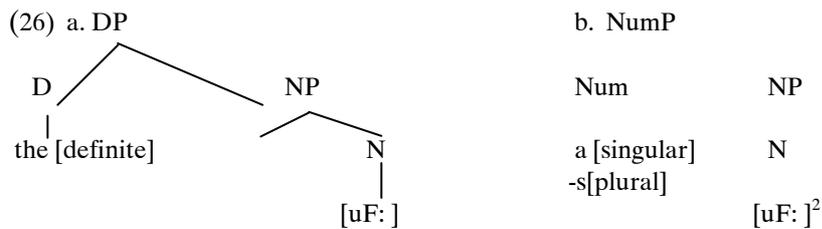
In Chierchia’s terms, *boys* and *books* are argumental bare NPs. However, this cannot translate simply into the claim that bare plural Ns lack [*uF*:]. This would require two lexical entries for every count noun, one with [*uF*:] when it is singular and one without it when it is plural. A simpler assumption is that count Ns always have the feature [*uF*:] in English, and that [plural] is an interpretable feature capable of valuing and deleting the [*uF*:] feature of N. Assuming that number is realised in an independent c-commanding NumP (Bernstein 1991, Ritter, 1993), the [*uF*:] feature of count Ns can be valued either by a feature of D, or by the [plural] feature of

Num:



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Observe that NumP is not projected in (25a). Following Lyons (1999, pp. 298-301) we assume that D is the locus of interpretable [definiteness], realised in English as *the*. The indefinite article *a* by contrast is not an exponent of D but an exponent of ‘cardinality’ (specifically of singularity), which we take to be located in the NumP¹. Other exponents of cardinality, according to Lyons, are the unstressed indefinite *some* (*sm*), *one*, numerals and plurality. Thus NPs appearing with the definite article have the structure in (26a) while those appearing with *a*, *-s*, *sm*, *one*, etc. have the structure in (26b):



On this account a phrase like *the book* is interpreted as singular indirectly, by virtue of the absence of a projection determining cardinality.

Mass Ns in English, in contrast to count Ns, would appear to lack the feature [uF:], and they are not dependent on a c-commanding category to license their appearance in syntactic expressions. Given the above account, the feature specifications of nouns in English, Japanese and French differ in the following way:

¹ This differs from Lyons who takes cardinality to be a projection separate from NumP: CardP.

² Lyons (1999: 36) points out that given this analysis *the* and *a* should be able to co-occur in the same projection, since *the* can co-occur with *-s*, *one* (*The books ...*, *The one person who can do it*). He suggests that co-occurrence is blocked by a phonological property: both *the* and *a* are unstressed, and unstressed forms can only occur initially in the phrase.

- (27) English: count: [N, uF:], mass: [N]
Japanese: all: [N]³
French: all: [N, uF:]

Such a 'mixed' syntactic property of English with asymmetric count-mass morphological manifestations can pose certain learnability problems for Persian learners of English. These acquisitional problems which can be attributed to syntax-semantics interface are dealt with in the following section.

5. Methodology

5.1. Hypotheses

The following research hypotheses were investigated in the present study:

- A) Persian L2 learners cannot acquire the functional feature associated with English articles.
- B) The type of context (anaphoric, encyclopaedic and association) does not affect the article selection in both definite and indefinite contexts.
- C) Persian L2 learners will experience no learning problem in acquiring the English count-mass distinction.

5.2. Participants

The study participants were 50 undergraduate and graduate students of English literature and TEFL at the University of Yazd, Iran. None of the

³ The implication of (27) for Japanese is that no c-commanding constituents are required to license the appearance of Ns, whether count or mass, in syntactic expressions. This does not mean that Ns may not appear with numerals, demonstratives, possessives and other modifiers of nominals.

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participants had any experience living in an English speaking country. The participants' bio data is presented in Table 1.

