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L2 English Article Use by L1 Speakers of Article-less Languages: A Learner Corpus Study

Abstract

This paper presents an Integrated Contrastive Model (Granger, 1996) of L2 English article use from the L2 English written production of L1 speakers of three article-less languages (Mandarin Chinese, Korean and Thai) - across four L2 proficiency levels. Data is sourced from the International Corpus Network of Asian Learners of English (ICNALE, Ishikawa, 2011, 2013), comprising 575 written essays totalling 125,588 words across two task prompts. Accuracy of L2 zero, indefinite and definite article use is measured using Pica's (1983) Target Language Use across Bickerton's (1981) semantic/pragmatic article contexts (generic, specific definite, specific indefinite and non-specific indefinite). The results show two different orders of article accuracy depending on L1 background, as well as effects of task type on the accuracy of certain article forms, and evidence of pseudo-longitudinal development for particular article usages as L2 proficiency increases, although not in all cases. Massive overproduction of indefinite/definite articles in generic contexts is problematic for all three L2 groups regardless of L1 background and L2 proficiency. However, Mandarin L2 English users appear to enjoy a significant advantage in L2 article accuracy over Korean or Thai L2 English users in almost all article contexts and L2 proficiencies, providing further potential evidence that the often reported grammaticalisation of definiteness/specificity markers in L1 Mandarin is aiding Mandarin L2 English users' acquisition of the English article system.

[Keywords] Contrastive Interlanguage Analysis / Mandarin / Korean / Thai / L2 English article

1 - Introduction

Given the central importance of article functions at the interface of syntax, semantics and pragmatics, the English article system is widely recognised as one of the most problematic aspects of the language for L2 learners of English to master (e.g. Master, 1987; Thomas, 1989; Young, 1996; Robertson, 2000; Ionin, Ko & Wexler, 2004; Chuang & Nesi, 2006; Ekiert, 2004, 2007, 2010; Diez-Bedmar & Papp, 2008, Ionin, Baek, Kim, Ko & Wexler, 2012; Snape, 2013; Crosthwaite, 2013, 2014a, 2014b; Diez-Bedmar, 2015). While highly frequent in L1 production (Celce-Murcia & Larsen-Freeman, 1999), they are also unstressed, have a complex form-to-function ratio, and their high frequency leads to a constant decision-making process on the part of the L2 learner during L2 production (Master, 2002; Ekiert, 2004, Świątek, 2013). All things considered, the underlying range of English article functions may at best be described as 'a complex set of abstract distinctions which are, to some extent, arbitrarily mapped onto surface forms' (Ekiert, 2007:1). Accordingly, L2 learners of English have trouble mapping said function to form, and in the case where congruence of form and function between source and target language is more distant, L2 learnability may be more difficult.

This is particularly noticeable in studies that compare the production of L2 learners who come from L1s with an article or article-like system (typically known as [+ART] languages) against L2 learners who come from L1s without an article or article-like system (typically known as [-ART] languages). The vast majority involve the comparison of Spanish against other languages such as Chinese (Diez-Bedmar & Papp, 2008); Japanese and Chinese (Snape, 2008; Snape, Leung & Ting, 2006); Chinese, Japanese and Russian (Master, 1987); Turkish and Japanese (Snape, García-Mayo and Gürel, 2013) and Russian (Chrabaszcz & Jiang, 2014). The majority of these studies (except Diez-Bedmar & Papp, 2008) use data sourced from production or grammaticality judgement tasks.

These studies all suggest that L2 learners from said article-less languages have difficulty assigning particular features of definiteness and/or specificity with the English article system given differences in how these features are (un)marked in the L1. These differences are claimed to result in the overuse of indefinite articles where definite articles are expected (Leung, 2001; Ionin, Ko & Wexler, 2004), overuse of definite articles where indefinite articles are expected (Master, 1987; Young, 1996), or overuse of definite/indefinite articles in generic bare singular/plural contexts (Snape, García-Mayo and Gürel, 2013; Snape, 2013; Ionin, Montrul, Kim & Phillipov, 2011; Cho & Slabakova, 2014).

Therefore, despite the 'article-less' status of these L1s, clear differences in L2 article production are apparent. A recent review in Diez-Bedmar (2015) cites four differing orders of accuracy for L2 English article use from speakers of article-less languages, with Lu (2001) noting the definite article is more accurately produced than the indefinite article, which is produced more accurately than the zero article; Nickalls (2011) finding no difference in the accuracy of definite/indefinite articles (with zero article use found to be less accurate); Diez-Bedmar & Papp (2008) finding that the use of the zero article was most accurate for Chinese students, followed by the indefinite article, which was followed by the definite article, unlike the order seen for a Spanish group; and finally Parrish (1987) reported that zero article use was the more accurate, followed by use of the definite article, then the indefinite (although this finding is sourced from only a single Japanese child).

