Countability versus Flexibility: Rethinking Vocabulary and Determiner Instruction

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Abstract

Research and pedagogical materials focusing on the acquisition of the determiner / quantifier system in English frequently highlight countability as a locus of difficulty for English language learners, particularly learners whose languages do not overtly mark a count-mass distinction. The current study uses a document analysis approach to analyze unedited written essays from the ICNALE corpus, produced by 52 Mandarin Chinese writers of L2 English across four proficiency levels. A target language use (TLU) analysis of the essays, all written on the same topic, suggests that prototypically count and mass nouns are not a source of inherent difficulty for learners. Instead, count-mass flexible nouns are the locus of the greatest number of errors, due to an inability to use these nouns correctly in context. In this article, I argue that a reanalysis of ESL/EFL pedagogical practice is necessary, one that focuses specifically on count-mass flexible nouns, and revisits determiner (especially article) use whenever new vocabulary is introduced. Presenting flexible countability as one facet of a noun's semantic meaning, I argue, will add lexical depth while concurrently allowing for more target-like use of determiners and quantifiers.

Introduction

A great deal of research has been dedicated over the years to the acquisition of determiners and quantifiers by learners of English, whether as a second or foreign language. Mastery of the determiner system, which includes not only the definite (*the*), indefinite (*a/an*) and zero (Ø) articles, but also demonstratives (*this, that, these, those*) and possessives (*my, his, your*, etc.), has been claimed by many (Chan 2016, 2017; Master 1997) to be among the most difficult features of English to acquire. Previous research on the acquisition of English syntax by second language (L2) speakers from languages without articles often focused on the fact that these languages also lacked a count-mass distinction. Mastery of the determiner and quantifier system was seen to depend on an understanding (or lack thereof) of this basic ontological distinction, along with concepts of specificity and definiteness, such as speaker reference and

hearer knowledge (Butler, 2002). Studies published in the past twenty years call claims about speakers' understanding of countability into question, however, arguing that conceptual distinctions are made, regardless of syntax.

Traditional grammar explanations of the division between count and mass nouns (Gillon, 1999; Cheung, Li & Barner, 2010) note that count nouns in English belong to a category of nouns that can be pluralized and occur with numerals or quasi-cardinal determiners, as well as with quantifiers such as *many*, *several*, or *a few* (*one book*, *two books*, *these books, many books*). Mass nouns, by contrast, reject such quantification and pluralization (**one sunshine*, **two sunshines*, **these sunshines, *several sunshines*), and instead require quantifiers that refer to amount (*some sunshine / little sunshine / a ray of sunshine*). These are the explanations that are typically offered in grammar textbooks and to L2 learners. For L2 learners who must understand the difference between *much experience* and multiple *experiences*, or the collective notion of *society* versus specific reference to *a society*, however, a more nuanced explanation than that between mass and count nouns is necessary. In the present study, I argue that insisting on a rigid count-mass distinction for nouns impedes learners' acquisition of the English determiner / quantifier. Instead, language development depends on learners' ability to recognize the flexibility of nouns to move between categories, and this concept should be discussed as vocabulary is introduced. Using Mandarin-speaking L2 learners' unedited essays, produced across proficiency levels for the ICNALE Written Essays (Ishikawa, 2013), I will demonstrate how learners' semantic and syntactic proficiency builds for several key nouns in a number of different contexts. I will conclude by highlighting difficulties that persist with count-mass flexible nouns, and will suggest changes to current pedagogical practices concerning the teaching of both vocabulary and determiners / quantifiers that I believe will allow for greater understanding of flexible nouns by L2 learners.

Literature Review

Count vs. mass vs. flexible nouns

Gillon (1999) examined differences between count and mass nouns, suggesting that each count noun is inherently marked lexically, while mass nouns typically bear a non-count, non-plural marker. The exception to this is mass nouns such as *police*, which are always used in the plural and which therefore carry a non-count, plus-plural marker (p. 53). In this way, Gillon explains how speakers know when common nouns can be used with numerals or can make the singular / plural distinction, versus when they do not, as well as which is the appropriate quantifier to use with them. He then provided a possible solution for count-mass flexibility, noting that a mass noun might undergo conversion to a count noun, if the mass noun can be determined to consist of "minimal parts, or atoms" (p. 57). Thus, both concrete and abstract mass nouns can be counted as individuals: "only two coffees are sold in this store," "Carol has two anxieties: her job and her children." (p. 57). Likewise, Gillon noted that count nouns may undergo conversion to mass nouns. In this instance, the mass noun represents an aggregate of the kind denoted by the parts. By highlighting these instances of conversion, Gillon pointed out that the count-mass distinction may be more flexible than previously believed. Based on the seminal work of Gillon and others (Chierchia, 1998; Lucy, 1992; Quine, 1960), multiple researchers (Barner & Snedeker, 2005, 2006; Barner, Inagaki & Li, 2009; Cheung et al., 2010, 2011;

Gentner & Boroditsky, 2001; Imai & Mazuka, 2003) have spent the past two decades examining the extent to which speakers understand inherent distinctions between count and mass nouns, and the influence of language type and resulting syntax on these categorizations.