Table 1. Participants' Information

	N.	Age range	Age mean	OQPT range
Intermediate	25	18-25	21	36-47
Advanced	25	18-27	22	48-59

In order to determine the participants' proficiency level, they were asked to complete the Oxford Quick Placement Test (OQPT) (2001) which is a timed test to be completed in 30 minutes. The test consists of 60 items of vocabulary, grammar and cloze test. Based on the instructions given by the test organizers, the participants who scored between 35 up to 47 were placed at the intermediate proficiency level. Those who scored between 48 up to 60 were placed at the advanced proficiency level. The present study offers the results of the advanced learners as no significant difference was observed between the two proficiency levels.

5.3. Task

The task designed for the study was a forced choice elicitation task comprising 92 conversational exchanges out of which 72 items were scrutinized. Twenty distracters were included in the task as fillers. Each short dialogue had either a count or a mass noun following the article. Based on previous studies it was believed that the L2 learners would have difficulty selecting the correct article due to the type of definite and/or the type of noun. There were 18 contexts half of which were definite contexts and the rest indefinite ones. The test instrument was designed to incorporate definite and indefinite specific contexts, indefinite non-specific

contexts and three definite contexts. The distribution of tokens in the test, together with the expected article choice in standard English, is displayed in Table (2) here.

Table 2. Distribution of Types and Tokens (= K) in the Forced Choice

Definite	Count singular		Count plural		Mass	
	Expected article	K	Expected article	K	Expected article	K
Anaphoric	the	4	the	4	the	4
General knowledge	the	4	the	4	the	4
Associative	the	4	the	4	the	4
Indefinite						
+specific (-scope)	a	4	∅	4	∅	4
-specific (-scope)	a	4	∅	4	∅	4
-specific(narrow scope)	a	4	∅	4	∅	4

An example relating to indefinite mass context is provided in (28) below.

(28) A: *What kind of floor would you like in your new kitchen?*

B: *I don't know.*

A: *I could lay ____ wood and then varnish it.*

an ∅ the a

5.4. Procedures

The participants were instructed to read each short dialogue in the forced choice elicitation task and choose from four possible items that could fill the gap. Written instructions for the completion of the task were given and once each participant had read the instructions the researcher then asked each of them if they had clearly understood what they were being asked to do. The participants were asked to choose the item that they felt was most appropriate to fill the gap and put a circle around it. They were asked not to spend much time on deciding which article should be inserted. Rather, they

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were encouraged to choose the most appropriate article to fill the gap. The task was not timed and the average amount of time to complete the task was forty five minutes.

5.5. Data Analysis and Results

The present section covers the results obtained from the forced choice elicitation task. Each participant's choice was given a score of 1 and the two non-selected choices a score of zero. It was then possible to quantify how often a participant selected the expected article and how often an unexpected choice was made in each context. The results of both definite and indefinite contexts (singular, plural and mass) are analyzed here.

6. Results

6.1. Results of Definite Contexts

The participants' performance on definiteness patterns are presented here. As pointed out earlier, there are three contexts of definiteness namely anaphoric, encyclopaedic and association. The overall results in all three contexts are presented in Table (3). As can be seen, there was some variability between the definite and zero article use in the plural and mass contexts. The participants, however, opted for the English definite article in 91%, 85% and 82% of the time.

Table 3. Choice of *the* in [+definite, +specific] Count Singular, Plural and Mass Contexts vs. *a and *Ø

Count singular (k=12)		Count plural (K=12)		Mass (k=12)	
The	a/an*	The	Ø*	The	Ø*
91%	5.66%	85%	14.66%	82%	16%

The results of the repeated measure ANOVA showed that there was a significant difference between the contexts [Wilks' Lambda= .715, F (2, 23)=4.578, $p=0.021$, Multivariate eta squared=.285]. The post-hoc analysis using Bonferroni adjustment showed that there was no significant difference between the singular and plural contexts ($p=0.159$); however, the singular context was significantly different from the mass context ($p=0.018$).