Diez-Bedmar (2015) suggests that these differences in the research findings are due to a significant effect of task type and the assessment of L2 proficiency used. To prevent such differences, there is a greater need for tightly controlled task conditions and rigidly defined proficiency levels when analysing article acquisition This has been seen in non-corpus studies such as Snape (2008), Sarko (2009), and Jeon (2011) who use the Oxford Quick Placement test to ensure valid L2 proficiency criteria, and the same approach has been taken

by others involved in corpus-based research that determines the 'criterial features' of L2 article use at different L2 proficiencies, such as Hawkins & Buttery (2009, 2010), *English Profile* (2011), Diez-Bedmar, (2010, 2015) that highlight developmental (in a pseudo-longitudinal sense) patterns of L2 article omission, use and misuse via large-scale learner corpus studies.

However, the number of corpus-based studies comparing the production of L2 English articles by L2 learners from article-less L1s is relatively small compared to those of learners from article vs. article less backgrounds or single article-less language contexts (e.g. Goto Butler, 2002; Ekiert, 2004; Diez-Bedmar & Papp, 2008). Notable exceptions include Han, Chodorow & Leacock (2006), who analysed 668 TOEFL essays from Chinese, Japanese, and Russian students, finding that 1 in 8 NPs had article errors. Young (1996) explored Czech & Slovak and found that demonstratives were often used where anaphoric definite article NPs were expected alongside over-generalisation of definite articles at low L2 proficiencies (although the use of the indefinite article was relatively unproblematic). However, no data was provided regarding differences between Czech & Slovak L2 English article production. The author of the present study has also compared the production of English by speakers of article-less languages. Crosthwaite (2013, 2014a, 2014b, 2016), comparing Chinese and Korean L2 English production, found significant differences in the accuracy of L2 English article use between learners from these L1 groups in terms of missing/unnecessary determiners generally (2013, 2014a) and for the use of definite articles in associative or 'bridging' contexts (Crosthwaite, 2014b, 2016; Clark, 1975; Hawkins, 1978). However, given the small size of the corpora involved in many of these studies, more corpus-based research is required to determine whether speakers of different article-less languages experience similar or different problems during the course of L2 article acquisition.

Luckily, the number of large learner corpora comprised of data from speakers of article-less languages is increasing, such as the International Corpus of Learner English (ICLE - Granger, Dagneaux, Meunier and Paquot, 2009), the Asian Corpus of English (ACE, 2014) and the International Corpus Network of Asian Learners of English (ICNALE, Ishikawa 2011, 2013). Corpora such as the ICNALE also contain comparative L1 English data. It is therefore now possible to explore L2 English article production by learners from a range of article-less L1 backgrounds via L1-L2 and L2-L2 comparison - a methodology known as Contrastive Interlanguage Analysis, in support of an Integrated Contrastive Model (Granger, 1996) of the article use by the language varieties under investigation. This paper presents such an exploration, focusing on L2 article use among native English speakers and speakers of three article-less languages (Mandarin Chinese, Korean and Thai) at four L2 proficiency levels in order to answer the following research questions:

1) Are there any differences in the accuracy of L2 English article production among speakers of Mandarin Chinese, Korean or Thai?

2) What is the accuracy order of L2 English article production at the four L2 proficiency levels specified in the ICNALE among the production of Mandarin Chinese, Korean or Thai speakers?

2. Cross-linguistic variation in expressing reference

2.1. English

Excellent treatments of definiteness and indefiniteness with the English article system are found in Snape, García-Mayo and Gürel, (2013), Winward (2012, 2014) and Diez-Bedmar and Papp (2008) and this paper does not intend to retread this ground, concentrating instead on treatments of the three article-less languages under investigation. The present study adopts

the approach taken by these studies in using Bickerton's (1981) and Huebner's (1983, 1985) semantic / pragmatic approach to article use, dependent on whether the nominal element is being specifically referred to [+/-SR] or is known to the hearer [+/-HK]. Under this framework, in English, zero and indefinite articles appear in generic [-SR, +HK], referential indefinite [+SR, -HK] or non-referential [-SR, -HK] contexts, and definite articles can appear in generic [-SR, +HK], and referential definite contexts [+SR, +HK]. Later work such as Thomas (1989), Leńko-Szymańska (2012) and Diez-Bedmar (2015) includes a fifth context of phrasal/idiomatic usage of zero, indefinite or definite articles such as 'on *the other hand*', but these will only be referred to again in passing in the present study.

Table 1: Four contexts for article use in Bickerton (1981), Huebner (1983, 1985), as shown with examples from Ekiert (2004), Thomas (1989) and Goto Butler (2002).