In a series of published studies examining ontological differences between count and mass nouns, linguists, psychologists and cognitive scientists have argued that preverbal children already make a distinction between objects and non-objects, preferring to treat the former as count nouns, while treating the latter as mass nouns. In an experiment with English- and Japanese-speaking children and adults, Gentner and Boroditsky (2001) asked participants to match items with similar items. Young children and adults paired concrete shapes with other concrete shapes, suggesting that they were being treated as individual types, and thus demonstrating participants' ability to individuate, regardless of age or language. Older children and adults matched substances to similar substances rather than to similar shapes, suggesting a mass rather than a count interpretation. Gentner and Boroditsky thus conclude that the count-mass distinction exists inherently, even for speakers of languages such as Japanese, where it is not expressed overtly. In situations where the count-mass distinction was flexible, however, both Gentner and Boroditsky (2001) and Imai and Mazuka (2003) demonstrated a possible influence of syntax that developed with age, noting that changing the question from "Show me what's the same as this?" to "Which is the same X?" led to different responses for Japanese and English-speaking children. Imai and Mazuka (2003) argue for "a universally present ontological distinction at the global level" (p. 447), but note that syntax may affect the boundary of these categories, particularly for those words which allow dual classifications. Other studies further demonstrate that morphosyntax and count-mass distinctions may intersect. Barner and Snedeker (2005, 2006) showed participants prototypically mass nouns divided into countable segments. They demonstrated that both adults and children in their study used the syntax of questions (*Who has more string?* vs. *Who has more strings?*) to guide their responses to either the mass or the count interpretation. They argued, therefore, that speakers are sensitive to nouns with flexible count-mass characteristics and use both syntactic and semantic information when processing language.

Cheung et al. (2010, 2011) acknowledged the claims made in these previous studies, but pointed out that researchers had not always clearly distinguished between types of flexible count-mass nouns. An apple cut in half does not equal two apples, for example, whereas a rope cut in half does equal two ropes. Nonetheless, in languages such as English, one can talk about two apples or some apple, two ropes or some rope. In an extension of Barner and Snedeker (2005, 2006) and Barner et al. (2009), Cheung et al. (2010, 2011) attempted to address these shortcomings. They again showed participants contrasting images and asked "Who has more?" but this time for four types of nouns: count nouns, mass nouns, and two types of flexible nouns, those that are not able to sub-divide (*apple*, *egg*), and those that are (*string*, *rock*). Mandarin-speaking participants overwhelmingly classified count nouns by number, and mass nouns by volume, whereas the flexible nouns showed some variability: flexible nouns that could not be broken into smaller atoms were classified by number 75% of the time, in contrast to flexible nouns that allowed subdivisions (i.e., contained smaller atoms) at 62.5%. (Cheung et al., 2010, p. 402)[1]. From this first study, Cheung et al. concluded that nouns shared the same inherent meaning in Mandarin as in English or Japanese (Barner et al., 2009), despite different syntactic structures in the languages. A second experiment, reported in the same article, showed that

sortal classifiers in Mandarin were often disregarded, as language users drew on relative frequency to help them determine whether a count or mass interpretation was most likely. The researchers argued that "nouns have the same meanings cross-linguistically by virtue of a universal concept structure, which is closely related to the way the world is structured" (Cheung et al., 2010, p. 410). They further claim that it is semantic differences between nouns that drive syntax, rather than vice versa (Cheung et al., 2011, p. 212).

Traditional L2 treatment of English determiners

Because these findings concerning conceptual similarities in count-mass classifications are relatively recent, pedagogical discussions of and research related to the English determiner system have traditionally focused on countability. Yoon (1993) noted that "the perceptual system of noun countability used by native speakers of English is not necessarily describable, explainable or acquirable by second language learners" (p. 284). Master (1997) observed that learners from languages without articles had a general ability to use the zero article that preceded the ability to use other articles, but argued that it was impossible to distinguish this use from simple omission. For these learners, this usage was followed by overuse of *the*. Master suggested that this overgeneralization of the definite article occurred as learners realized that English required articles, but were unable to discern which article or determiner to use, and when. Learners from languages with articles, on the other hand, tended to overuse *the* immediately, likely due to transfer from their first language (L1). These learners did not default to a zero article, but instead overextended the use of the definite article, until they could figure out the intricacies of the determiner system in English. For both groups of learners, Master noted that these included countability, number, and definiteness, which all had to be considered in order to choose the correct article. Master evoked, but did not elaborate on, the problem of nouns that shift from count to mass categories and vice-versa. In pedagogical suggestions provided for learners at various levels, he suggested teaching the difference between count nouns with an article and mass nouns without, but provided no further mention of count-mass flexible nouns.