Table 4 displays the results of the anaphoric context in singular, plural and mass contexts. Majority of the participants opted for the correct option in all contexts implying that they fully recognized a need for a functional word in such contexts. However, their performance in the mass context had less certainty than other contexts.

Table 4. Definite Anaphoric Count Singular, Plural and Mass Contexts

The			a/an*			Ø*		
Sg.	Pl.	Mass	Sg.	Pl.	Mass	Sg.	Pl.	Mass
94%	99%	83%	5%	0%	6%	0%	1%	11%

The analysis of the results using repeated measure ANOVA revealed that there was a significant difference across the contexts [Wilks' Lambda= .604, F (2,23)=7.533, $p=0.003$, Multivariate eta squared=.396]. The post-hoc results using Bonferroni adjustment showed that the participants had a similar performance in both singular and plural contexts ($p=.171$); nonetheless, their performance in the plural context was significantly different from the mass context ($p=<0.003$). Therefore, it shows that the participants experienced more problems in the mass context.

Table 5 shows the results of the encyclopedic context in singular, plural and mass contexts. Unlike the anaphoric contexts, the L2ers experience more problems in the plural context. The advanced learners selected zero article 25% of the time. A statistically significant difference was observed

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between the singular and plural contexts as a whole ($p=0.001$). It seems that the encyclopedic knowledge seems too general for some L2ers to license definite articles.

Table 5. Definite Encyclopaedic Count Singular, Plural and Mass Contexts

The			a/an*			Ø*		
Sg.	Pl.	Mass	Sg.	Pl.	Mass	Sg.	Pl.	Mass
91%	74%	89%	2%	1%	0%	7%	25%	11%

The analysis of the results showed that there was a statistically significant difference across the contexts [Wilks' Lambda=.560, $F(2,23)=9.036$, $p=0.001$, Multivariate eta squared=.440]. Further analysis of the results using Bonferroni adjustment showed that the participants' performance in the singular and mass contexts were similar ($p=1.000$). Nonetheless, it was significantly different in the rest of the contexts ($p<0.01$).

Table 6 offers the results of the definite association context in singular, plural and mass contexts. The participants exhibited some variability between the definite and zero article in the plural and mass contexts. Such a behavior was not found in the singular context where the advanced learners wrongly used *a/an* in 10% of the cases.

Table 6. Definite Association/Count Singular and Plural

The			a/an*			Ø*		
Sg.	Pl.	Mass	Sg.	Pl.	Mass	Sg.	Pl.	Mass
88%	82%	73%	10%	0%	1%	2%	18%	26%

The analysis of the results revealed that there was no statistically significant difference across the contexts [Wilks' Lambda= .773, $F(2,23)=3.370$, $p=0.052$, Multivariate eta squared=.227]. In fact, the participants had a similar performance in all three contexts.

The last analysis performed on the use of articles in the definite contexts was to see which of the three contexts of anaphoric, encyclopedic and association contexts was more challenging to the L2ers. To this end, the participants' performance in each context was aggregated in terms of their performance in the singular, plural and mass contexts. The analysis of the results as displayed in Table 7 below showed that the anaphoric context was the easiest context while this was not the case with the encyclopedic and association context.

Table 7. Comparison of the Participants' Performance in All Definite Anaphoric, Encyclopedic and Association Contexts

Context type	Anaphoric	Encyclopedic	Association
Mean percentage	92	85	81

The inferential analysis of the results using repeated measure design showed that there was a statistically significant difference across the context [Wilks' Lambda=.435, $F(2,23)=14.917$, $p=0.0001$, Multivariate eta squared=.565]. The within context comparison of the results showed that the anaphoric context was statistically different from the other contexts ($p<0.01$); however, the encyclopedic and association contexts were not statistically different from each other ($p=0.423$).