Generics [-SR, +HK]	**Referential definites** [+SR, +HK]
Ø Fruit flourishes in the valley	Pass me the pen
Ø Elephants have trunks	The idea of coming to the UK was…
The Grenomian is an excitable person	I found a book. The book was…
They say the elephant never forgets	The first person to walk on the moon…
A paper clip comes in handy	
An elephant never forgets	

Referential indefinites, first mentions [+SR, -HK]	**Non-referentials – Attributive indefinites, non-specific indefinites** [-SR, -HK]
Chris approached me carrying a dog	Alice is an accountant
I've bought a new car	I need a new car
A man phoned	I guess I should buy a new car
I keep sending Ø messages to him	A man is in the ladies, but I haven't seen him
I've got Ø friends in the UK	Ø Foreigners would come up with a better solution
I've managed to find Ø work	

Using this approach, all contexts for article use (as well as omission and misuse) can be easily identified and annotated for L1 and L2 English, and as these contexts are considered language-universal, equivalent analyses of article-less L1 languages can also be conducted via the same four contexts if the tasks are equivalent.

2.2. Mandarin Chinese, Korean, and Thai

As L1 corpus data comparable to that of the L2 data used in the present study is lacking, the following section presents a contrastive analysis (CA) in support of the ICM, with data mostly sourced from a combination of non-corpus based studies (e.g. Singnoi, 2004; Piriyawiboon, 2012; Snape, García-Mayo and Gürel, 2013; Li and Bisang, 2012) alongside examples from corpus-based research. The corpus-based studies include Crosthwaite (2014a, 2014b) which uses examples sourced from a small corpus of L1 Chinese / L1 Korean / L2 English narrative discourse, while Winward (2012) is comprised of a small bilingual Thai-English corpus, which although not directly comparable to the L2 tasks in the present study, at least represent authentic L1 usage in another context.

2.2.1. Generic reference

A salient problem for L2 English learners in recent research is the relatively poor accuracy of L2 English articles produced by speakers of article-less languages in generic contexts (Ionin et. al. 2004; Snape, García-Mayo and Gürel, 2013; Snape, 2013; Ionin, et. al, 2011; Cho and Slabakova, 2013). In article-less languages such as Korean, Chinese and Thai, the combination of [+/-SR] [+/- HR] is semantic/pragmatic (unmarked), while it is grammatically marked in English. L2 English learners must thus learn the form/function mappings of articles for each combination. As noted in table 1 above, English generics take three different kinds of articles (zero, indefinite, definite) depending on whether they are bare plurals ('Lions are dangerous'), definite singulars ('The lion is dangerous') and indefinite singulars ('A lion is dangerous', Ionin et. al. 2011). In Korean, the topic marker is used alongside bare singular or plural nouns to provide generic reading in all three English-language situations (e.g. 사자는 lions-TOP[1]위험하다 dangerous-DEC), leading them to fluctuate between article forms when

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[1] TOP - topic marker, DEC-declarative sentence particle

producing L2 English (Ionin et. al, 2011). For Thai, numeral classifiers may be used for singular or plural reference but their use is not obligatory. Winward (2012) suggests that the following sentence could in fact be considered generic, indefinite or definite:

(1)   maa non nork baan
        dog sleep outside house

        'The dog/A dog sleeps outside (the) house'

        'Dogs (tend to) sleep outside the house（Winward,2012:11)

As with Ionin et. al. (2004) for Korean, Winward noted very similar results for Thai L2 English learners, fluctuating between indefinite and definite articles in generic contexts.

Mandarin Chinese generally follows Korean and Thai in using bare nominals for generic reference. However, Mandarin has been suggested to allow the use of the proximal demonstrative 这 (zhè) or the distal demonstrative 那 'nà' or 那个- 'nàge' to mark definiteness & specificity in the same way as the English article system (Li and Thompson, 1981; Hedberg, 1996; Chen 2004; Ting, 2005; Snape, Leung & Ting, 2006; Winward, 2012). For example, Ting (2005) and Snape, Leung & Ting (2006) showed that Mandarin L2 English learners did not experience the same fluctuation in L2 English article use that has been reported for Korean or Thai, marking reference (including generics) where definite articles were required in certain [-SR, +HK] contexts, although the same accuracy was not seen with indefinite articles. Thus, there is some potential for differences between Mandarin L2 English accuracy of article use in generic contexts compared to that of Korean/Thai.

2.2.2. Referential definites

For the majority of definite expressions in both Mandarin and Korean, the zero anaphor is the preferred NP for co-referential anaphoric descriptions (Crosthwaite, 2014a), with pronouns used to mark shifts in topic/subject in Mandarin (Lehonkoski, 2000) and Korean (Sohn,

2001). However, as mentioned in section 2.2.1, Mandarin allows for demonstratives to be used to mark definiteness and specificity. In the following example from Li & Bisang (2012), the distal demonstrative + classifier construction is used to mark the definiteness of the book, and the use of a classifier before the definite referents 'the student(s)' is rendered ungrammatical:

(2) Context: Where is the book?

na ben shu, (*ge) xuesheng mai-zou le.
that CLS[2] book CLS student buy-away PF[3]
'The book, the student(s) has/have bought it.' (Li & Bisang, 2012:338)

Mandarin L2 English learners have been shown to use demonstratives (as well as numerals) for the same function as English articles in their L2 English production (e.g. Robertson, 2000), although Diez-Bedmar & Papp (2008) note that these 'definite articles' are very rarely used in the L2 data presented in their corpus study.