Butler (2002) asked Japanese-speaking learners of English to complete blanks with the appropriate missing article (*a*, *the*, Ø) and then explain their choice. Learner errors were explained by referentiality (inability to detect or consider speaker reference or hearer knowledge) as well as by countability (p. 462). Butler noted that lower proficiency learners had a tendency to consider nouns as either count or mass, with no room for conversion (p. 466), with this tendency diminishing somewhat, but not disappearing, among those at higher proficiency levels. He further noted an interaction between count-mass flexible nouns and referentiality, specifically hearer knowledge (HK). Butler indicated that "…the problems with countability that the L2 learners in this study faced could be one of the most significant hurdles for them to overcome in properly detecting HK and using articles appropriately" (p. 474). While Butler suggested extensive practice with article – noun combinations in context, he stopped short of suggesting that the subject of count-mass flexibility should be introduced as part of vocabulary instruction. Like others before him, his focus remained on acquisition and/or instruction of the determiner system.

In more recent research on Cantonese learners' knowledge of the English article system, Chan (2016, 2017) found further evidence that the count-mass continuum posed difficulties for learners. Like Butler, Chan focused her studies on learners' explicit knowledge of articles in English; statements provided by students allowed her to indicate countability, collectivity vs. individuation, and count-mass flexibility as areas of difficulty for learners:

Chinese ESL learners may perceive the countability of a certain English noun (e.g. *equipment*) differently from native English speakers, resulting in different, and possibly inappropriate, choices of articles (e.g. *an equipment*). The fact that some English mass nouns (e.g. *food*) can be used as count nouns in certain contexts adds further difficulty to ESL learners' judgment about noun countability in English (2016: 73, italics in original).

In her conclusions, Chan called for explicit instruction on articles, particularly regarding the semantics and functions of the articles themselves, the difference between specificity and definiteness, referential and generic uses of the three types of articles, and, at an advanced level, "difficulties in distinguishing the differences in countability of a target word in the target language and its equivalent in the native language" (2016: 75). While this is a step in the right direction, I will argue below that notions of individuation and countability must accompany the introduction of vocabulary, and, rather than being distinguished from vocabulary as a separate grammar point, must proceed hand in hand with it, if learners are truly to master both word meaning and appropriate syntactic usage.

In this article, I explore the extent to which Mandarin learners of English are able to distinguish differences in countability during a free production writing task. Using unedited essays drawn from the International Corpus Network of Asian Learners of English (ICNALE) (Ishikawa, 2013), I examine the following research questions specifically:

- Do Mandarin Chinese writers exhibit a higher error rate with flexible nouns than with prototypical count or mass nouns?
- Does the error rate decline with proficiency?
- What impact, if any, does the atomic structure of nouns have on learners' ability to convert them?

Methodology

For the purposes of this study, a document analysis (Bowen, 2009) was conducted using only unedited essays from the ICNALE corpus. This allowed for the examination of language produced by learners addressing the same prompt ("It is important for college students to have a part-time job"), before any corrective feedback was provided. A decision was made to focus on writers from one language group, Mandarin Chinese, in an effort to eliminate cross-linguistics factors that might otherwise confound results. The ICNALE Written Essays corpus distinguishes four proficiency levels: A2 (Waystage), B1-1 (Threshold lower), B1-2 (Threshold upper), and B2+ (Vantage or higher). It should be noted that participants' proficiency level was determined by the corpus owner, based on a combination of measures: profile data, scores on standardized English exams (TOEFL / TOEIC), vocabulary size test, etc. No effort was made to independently rate learner proficiency, as the essays were too short to allow for this. The

maximum number of essays at the B-2 level was 13; this thus determined the inclusion of 13 essays from each of the other levels as well. For purely pragmatic reasons, the first 13 essays at each level were selected, for a total of 52 essays.

These essays were then copied from the corpus and labelled by participant and level, so that they could be mined for frequently occurring nouns and co-text. Frequently occurring nouns were defined as those nouns which were used by at least six (~50%) writers in each of two or more levels. This resulted in 12 noun types used recurrently within the essays, ranging from a minimum use of 35% (*reason(s)*) to a maximum use of 100% (*part-time job(s)*) by all writers. (Specific words examined are shown in the results section, below.) Individual tokens accounted for far greater use, as writers often repeated nouns within their essays, but no nouns studied were used by less than a third of the writers, and many were used by far more. Setting the lower threshold at 35% assured that the determiner + noun combinations studied were representative of the sample on the whole, and not simply the result of an individual participant's lexical choice.