In sum, the analysis of the results obtained from definite contexts shows that some participants tend to use zero article in the plural and mass contexts. Additionally, the participants perform less certainly in the mass contexts. Putting these inconsistencies aside, the general results in the definite contexts lend support to the interpretability hypothesis claiming that those functional features which play a semantic role in the LF component can be acquired by L2 learners even if the required feature is lacking in their L1 inventory of features.

6.2. Results of Indefinite Contexts

Indefinite contexts were analyzed in terms of specificity as a semantic feature. There were three main indefinite contexts which were further subdivided in terms of the number variable, i.e., singularity, plurality and mass (see Table 2). The results of each individual indefinite context are presented in turn below.

Table 8 displays the article supplience of the L2 learners in indefinite, + specific contexts for singular, plural and mass contexts. The participants showed variability in the use of articles in the singular context where the expected article was *a*. Nearly 40% of the participants opted for the definite article in the singular context. In the plural context where the target article should be zero, the participants showed an overuse of the definite article *the* in nearly half of the cases. However, compared to the first two contexts, the participants had a more categorical performance in the case of mass nouns where they opted for the correct zero article and definite article in 69% and 22% of the time, respectively. All in all, it seems that they have not yet established the fact that specificity in English may or may not be encoded by the definite article. In fact, the participants are assuming that if an entity is specific, it should also be considered as definite.

Table 8. Indefinite Referential de re/count

	the*	a/an	Ø
Singular	39%	59%	1%
Plural	50%	0%	50%
Mass	22%	8%	69%

The analysis of the results using repeated measure ANOVA revealed that there was a statistically significant difference between the three contexts [Wilks' Lambda=0.752, $F(2,23)=3.802$, $p=0.037$, Multivariate eta

squared=.248]. The post-hoc analysis of the results showed that there was a significant difference in participants' performance between the plural and mass context with a mean difference of 19%. The difference between the rest of the contexts did not reach statistical significance.

In Table 9, the results of the participants' performance in indefinite, non-specific (- scope) for singular, plural and mass contexts are presented where the target article should be *a/an*, \emptyset and \emptyset , respectively. The L2ers categorically supplied the correct relevant article in the singular contexts which are both – definite and – specific.

Table 9. Indefinite Non-referential de re/count

	the*	a/an	\emptyset
Singular	2%	98%	0%
Plural	3%	2%	95%
Mass	2%	43%	55%

A similar behavior can be observed in the plural contexts where the majority of the learners correctly supplied the zero article in such instances. However, the participants displayed fluctuations in the use of zero (55%) and a/an article (43%) in the mass context. This in turn indicates that they have not established the fact that a/an article cannot be used in indefinite referential mass context.

The analysis of the results showed that similar to the previous contexts, there was a statistically significant difference in the participants' judgment between the three contexts [Wilks' Lambda=.248, $F(2,23)=34.949$, $p=0.0001$, Multivariate eta squared=.752]. Further comparisons using Bonferroni adjustment showed that there was no significant difference between the singular and plural contexts; however, the rest of the contexts reached a statistically significant level ($p=0.0001$).

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The last context considered for the indefinite pattern is indefinite, -specific (Narrow scope). Table 10 displays the results of the singular, plural and mass contexts which require *a/an*, \emptyset and \emptyset , respectively. The L2 learners correctly supplied the indefinite article in the singular context in 95% of the time. Additionally, majority of the participants (84%) opted for the zero article in the plural condition. However, 16% of the participants favored the definite article in such cases. Unlike the -scope context displayed in Table 9 where the participants had no categorical performance, the use of zero article in the mass context seems categorical (93%).

Table 10. Indefinite de dicto/count

	the*	a/an	\emptyset
Singular	4%	95%	1%
Plural	16%	0%	84%
Mass	3%	4%	93%

The results of the repeated measure ANOVA revealed that there was no statistically significant difference among the three contexts [Wilks' Lambda = .781, $F(2,23)=3.231$, $p=0.058$, Multivariate eta squared=.219].