Ionin, Baek, Kim, Ko, & Wexler (2012) claim Korean demonstratives also share certain functions with English definite articles, finding that Korean learners of L2 English used demonstratives and definite articles analogously for non-unique referents where demonstratives were expected, and unique referents where definite articles were expected. However, Crosthwaite (2014a) found that the frequency and distribution of demonstratives used for specific definite reference in L1 Korean was far lower than was found in L1 Mandarin production (and where definite articles would be used in English).

Thai may also encode definite reference through demonstratives *ni* – thisN; *nan* – thatN; *noon* –yonderN) that combine with classifiers:

(3) maa tua **nan** non nork baan

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[2] CLS - Classifier
[3] PF - Aspect marker

dog CLS **that** sleep outside house

'The dog sleeps outside (the) house' (Piriyawiboon, 2010, in Winward,2012:11)

However, in a 2500 word sample of the bilingual English-Thai corpus used in Winward (2012), English native speakers used 124 definite article and three demonstratives, while the Thai speakers used only three demonstratives to encode definite reference, and so these uses in Thai production are claimed to be 'vanishingly rare' (Winward, 2012). Singnoi (2004) claims that the Thai demonstrative alone cannot be used to specify definiteness (example 4 below), but that it must be supplemented with a classifier before a demonstrative noun phrase can be considered definite (as with example 5):

(4)   Kày   mii   thûapay tææ [**pèt nán**]   hǎa yǎak

Chicken exist generally but **duck that** find difficult

'Chickens are common, but ducks are difficult to find' (indefinite)

(5)   Kày   mii   thûapay tææ [**pèt làaw nán**] hǎa yǎak

Chicken exist generally but **duck CLS that** find difficult

'Chickens are common, but those ducks are difficult to find' (definite) (Singnoi, 2004:651).

2.2.3. Specific Indefinite / Non-referential reference

Generally, in Mandarin, word order is the primary determinant of (in)definiteness (Li & Thompson, 1981; Hickmann et.al., 1996, Crosthwaite, 2014a), with post-verbal position preferred for new (indefinite) information. Specific indefinite entities may also be locally marked with a numeral + classifier or a bare classifier before the noun (Bisang, 2014). These 'classifiers', common in East Asian languages such as Mandarin and Korean, accompany their nominal counterpart and 'classify' it according to its type and/or quantity in indefinite contexts. There are approximately 900 such classifiers in Mandarin (Zhang, 2013).

Referentially, such NPs are common with animate referents introduced as part of presentative constructions (similar to the English '*there was* a boy') (Crosthwaite, 2014a, 2014b), as with the example below:

(6)　有　　一　　个　　男孩　走进　餐厅

yǒu　　**yī**　**gè**　　**nánhái** zǒujìn cāntīng

There is one　CLS[4] boy　　enter　restaurant
'A boy went to a restaurant' (Crosthwaite, 2014b:462)

Despite being optional in both indefinite and definite contexts, numeral + classifier NPs are typically used for 'new' referents, and can be used specifically or non-specifically (Hickmann et. al. 1996).　This leads Li & Thompson (1981), Hedberg (1996), Chen (2004) and Liu (2010) to claim that the Mandarin numeral + classifier may actually be considered as equivalent to the English indefinite article in distribution. Li & Bisang (2012) suggest that the classifier in classifier + noun NPs only marks non-specific indefiniteness, while if the numeral 'yi' is present with the classifier, this NP form can express specific indefiniteness, non-specific indefiniteness as well as cardinality.　They claim that the classifier has grammaticalised as an article-like NP in that it has a fixed position in two different constructions (one for individuation and one for referential status), and this is unlike the kind of behaviour exhibited in South-East Asian languages such as Hmong and Vietnamese (and by extension, Thai).

In Korean, specific indefinite referents are generally overtly mentioned in first position with pre-nominal numeral + classifier NPs or NPs with post-nominal nominative markings only (Sohn, 2001; Crosthwaite, 2014a):

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[4] CLS = classifier

(7) 한 아이가   식당으로   들어갔습니다.

      han ai -ga   sikdang-euro   dureo-gass-seumni-da.

      one boy-**NOM** restaurant-into   enter-PAST-POL-DEC[5]

      'A boy walked into a restaurant' (Crosthwaite, 2014b, 464)

However, the use of pre or post-nominal marking is non-obligatory (as with Mandarin), and, importantly, less frequently occurring for this function than in Mandarin (Crosthwaite, 2014a), leaving the vast majority of referents introduced with zero articles. Brown (2011) notes that Korean has developed an 'elaborate system of titles, kinship terms [...] that is varied and complex' (2011:38), with the information contained in the noun enough to allow the reader/listener to infer discourse novelty (at least for animate referents) without the need for explicit marking:

(8) 선생님이   식당으로   들어갔습니다.