Essays were then coded following a target language use (TLU) model, where frequently used nouns and their accompanying determiners / quantifiers were highlighted according to whether the noun + determiner / quantifier phrase would be deemed acceptable in written English in that context. Coding was first completed by the author of the study. Copies of the essays were then given to a second reader, an individual with experience both as a science journal copy editor and an instructor in ESOL. Targeted nouns were underlined, and the second reader was asked to indicate if the determiner used with each was acceptable, unacceptable or grammatically correct but pragmatically questionable in context. No details concerning the exact focus of the study were provided. Discrepancies between the author's coding and the second rater's coding were discussed, to determine if disagreements concerned target-like use of the determiners themselves, or if one rater had been influenced by other factors in the sentence. Discussion also included determiner + noun combinations that had been marked questionable by one or both coders. Some questionable items included an appropriate determiner / quantifier that did not meet the count / mass constraints that native speakers would have observed (*her experiences*, for example, when a native speaker would have used *her experience*). Overall context was discussed, and these items were ultimately marked target or non-target-like by consensus. In other situations, an unusual choice of verb (*learn knowledge*) resulted in the flagging of an expression as questionable, while *acquire knowledge* did not. In these cases, we discussed the determiner + noun sequence without the verb, and determined that it was, in fact target-like, and coded it as such. When all extraneous factors were eliminated, an inter-rater reliability of 98.4% was established. Remaining cases of disagreement were frequently resolved by consulting the Corpus of Contemporary American English (COCA, Davies, 2008); attestations of use in COCA (for example, *much knowledge*) permitted a target-like coding in this study, while lack thereof (*much money*) resulted in a decision of non-target-like. The few remaining discrepancies between the two coders that could not be resolved were coded as non-target-like.

When coding was completed, all nouns were assigned a count, mass, or count-mass flexible designation. Usage was recorded by participant, with an indication of whether each participant had used determiners / quantifiers with each targeted noun in a consistently target-like or non-

target-like manner or had demonstrated variability in usage throughout the essay. A type / token ratio of nouns used and accuracy rates will not be presented, as learners who used nouns in non-target-like ways frequently repeated their errors throughout their essays, skewing results. One single learner, for example, produced the following: *Do not forget that *the study can help *the work while *the work can help *the study. ... How balance *the study and *the work is the challenge for our freshman.* While these could have been counted as six separate errors, an analysis that examined simply whether targeted nouns were used in target-like ways or not, and consistently or not, provides cleaner results overall, while still allowing a detailed look at differences across noun types and proficiency levels. In the results section that follows, tables categorize writers according to those who used the determiner + noun sequence in exclusively target-like, exclusively non-targetlike, or in variable ways, rather than presenting overall error rates. It is believed that this presents a clearer picture of participant behavior with respect to noun type overall. The percentage of exclusively target-like use with each individual noun, and then as an aggregate, is also noted in each table, although these percentages should be regarded with some caution, given the low number of participants involved at each level.

Results

In this section, I will first present information concerning the essays written by the learners and the words mined from them, and then examine separately writers' use of determiners / quantifiers with nouns that are prototypically count nouns, prototypically mass nouns, and those that are count-mass flexible.

Word count differences between the levels were minor, as illustrated in Table 1. Participants from level B2 wrote slightly longer essays than those at other levels. However, their essays also included more repetition, due to inclusion of introductory and concluding sentences that did not appear in essays written by students in the other groups. Length did not appear to influence choice or use of the frequently recurring nouns, as illustrated in Table 2, below; patterns of use by participants from level B2 mirror those of other levels, despite a mean word length that was 20 words longer.

Table 1. *Total word count and mean essay length by level*

Level	Total word count	Mean essay length
A2	2859	220
B1-1	2873	221
B1-2	2965	228
B2	3227	248

Table 2. *Frequently occurring nouns mined, in alphabetical order. Number of writers, per level, illustrating use of each noun*

Noun	A2	B1-1	B1-2	B2	Total (n=52)
College student(s)	13	12	11	11	47 (90%)
Experience(s)	9	12	10	11	42 (81%)
Job(s)	6	11	8	6	31 (60%)
Knowledge	9	4	2	7	22 (42%)
Money	9	9	12	13	43 (83%)
Opinion(s)	8	5	6	4	23 (44%)
Parents	7	8	6	3	24 (46%)
Part-time job(s)	13	13	13	13	52 (100%)
People	9	9	9	11	37 (71%)
Reason(s)	6	6	4	2	18 (35%)
Society	5	6	6	5	26 (50%)
Student(s)	8	11	9	8	36 (69%)
Study/Studies	11	6	6	10	33 (63%)
Time	9	12	11	12	44 (85%)

Count nouns

The two most commonly used count nouns, not surprisingly given the prompt, were *job(s)* and *student(s)*. For these nouns, to avoid the possibility that participants were simply recopying words from the prompt, tokens occurring in the strings *part-time job(s)* or *college student(s)* were examined separately from those that did not include the qualifiers. Additionally, the count nouns *opinion(s), parents, people* and *reason(s),* made frequent appearances in learners' essays. All count nouns appeared with a variety of determiners and quantifiers, as well as in zero article contexts. Uses of these nouns were overwhelmingly target-like, as illustrated in Table 3, although random instances of overuse of *the* were noted (*nobody can guarantee *the part-time job will give*), in addition to zero determiners in definite contexts (*but not ask *Ø parents for money*). This was especially true at the A2 level. Further errors may be blamed on incorrectly learned expressions of quantity (*most of *people*). Table 3 does, therefore, indicate that a minority of writers displayed only non-target-like uses of certain nouns, while a few others varied between target- and non-target-like uses.