Considering the use of *the* in indefinite contexts, it was revealed that the participants tend to use the definite article in +specific contexts more than the -specific ones. The participants wrongly supplied the definite article *the* in 39%, 50%, and 22% of the cases in singular, plural and mass contexts respectively.

Further analysis of the results using paired sample t-test was also conducted comparing the participants' performance in all definite mass versus indefinite mass contexts. The results showed that the participants had a better performance in definite contexts (Mean= 82; SD= 14.7) than the indefinite one (Mean=72; SD= 10.7). The mean difference (.10) was statistically significant [$t=2.791$, $p= 0.010$].

Overall, the results of the participants' performance in indefinite contexts show that the L2ers exhibit more variability in indefinite specific contexts whereas such a fluctuation greatly diminishes in all indefinite non-specific contexts.

7. Discussion and Conclusion

The present study aimed to investigate whether Persian learners of English can acquire functional features lacking in their L1. Furthermore, the researcher tried to identify the problematic areas in the acquisition of count-mass distinction in English. Each of the above-mentioned questions is discussed below.

Features are the primary elemental units making up the lexical items of all languages. According to Travis (2008), features are at the forefront of recent Chomskyan syntactic theory. In the spirit of minimalism, the differences among different languages lies in the features selected from an inventory of features. Features are indeed aggregated leading to the formation of functional categories.

The functional category pursued here is the determiner (D) function which comprises a set of formal features including [+/- definite] and [+/- specific]. Features are bundled together in specific ways in different languages. To illustrate, English has not selected specificity as one of the features of determiners.

Given the above points, what should L2 learners do in the way to acquire an L2? They should identify the particular configuration of features from the properties of the lexical items in the target language. The second language acquirer, according to Lardiere (2009) has already assembled the features onto lexical items in the first language. Now, the learner has to

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reconfigure or reassemble the features from the way they are represented in L1 into new formal configurations because L1 features may not necessarily correspond to L2 features. He has to identify the type of functional categories the new features are associated with.

The feature [definite] does not have any phonological spell-out in Persian but is available in English. The task of a Persian acquirer of English is to figure out how the relevant feature is realized in English. The definiteness feature has been acquired because, in Lardiere's (2009) term, any feature contrast which is detectable is finally acquirable. The results obtained lend support to the interpretability hypothesis verifying the point that interpretable features, despite a lack of phonetic spell-out in L1, can be acquired. Therefore, the first research hypothesis on the inability of the L2ers in acquiring the functional feature inherent in the article system is rejected. One can account for the early acquisition of definiteness over specificity along the lines suggested here. Specificity is less detectable than definiteness.

One of the major challenges facing L2ers is to be able to assemble the proper combination of features into the right lexical items (White, 2003). The fact that our learners in this study have not fully acquired the use of articles in indefinite referential contexts lends support to the fact that they have not been able to reconfigure the features in the target language.

The results of the study reveal that in definite contexts, the participants are having more than 80% accuracy in the selection of definite articles. Comparing the three contexts of singular, plural and mass nouns, it was shown that the L2ers have a less certain performance in the mass context (82%). The easiest context was the singular one with 91% accuracy level.

Regarding the plural context, the learners have experienced some fluctuations between the use of the definite (85%) and zero article (14%). The reason can be attributed to the fact in English singular count nouns must be preceded by a determiner whereas in the plural case, the nouns may or may not be preceded by the determiners depending on their situational or pragmatic context. A similar situation holds true for the mass nouns where the participants have opted for the zero article in 16% of the time.

Comparing the results of the participants' performance in anaphoric, encyclopedic and association contexts, it was found that the participants have more problems in the association and encyclopedic contexts. The mean difference of the last two contexts (3.33) did not reach a statistical significance. Hence, the second research hypothesis as to the lack of context type effect on the participants' performance is rejected. The results further imply that the encyclopedic and association contexts should receive a more focused treatment in the development of course book materials.