      seonsaeng-nim-**i**   sikdang-euro   deureo-gass-seum-nida.
      teacher-HON-NOM   restaurant-into enter-PAST-POL-DEC
      '(A) teacher walked into a restaurant' (Crosthwaite, 2014b:464)

Similarly to Mandarin and Korean, Thai classifiers / numerals may be used in specific indefinite contexts, although their use is rare (Winward, 2012):

(9)   maa tua neung non nork baan
      dog CLS dog   sleep outside house
      'a (certain) dog is sleeping outside the house' (Piriyawiboon, 2010, in
      Winward, 2012:9)

In Winward's (2012) analysis, classifiers were used to signal specificity just once in his Thai data. Moreover, because Thai nominals come in various forms (some with and some without classifiers), in some cases the classifier is *de-facto* the noun itself, highlighting the non-obligatoriness of these classifiers for the marking of indefiniteness.

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[5] NOM = nominative marker, PAST – simple past, POL – polite verb ending, HON-honorific marker.

2.2.4 - Summary of cross-linguistic CA

While Mandarin Chinese, Korean and Thai are typically classified as article-less languages, the CA suggests that when it comes to indefinite and definite reference, each language behaves differently. Mandarin speakers appear to use overt syntactic means to signal (in)definiteness (e.g. overt or deliberately omitted numeral + classifiers, demonstratives) *more often* and in *more clearly differentiated article contexts* than Korean and Thai speakers, who tend to produce more bare nominals in generic, indefinite and definite contexts despite having the syntactic means to mark (in)definiteness available in the grammar. Thus, Crosthwaite (2014a, 2014b) has labelled Mandarin as a 'semi-syntactic' language compared with the more 'pragmatic' Korean (and also Thai) when following Huang's (2000) syntactic/pragmatic continuum of anaphora distribution across languages. As such, these considerations –along with the literature cited thus far – suggests that grouping Mandarin together with Korean and Thai as 'article-less' languages may be inaccurate, as the potential for positive L1 transfer of certain form/function relationships associated with the English article system appears to be greater for speakers of Mandarin than those of Korean and Thai. This may likely result in higher accuracy of L2 article use by Mandarin L2 English learners in a number of obligatory contexts, or that the article system is acquired 'earlier' in a pseudo-longitudinal sense than might the case for Korean/Thai L2 English learners.

2.2.5 - Comparable CA data

The CA presented above is a useful reference point for forming hypotheses regarding L2 English article use by speakers of the L1 reference varieties in question, following the 'best after 1980' approach of Gilquin (2001) in order to avoid studies with a 'strong' CA hypothesis sourced in outdated behaviourist SLA theory. However, an appropriate methodology for the Integrated Contrastive Model should involve the collection of original

texts which share content or text-type features - a 'comparable corpus' (Gilquin, 2001). In this respect, a (very) small amount of L1 Mandarin, Korean and Thai data was collected under the same task types and conditions as the L2 data to be analysed in the present study. This data will be presented in section 4.1.

3 - Methodology

3.1 - Sample

3.1.1 - L2 data

The L2 data are drawn from the written version of the International Corpus Network of Asian Learners of English (ICNALE, Ishikawa 2011, 2013), including the L1 English data and the L2 English data from L1 Mandarin, L1 Korean and L1 Thai speakers. The ICNALE's design criteria (following Ishikawa, 2011) was considered advantageous for the present study over other large learner corpora for two main reasons.

Firstly, the data is spread across four L2 proficiency levels, allowing for development of article usage across pseudo-longitudinal measures of L2 proficiency to be quantifiably determined. These proficiency groupings are *claimed* in Ishikawa (2011) to be equivalent to the levels A2-B2/C1 of the Common European Framework (CEFR, Council of Europe, 2001). However, there are a number of different measures of proficiency used in the construction of the ICNALE, with some students' proficiency measured by standardized tests such as IELTS® and TOEFL®, but with other students (who had not previously taken a standardised test) having their proficiency measured via a converted score following Nation & Beglar's (2007) Vocabulary Size Test. Ishikawa (2011) then aggregates these different scores to generate ad-hoc proficiency groupings for the ICNALE corpus. For these reasons, the present study makes **no** assumptions regarding ICNALE proficiency distinctions and CEFR

equivalency, and comments only on differences across/between the ICNALE-defined distinctions of proficiency. In this respect, for the purposes of the present study, the ICNALE levels have been renamed 'Beginner', 'Lower-Intermediate', 'Intermediate' and 'Upper-intermediate' respectively for the purposes of the present study.