Table 3. *Prototypically count nouns, categorized according to target-like (TL), non-target-like (NTL) or variable (V) use within essays, by number of writers at each level*

Count Nouns	Usage type	A1	B1-1	B1-2	B2
College student(s)	TL	10 (77%)	12 (100%)	10 (91%)	10 (91%)
	NTL	1	0	0	1
	V	2	0	1	0
Student(s)	TL	4 (50%)	9 (82%)	9 (100%)	6 (75%)
	NTL	0	0	0	0
	V	4	2	0	2
Part-time job(s)	TL	4 (31%)	7 (54%)	7 (54%)	6 (46%)
	NTL	0	0	0	0
	V	9	6	6	7
Job(s)	TL	5 (83%)	9 (82%)	7 (88%)	5 (71%)
	NTL	1	1	0	1
	V	0	1	1	1
Opinion(s)	TL	7 (88%)	5 (100%)	5 (83%)	4 (100%)
	NTL	0	0	1	0
	V	1	0	0	0
Parents	TL	6 (86%)	6 (75%)	4 (75%)	2 (66%)
	NTL	1	2	2	1
	V	0	0	0	0
People	TL	7 (78%)	8 (100%)	8 (89%)	11 (100%)
	NTL	2	0	1	0
	V	0	1	0	0
Reason(s)	TL	5 (83%)	6 (100%)	4 (100%)	2 (100%)
	NTL	1	0	0	0
	V	0	0	0	0
Target-like use per level		48/70 (69%)	62/75 (83%)	54/66 (82%)	46/59 (80%)
Target-like use without *part-time job(s)*		(77%)	(89%)	(89%)	(87%)

In all, the variety of appropriate determiners / quantifiers used with both singular and plural forms of count nouns suggests that writers at all levels appropriately individuated them, although those at the A2 level were less successful in doing so in a consistently target-like way

than learners at higher levels of proficiency. Results show that learners at the A2 level displayed variable usage, with overuse of *the* still accounting for frequent errors, as noted in previous literature.

Ironically, learners were less accurate with the language provided in the prompt (*a part-time job*) than with other count nouns, including *job*. While many did correctly use this and other variations correctly (*part-time jobs, our / their part-time job*), more than one half (28/52) of L2 writers combined target-like and non-target-like uses. Twenty produced the singular in a generic context, but preceded it with a zero article (**Ø part-time job is important…*) and another five failed to recognize definiteness constraints, using *the part-time job* in a non-definite context. No such difficulties were noted for *student(s)* versus *college student(s)*, although an occasional over-specification did occur. The last row of Table 3 shows the percentage of exclusively target-like uses of count nouns by writers, with *part-time job* excluded. It is clear that this one noun was responsible for many of the errors amongst learners at all levels. While it is impossible to explain with certainty why this noun caused such difficulty for learners without interviewing them, it is possible that they conflated *part-time job* and *part-time work*, allowing a mass reading for the former. No such difficulty was evidenced with the term *job* itself, suggesting that learners may have conceived of a difference between *a job* (count) and *part-time work / job* (mass). More studies of complex noun phrases are needed to determine if these pose additional challenges for learners in terms of cognitive load, or if, as suggested above, there was conflation with this particular expression and another closely related one with which they may have been familiar.

Mass nouns

Fewer mass nouns were used recurrently across essays, but these also appeared to pose no inherent difficulty for writers. Table 4 illustrates L2 writer use of the two mass nouns, *money* and *knowledge*, and it is again immediately clear that target-like uses dominated. As with the count nouns described above, errors tended to be caused by over-specification. These were relatively rare, however, as most writers preferred a zero article, a possessive or a quantifier with these mass nouns.

Table 4. *Prototypically mass nouns, categorized according to target-like (TL), non-target-like (NTL) or variable (V) use within essays, by number of writers at each level*

Mass Nouns	Usage Type	A2	B1-1	B1-2	B2
Money	TL	8 (89%)	3 (75%)	11 (92%)	12 (92%)
	NTL	0	1	0	0
	V	1	0	1	1
Knowledge	TL	6 (67%)	3 (75%)	2 (100%)	5 (71%)
	NTL	2	1	0	1
	V	1	0	0	1
Target-like use per level		14/19 (74%)	6/8 (75%)	13/15 (87%)	17/20 (85%)

Count-Mass flexible nouns

In contrast to prototypically count or mass nouns, which presented virtually no difficulty for the L2 writers included in this study, nouns whose use frequently straddles the count-mass divide in English proved much more difficult for learners. A great deal of variability within these nouns was also displayed, requiring discussion of each noun separately. These nouns included *experience(s), society, study/studies, and* *time(s)*. Table 5 displays target-like, non-target-like and variable uses of these nouns.