The participants find the indefinite context more cumbersome. They have not been able to distinguish between specificity and definiteness. That's why they are fluctuating between the definite and indefinite article in the singular indefinite referential contexts. They have supplied the correct article in 59% of the time. A similar case exists in the plural context where they are fluctuating between the definite and zero article (50%). The participants are also showing inconsistencies in the mass context between the definite and zero contexts. In fact, they have supplied the correct null article in 69% of the time.

The participants' performance in the indefinite non-specific context (-scope) seems satisfactory. They have supplied the correct article in the singular and plural contexts more than 90% of the time. However, they

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exhibit fluctuations in the use of *a/an* and zero article in the mass context where they have supplied the correct article 55% of the time. The participants have found the mass context more challenging compared to other contexts. The participants' performance in the narrow scope context (indefinite non-specific) shows that they have been able to supply the correct article in all singular, plural and mass contexts satisfactorily. Unlike the –scope context where the correct zero article was used 55%, the participants supplied the correct zero article in the narrow scope context 93% of the time.

Given the above points, it can be revealed that the participants do not experience learn ability problems in count and mass definite contexts. Nonetheless, when it comes to indefinite contexts, they experience problems in mass noun contexts in referential and non-referential –scope contexts. As a result, the third hypothesis indicating a lack of asymmetric behavior in the two contexts is rejected.

The question arising here is why there is a discrepancy between the above two contexts regarding the supplience of the zero article in the mass context. How can one account for such an asymmetry? To illustrate, let's look at examples related to the –scope and narrow scope contexts in 29 and 30 respectively.

(29) A: *Robert says he knows who stole from school.*

B: *I don't believe him.*

A: *He has ___ evidence, but I don't know what it is.*

(30) A: *I've got my relatives coming for Christmas.*

B: *How many are there?*

A: *Thirteen. I should buy ___ milk.*

The wide scope indefinite in (29) is + specific. The word *evidence* is indefinite but specific. The narrow scope indefinite in (30), however, is

obligatorily –specific. The word *milk* is both indefinite and –specific. Therefore, given the fact that wide scope indefinites are + specific whereas narrow-scope indefinites are obligatorily specific, we can account for the results of the mass nouns observed here. The participants have experienced more problems in the –scope context because they have not yet acquired the distinction between definiteness and specificity.

Standard English encodes definiteness by providing *the* article in definite settings. Nonetheless, it has no marker for the [+specificity] feature in its article system. The two articles *the* & *a* are used regardless of their specificity. Persian, on the other hand, has not selected the definiteness setting and does not encode any article for definiteness. Furthermore, specificity in Persian, as Rahimian and Hajiani (2009) state, is basically defined in systematic pragmatic terms. The L2ers in the present study have performed more satisfactorily on definiteness than specificity settings. When it comes to +definite, +specific contexts on the one hand and –definite, –specific contexts on the other hand, the participants are behaving target-like. Nevertheless, when the +definite contexts are combined with the –specific settings, they will create a learnability problem. One main reason behind this behavior is related to the saliency of definiteness settings over specific ones in the L2 input.

Why are the L2ers having a conservative behavior in mass contexts? One can account for such a performance in terms of the properties of L1. Mass nouns in Persian can be accompanied with the indefinite article. In other words, mass nouns can be countable. As was observed before, the L2ers have opted for *a/an* in wide scope indefinite non-referential de/re context 43% of the time. A second plausible reason is the role of pragmatic knowledge in the suppliance of articles in the mass context. Such a

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pragmatic awareness is not required for singular count nouns where they are not licensed to appear bare.

Therefore, it can be argued that they have not yet established the fact that specificity in English may or may not be encoded by the definite article. Indeed, it cannot be generalized that whatever is specific should be considered as definite.

A pedagogical implication of the present study is that there should be more focused instructions on other uses of definite articles such as encyclopedic or situational one. It seems that too much attention is given to the anaphoric use of articles. The results of the corpus findings, as indicated by WonHo Yoo (2009), are that anaphoric use of the articles is not as common as situational or cataphoric use in conversation or in academic prose.

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