Secondly, the entire corpus is comprised of argumentative essays covering only **two** potential questions - the 'Part time job' and the 'Smoking ban' tasks - **across** the different L2 proficiencies. The prompts for these tasks are seen by the writers when producing the texts, and are shown below:

> *'Do you agree or disagree with the following statements? Use reasons and specific details to support your answer.*
>
> *[Part-time job]: 'It is important for college students to have a part-time job'*
>
> *[Smoking ban]:'Smoking should be completely banned at all the restaurants in the country'*

Von Stutterheim and Klein (1989) suggest that the question or *quaestio* (implicit question) that prompts a given text constrains the writer's selection of potential referents, and accordingly the range of potential NP types, before the writer has even begun the text. Therefore, there would be a difference in the structure of a text if the question that prompted the text was 'what happened?' or if the question was 'what happened *to X?*' Given that the corpus data is limited to only two possible questions, the data allow us to compare 'like for like' interlanguage and L1 data, two of the requirements of Contrastive Interlanguage Analysis (Granger, 1996:44), which, together with the comparative L1 Mandarin / Korean / Thai data collected, will constitute the Integrated Contrastive Model for the present study.

The original ICNALE dataset contains 400 native English texts, 800 Mandarin L2 English texts, 600 Korean L2 English texts and 800 Thai L2 English texts, with a 50/50 split between 'Part-time job' and 'Smoking ban' tasks. However, most L2 texts in the ICNALE are sourced

within Lower-Intermediate and Intermediate proficiency levels, and in an attempt to ensure roughly equal corpus sizes between L2 proficiencies, a maximum of 25 L2 texts per proficiency were analysed. The number of Upper-Intermediate texts in the Mandarin L2 English data is roughly half that other levels (n=13 for both tasks) but as this data still accounts for over 1000 obligatory article contexts, it was considered as sufficient for analysis/comparison. The number of Upper-Intermediate texts in the Thai ICNALE data (n=3) was too small for inclusion in the present study. When selecting the texts for analysis, a random sampling from the entire data was employed. In some cases, the random sampling uncovered a number of texts that had to be substituted with others either due to duplication of data (or at least, where the vast majority of one text was identical to that of another), or when it was apparent that online translation from L1 into L2 had been used to generate the text (mostly in the Korean L2 English dataset at Beginner level). If a text was removed, another text from the ICNALE dataset was included at random, and checked again for duplication/translation issues. In total, 573 ICNALE texts were sampled in the present study, with 523 L2 texts alongside 50 L1 English texts.

Table 2 describes the complete ICNALE corpus sample in terms of the number of texts, word count, mean words per composition and the number of obligatory article contexts contained within:

Table 2 – ICNALE Data sample

Task	Language/Level	Texts	Words/Characters	Mean words per composition	Obligatory contexts[6]
Part-time job	**L1 English**	25	5526	221.04	562

	Mandarin L2 Eng.				
	Beginner.	25	5446	217.84	739
	Low-int.	25	5839	224.58	743
	Int.	25	5839	233.56	768
	Upper-int.	13	3260	250.77	486

	Korean L2 English				
	Beginner	25	5456	218.24	720
	Low-int.	25	5524	220.96	787
	Int.	25	5508	220.32	798
	Upper-int.	25	5744	229.76	808

	Thai L2 English				
	Beginner	25	5539	221.56	884
	Low-int.	25	5940	237.60	860
	Int.	25	5770	230.80	815
Smoking ban	**L1 English**	25	5415	216.60	696

	Mandarin L2 Eng.				
	Beginner	25	5590	223.60	767
	Low-int.	25	5630	225.20	852
	Int.	25	5781	231.24	905
	Upper-int.	13	3187	245.15	518

	Korean L2 English				
	Beginner	24	5055	210.62	850
	Low-int.	25	5318	212.72	964
	Int.	25	5306	212.24	1074
	Upper-int.	25	5619	224.76	943

	Thai L2 English				
	Beginner	24	5320	221.67	948
	Low-int.	24	5427	226.12	916
	Int.	25	5693	227.72	975

Total sample [both tasks]		573	128732	225.19	19378

3.1.2 - L1 Mandarin, Korean, Thai sample

As mentioned in section 2.2.5, it was considered necessary to collect a small amount of new L1 data from each source language under the same conditions and tasks that the L2 ICNALE data was generated from, in order to avoid bias between the CA and the L2 data when considering L1 typology for the Integrated Contrastive Model. Two native speakers of

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[6] Includes all obligatory contexts for 'type 5' (idiomatic/phrasal uses) as well as generic, referential definite, referential indefinite and non-referential contexts. Type 5 contexts were coded by the researcher but will not be mentioned again in the analyses

Mandarin, Korean and Thai respectively provided the L1 texts for their respective L1 group, answering both ICNALE questions (Part-time job, Smoking ban) and with the texts produced under the same conditions as the ICNALE data collection procedure.

Table 3 - L1 Mandarin / Korean / Thai data sample

Task	Language/Level	Texts	Words/Characters[7]	Mean words per composition	Obligatory contexts[8]
Part-time job	**L1 Mandarin**	2	337	168.5	80
	L1 Korean	2	172	86	44
	L1 Thai	2	521	260.5	93
Smoking ban	**L1 Mandarin**	2	363	181.5	92
	L1 Korean	2	153	76.5	46
	L1 Thai	2	880	440	144

3.2 - Annotation

All source texts were compiled into a searchable corpus using UAMCorpustool (O'Donnell, 2008), version 3.1.17. Annotation for each text followed the scheme first devised in Diez-Bedmar & Papp (2008) and modified in Diez-Bedmar (2015).