Table 5. *Flexible nouns, categorized according to target-like (TL), non-target-like (NTL) or variable (V) use within essays, by number of writers at each level*

Flexible Nouns	Usage Type	A2	B1-1	B1-2	B2
Experience(s)	TL	3 (33%)	7 (58%)	7 (70%)	8 (73%)
	NTL	4	2	1	1
	V	2	3	2	2
Society	TL	2 (40%)	2 (29%)	4 (50%)	3 (60%)
	NTL	2	4	2	2
	V	1	1	2	0
Study/studies	TL	1 (9%)	2 (29%)	0 (0%)	0 (0%)
	NTL	10	4	6	7
	V	0	1	0	3
Time(s)	TL	6 (67%)	6 (50%)	9 (82%)	10 (83%)
	NTL	1	3	1	0
	V	2	3	1	2
Target-like uses by level		12/34 (35%)	17/38 (45%)	20/35 (57%)	21/38 (55%)

The noun *experience* was used 14 times in the plural and 43 times in the singular by L2 writers in the study. None of the plural uses was deemed target-like, but instead, implied count (atomic) reference (*part time jobs give them … *many experiences; it is good for students to have *some practical experiences*) when one would have expected the singular and a mass (non-atomic) interpretation. Singular uses varied between target-like count references (*an experience*) and mass references (*much experience*), but also included over-specification (**the living experience, *the more experience*). It is highly likely that the verb *to experience* influenced learners' early categorization here. The verb implies a punctual action, perhaps leading learners

to first interpret both the verb and the noun as one-time events. Transfer from the L1 may have further compounded the issue, as a verb and noun equivalent to the English *to experience / an experience* also exists in Mandarin, undoubtedly leading learners to first analyze this noun as a count noun. Only frequent exposure to the noun in context would allow learners to understand the more prototypical American English usage as a mass, one that can be converted to a count noun focusing on individual atoms, if necessary. Examination of the essays shows that those at higher proficiency levels did pattern more like native speakers, preferring the mass interpretation, while not entirely abandoning the count use. This is consistent with corpus data: a search of COCA reveals that *experience* is used in the singular 104,444 times, compared to 35,684 times in the plural. A large majority of the singular uses are bare nouns, suggesting an accumulation of experience (mass), as opposed to a single experience (atom). One would expect that as proficiency and thus exposure to the language increases, learners would become more sensitive to frequency of occurrences of the mass interpretation, allowing them to shift to this usage in appropriate contexts. Writers at the B1-2 and B2 levels did so to a much greater extent than those at the A2 and B1-2 levels, while uses of the non-target-like plural decreased but did not disappear entirely.

The noun *society* appeared in 26 of the 52 learner essays. While learners frequently treated the noun *society* as a count noun, only three instances of count usage (two uses of *our society*, one of *the whole society*) were target-like in context. It appears that learners who wrote about *people in *the society* or the need to *observ[e] *the society firsthand* were making one of two errors. In the first, they intended to reference the *community*, an atomic term that would have made more sense in the context. In the second context, they appear to have been referencing *society* as an aggregate, and thus should have used a zero article, as with other mass (non-atomic) nouns. Only a small minority of writers, those at higher levels of proficiency, managed to do so successfully.

The most problematic noun for learners in this study was *study* itself. The verb *to study* is durative and therefore undoubtedly leads to interpretation of the noun as a mass noun, as in *the study of chemistry*. Native speakers only convert it to a count noun if a specific study is referenced. However, a mass plural noun, denoting the cumulative object of the action of studying, is also available to native speakers (*my studies*). It was apparently this sense that learners attempted to reference in their essays, but only a few L2 writers at the B2 level were able to adopt this classification. All others produced anomalous forms such as **my/his/your/the study*, suggestive of a single, individuated study (atomic), when, in fact, what was implied was an on-going process, a cumulative action (non-atomic). There are several factors that might account for these difficulties. First, in pedagogical materials, students may encounter singular uses (for example, *in this study, the authors describe...*), undoubtedly leading them to first analyze the noun as a count noun. Verbal morphology offers little help, as singular mass nouns are generally derived from durative verbs, as in the case of *to sleep / in a deep sleep* (Barner et al., 2008). Thus, even if learners are sensitive to the need for a mass noun, they would likely not choose the plural *studies* without help. Previous language-learning experience likely offers little support: conversion from a count (atomic) to mass (non-atomic) interpretation eventually led the more proficient speakers away from the plural *experiences* and to the singular *experience*; here, however, they must convert from *study* (atomic) to *studies* (non-atomic), a counter-intuitive move given the way most mass nouns pattern in English. This is

again an example of flexible use of a noun that must be taught explicitly, with a recycling of rules for determiner / quantifier use, if learners are to understand such nuances.