Table 3 - Tagging system for correct uses of articles (Diez-Bedmar, 2015)

	Article used by the learner			
	Generic	Referential Definite	Referential Indefinite	Non-referential
Definite article	1DA	2DA		
Indefinite article	1IA		3IA	4IA
Zero article	1ZA		3ZA	4ZA

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[7] Korean word counts do not include meaning-carrying post-nominal/verbal markings, such as nominative marker 가 'ga' or post-verbal 고 'go' which would translate to 'and' in English, hence the word counts appear small. These are not separate words in the sense that 'the' or 'a' are in English or Mandarin. One of the Thai writers produced very long texts for 'Part-time job' and 'Smoking ban' tasks, hence the much larger word count.

[8] Non-English language counts are a rough approximation based on clearly identifiable zero article noun phrases and any classifier/demonstrative noun phrases found by the researcher, with guidance sought from native-speaking translators of each respective language regarding the final calculation of article contexts.

Table 4 - Tagging system for incorrect uses of articles (Diez-Bedmar, 2015)

| | Article used by the learner | | | |
	Generic	Referential Definite	Referential Indefinite	Non-referential
Definite article	1GAIA[9]	2GAIA		
	1GAZA	2GAZA		
Indefinite article	1GADA		3GADA	4GADA
	1GAZA		3GAZA	4GAZA
Zero article	1GADA		3GADA	4GADA
	1GAIA		3GAIA	4GAIA

All article uses in all texts were manually annotated according to the above scheme, originally by the researcher (a native speaker of English) and a non-native speaking research assistant with an MA in applied linguistics. All non-English L1 texts were annotated by a native speaker of that L1 (all working in English departments at universities in their respective countries), with a translated and annotated version of each text provided to the researcher for analysis. After the annotation process was complete, the researcher manually double checked all English language codings (both the researcher's own and those of the research assistant) for accuracy. Following this, two additional native English speakers were recruited to check a maximum of 5 texts per task, English speaking group and L2 level for accuracy of both correct and incorrect codings (L1 English; Mandarin, Korean, Thai L2 English at Beginner to Upper Intermediate. levels, *n*=120 texts). This process produced an Intraclass Correlation Coefficient of .814, where a coefficient of >0.74 is considered 'excellent' (Fleiss, 1981). Where the raters did not agree, both native speaker raters and the researcher reached a consensus and, if necessary, the researcher recoded the data accordingly. The final total number of English (L1 or L2) definite articles coded (appropriate or

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[9] Taken from Diez-Bedmar & Papp, (2008) - GA=Grammar Article. 1GAIA = Grammar article error with incorrect use of indefinite article in generic context; 2GAIA = Grammar article error with incorrect use of indefinite article in referential definite context, etc.

inappropriate) was 5189, the number of indefinite articles coded was 3488, and the number of zero articles was 12,452.

3.2.1 - Appropriate / inappropriate article use – Target Language Use

Different studies on L2 article use have suggested various orders of accuracy depending on how accuracy was measured. Earlier studies analysed measures of complexity, accuracy and fluency (e.g. Ortega, 2003), looked at suppliance in obligatory contexts (Brown, 1973) or observed error frequency and type (Corder, 1975). However, it is important to compare both appropriate and inappropriate article use per context when determining overall accuracy of use. For example, it may be that the accuracy of zero article use in specific indefinite contexts is quite high, but that zero articles are also frequently inappropriately used over obligatory indefinite articles in the specific indefinite context (e.g. for singular entities), thus reducing the overall accuracy of target language use for that article type in that context.

With this in mind, the present study follows Diez-Bedmar & Papp (2008) and Diez-Bedmar (2015) in adopting Pica's (1983) measure of accuracy in the form *Target Language Use*, shown in the equation below:

$$TLU = \frac{\text{No. of correct suppliances in obligatory contexts}}{(\text{No. of obligatory contexts}) + (\text{No. of suppliances in non-obligatory contexts})} \times 100$$

Because this approach relies on a measure of obligatory contexts, there is no need to normalise word counts across/between subcorpora, given that language users of different L1/L2 groups may use other kinds of NPs (such as demonstrative or quantitative NPs) that are, by their nature, non-obligatory contexts for articles.

4 – Results and discussion.

4.1 - L1 English, Mandarin, Korean and Thai

Table 5 shows the results of the L1 English, Mandarin, Korean and Thai data, with information provided regarding the specific NP form used per context (as articles are not used).