Finally, t*ime* was generally used as a singular mass (non-atomic) noun. In this form, it appeared with a variety of determiners and quantifiers, and in a number of fixed expressions. Overall target-like use for this noun was somewhat higher than for the others, likely because of the number of fixed expressions in which it occurred. However, while analysis of the mass context was correct, learners also erred at times in using a memorized expression such as *all the time:* *"we spend all *the time"* when attempting to express another notion entirely, such as *wespend all our time*. Other erroneous productions, such as *have enough *times, much of *Ø time* and **college time*, further indicated that learners encountered difficulty even when using the noun with its prototypical mass sense. Some writers were also able to treat this noun as a count (atomic) noun, successfully marking events (*many times, sometimes, the times*). This ability to convert the noun was noted more frequently at higher levels of proficiency, however, with lower levels failing to use an appropriate determiner in apparent attempts to convert the noun (**a best time, at *Ø certain time)*.

Discussion

One research question asked was whether flexible nouns posed more difficulty for Mandarin Chinese writers of English than count or mass nouns. The response to this question is a clear yes, as indicated in Tables 3-5. A close TLU analysis of the 52 essays selected from the ICNALE indicated that L2 writers made frequent use of several key nouns when reacting to the prompt "It is important for college students to have a part-time job." These writers were consistent in their classification of *job(s), student(s), reason(s), opinion(s),* and *people* as count nouns, and *money* and *knowledge* as mass nouns, as indicated by the determiners that they chose to accompany them. The ability of learners to use both singular and plural forms of the count nouns (with the exception of *people*, which they accurately used only in the plural, but with individuating quantifiers), indicates that they understood the ramifications of individuation for these nouns. The two mass nouns, by contrast, were treated only as non-count, non-plural and were used with appropriate determiners / quantifiers the majority of the time.

Ability to individuate does not imply that all nouns were marked correctly, however; over-specification errors did sometimes occur, with learners using a definite article at times when an indefinite or possessive article would have been more appropriate. As Chan (2016, 2017) noted, this is an error that persists late into the language learning experience, and one that deserves ongoing attention in the language classroom. Despite these errors, the fact that learners recognized that an article was necessary with all count nouns, but only with those singular mass nouns that were somehow qualified (*the latest knowledge*), speaks volumes to their ability to distinguish count from mass nouns. Errors with the zero article and with quantifiers were also rare with these prototypically count and mass nouns, again suggesting control of this distinction that mirrors that of native speakers, contrary to claims by Yoon (1993). The data presented here substantiates evidence in earlier empirical studies by Barner and Snedeker (2005, 2006), Barner et al. (2008, 2009), Cheung et al. (2010, 2011), Gentner and Boroditsky (2001) and Imai and Mazuka (2003), which suggest that the difficulty for learners from languages which do not

denote the count-mass distinction morpho-syntactically is not, in fact, a conceptual understanding of this ontological classification.

Question two asked whether error rates declined with proficiency. Results above show marked improvement from levels A2 to B1-1 for prototypically count and mass nouns, as learners sort out issues with overuse of *the*, use/non-use of zero articles, etc. Because this was an open-ended production task, learners were free to choose their own vocabulary, and some produced a wider variety of nouns than others. Exact comparison is therefore difficult across essays. What is apparent, however, is that a higher proportion of writers at all B levels used these nouns in a target-like way than did writers at the A2 level, suggesting that, as proficiency increases, learners are able to eliminate some of the difficulties related to over-specification, referentiality or (non)definiteness. Count-mass flexible nouns witnessed the same improvement in terms of overall percentage from level A2 to B-1, but performance improves to only chance levels, even among the most proficient learners. It is clear that flexible nouns continue to pose difficulties that the others do not, and that cannot be linked to L1 syntax or ontological structure, given the difference in performance between the three classes of nouns overall. Gillon (1999) noted that flexible nouns have a prototypical categorization as count or mass and must undergo a conversion process in order to move from one category to another. Learners in the current study had much more difficulty using these nouns correctly than others in their essays. A far higher number of non-target-like uses were attested with flexible nouns, indicating that learners had not yet internalized flexible usages similar to those of native speakers. This is again in keeping with findings from previous studies (Chan, 2016, 2017), and underscores the importance of focusing on nouns that straddle the count-mass divide, rather than continuing to focus instruction on an ontological distinction that learners grasp inherently.

In response to research question three, concerning how the atomic structure of the noun impacted writers' ability to convert the noun, it is clear that in two cases, *experience* and *society*, learners began at the opposite end of the spectrum from the typical interpretation given to those same nouns in American English. Writers in this study preferred an atomic reading for both nouns. L1 influence (*experience*) or the practice of teaching vocabulary in isolation (*an experience*, *a society*) may explain this phenomenon. It was only as proficiency increased that they were able to move toward the non-atomic and more native-like mass uses of these nouns. In the case of *society*, learners who were searching for an atomic noun should have used a term like *community* instead, but failed to do so. In this instance, they did not recognize that *society* does not consist of smaller *societies*, while a *community* may well contain smaller *communities*. Failure to distinguish the atomic structure of these two nouns led to non-target-like uses for many learners, and is an issue that should be addressed through more nuanced vocabulary instruction.

For the abstract mass noun *time*, on the other hand, writers in the study evidenced target-like uses of the singular (non-atomic) form. While those at higher levels of proficiency gave evidence that they were aware that *time* could be divided into *times* (atoms), they struggled to produce correctly marked atomic singulars and plurals. These errors may be attributed to overextension of memorized forms, forms that will need to be explored individually outside of their fixed uses. Finally, the noun *study* caused particular problems, due to the fact that the non-atomic form is rendered in English in the plural. Learners instead chose a more intuitive

singular form, one that to native English speakers implies an atomic interpretation. This error persisted well into the advanced stages of proficiency, and is not likely to be eradicated without explicit instruction. Conversion of each of these nouns is possible, but because they follow rules that are not obvious to learners and may appear idiosyncratic or counter-intuitive, a specific focus on nouns such as these in class is necessary.

Conclusion

Data presented in this study suggest that contrary to previous arguments, the distinction between count and mass nouns does not pose a primary difficulty for learners in their effort to acquire the English determiner / quantifier system. Instead, nouns that move flexibly between count and mass categories are more deserving of our attention, as these frequently escape the notice of L2 learners. All evidence suggests that learners understand inherent ontological distinctions between count and mass, no matter how these are represented in their syntactic systems (Barner & Snedeker, 2005, 2006; Barner et al., 2008, 2009). It is incumbent on us now to present vocabulary and syntax as a unified system, pointing out to students that nouns move at times between categories, and equipping them with the grammatical knowledge to deal with vocabulary items as both count and mass nouns. Master (1997) suggested introducing count nouns with an article and mass nouns without. While this may be sufficient for nouns that are used in prototypical ways, our time would be well spent introducing the conversion potential of nouns as well, particularly those that are flexible in nature. Data from the study presented here indicate that students at higher levels of proficiency were becoming sensitive to some of the most frequent conversions through simple exposure (e.g., *experience*). More difficult items, where the L1 and/or a corresponding verb provide conflicting information, may require explicit focus in class, however. A quick perusal of the Academic Word List (Coxhead, 2000), a source of new vocabulary for many ESL/EFL classrooms and textbooks, allows us to see exactly how problematic not dealing with the question of flexible nouns can be. A verb such as *deny* implies a punctual event and is likely introduced as such in the classroom. While one can certainly speak of *a denial*, students are as likely to encounter the mass use of the noun, e.g., *denial is one stage of grief*. A verb such as *expand*, on the other hand, may be perceived by students to be more durative or procedural in nature, leading them to derive a mass noun from it. They will certainly encounter it in this context, e.g., *expansion of the West Bank*. If we fail to teach the possible count contexts in which such a noun could occur (*the build-up of gas caused an expansion of pressure*), however, we virtually guarantee that learners will continue to have difficulty with these count-mass flexible nouns. Discussion of the flexibility of nouns as they are introduced, and further examination of nouns in context, will help students to better understand both the ways that nouns move between categories and the determiners with which they co-occur, without demanding a large amount of class time. Inclusion of notions such as wholes vs. atoms may help learners to understand when native speakers are talking about an aggregate and when they are individuating, and thus make the application of rules that they have learned concerning determiners / quantifiers more logical. We have blamed the lack of a count-mass distinction in learners' L1 for difficulties in determiner / quantifier acquisition in L2 for far too long. The time has come to recognize that learner difficulties lie beyond this basic ontological distinction, which is established in early childhood. A more nuanced approach to the teaching of both vocabulary and grammar is necessary if we are to help learners master this concept in English as a second / foreign language.

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[1] It should be noted here that Gillon (1997) and Cheung et al. (2010) appear to use the term *atom / atomic* in contrasting ways. Gillon refers to the conversion potential of nouns if they contain smaller atoms: *anxiety* (mass) converts to *her anxieties* (count) because it can be subdivided into particles. Cheung et al. take an opposing reading of this term. They use atomic to refer to count nouns (*apple, egg*) that, when cut in two, do not yield two wholes. For the remainder of this paper, I will adopt Gillon's interpretation. [back]