Table 5 – Results of L1 English, Mandarin, Korean, Thai essays (both tasks)

		Generic contexts			Referential definite contexts	Referential indefinite contexts		Non-referential contexts	
Language	Texts	1DA	1IA	1ZA	2DA	3IA	3ZA	4IA	4ZA
English	50	5	22	151	295	65	223	219	160
Mandarin	4			36	8 (3 demonstrative, 5 zero art)	1 (numeral + classifier)	53	2 (numeral + classifier)	70
Korean	4			37	4 (zero art)	1 (numeral)	29		17
Thai[10]	4			77	68 (66 zero art 2 classifier)		39		55

Despite the small sample size, the Mandarin, Korean and Thai data produced here mostly supports the claims of the CA presented in section 2, namely, that Mandarin speakers appear to use demonstrative and numeral + classifier NPs to mark for (in)definiteness, unlike speakers of Korean and Thai. The Korean and Thai speakers did not produce any demonstrative NPs to mark definiteness, while the Mandarin speakers used three in referential definite contexts. The Mandarin speakers also produced 3 numeral + classifier NPs to mark indefinite reference while the Korean speakers used only 1. The Thai speakers

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[10] Counts by context for Thai are at best a rough approximation. This is because even the Thai translator had trouble determining if things are definite or indefinite, e.g. nán mâi dâai bpen sìng têe kun kít wái – roughly 'that didn't be Ø thing that you expect' - the zero article here could read [roughly] 'the thing that you expected' or 'a thing that you expected' in an English word-for-word translation. The Thai texts were also considerably longer than those of the Mandarin/Korean L2 English groups, hence the increased number of obligatory article contexts.

produced 2 classifier noun phrases in definite contexts when referring to a list of 'reasons',

e.g. 'the first reason / the last reason', but this is not necessarily a marker of definiteness as

the classifier is related to the lexical item 'reason', and as such, the reading of the classifier

could just as easily be 'a first reason / a last reason'. Usage of this NP form was also non-

obligatory, with other texts omitting the classifier in the same context. Also of note is that the

L1 English data contains a small number of definite (n=5) and indefinite article (n=22) usage

in generic contexts, while the use of demonstratives/numerals is absent from generic contexts

in L1 Mandarin, Korean and Thai production (at least in the small sample here). Such

absence was considered problematic in terms of L2 English article acquisition for these

language groups in the CA.

4.2 - TLU ratings and accuracy orders for Mandarin L2 English group

The following tables describe the mean Target Language Use scores from the Mandarin L2

English data for both 'Part-time job' and 'Smoking ban' tasks. Given the data is not normally

distributed (requiring non-parametric comparison such as Kruskal-Wallis / Friedman), the

median and median absolute deviations (MAD) are reported rather than the mean and

standard deviations.

Table 6 – Target Language Use ratings by level and context for Mandarin L2 English group
[Part-time job]

Level	Texts	Generic contexts			Referential definite contexts	Referential indefinite contexts		Non-referential contexts	
		1DA	1IA	1ZA	2DA	3IA	3ZA	4IA	4ZA
Beginner	25	M=0 AD=0	M=0 AD=0	M=1 AD=0	M=1 AD=0	M=.50 AD=.50	M=.67 AD=.17	M=.86 AD=.14	M=.78 AD=.22
Low-int.	25	M=0 AD=0	M=0 AD=0	M=1 AD=0	M=1 AD=0	M=0 AD=0	M=.75 AD=.25	M=.83 AD=.17	M=.75 AD=.25
Int.	25	M=0 AD=0	M=0 AD=0	M=1 AD=0	M=1 AD=0	M=0 AD=0	M=1 AD=0	M=.89 AD=.11	M=.83 AD=.16
Upper-int.	13	M=0 AD=0	M=1 AD=1	M=1 AD=1	M=1 AD=.50	M=1 AD=1	M=.92 AD=.25	M=1 AD=.50	M=1 AD=.17

Table 7 – Target Language Use ratings by level and context for Mandarin L2 English group [Smoking ban]

Level	Texts	Generic contexts			Referential definite contexts	Referential indefinite contexts		Non-referential contexts	
		1DA	1IA	1ZA	2DA	3IA	3ZA	4IA	4ZA
Beginner	25	M=0 AD=0	M=0 AD=0	M=.80 AD=.08	M=1 AD=0	M=1 AD=0	M=1 AD=0	M=.83 AD=.17	M=.80 AD=.20
Low-int.	25	M=0 AD=0	M=0 AD=0	M=.93 AD=.07	M=1 AD=0	M=.67 AD=.33	M=.91 AD=.09	M=.86 AD=.14	M=.88 AD=.12
Int.	25	M=0 AD=0	M=0 AD=0	M=.83 AD=.09	M=.86 AD=.14	M=.67 AD=.33	M=1 AD=0	M=.83 AD=.17	M=.83 AD=.17
Upper-int.	13	M=0 AD=0	M=0 AD=0	M=1 AD=.25	M=1 AD=.50	M=1 AD=1	M=1 AD=.57	M=.83 AD=.83	M=1 AD=1

From the tables, the Mandarin L2 English learners appear to have little trouble with the use of the zero article in generic, referential indefinite and non-referential contexts, the definite article in referential definite contexts, and the indefinite article in non-referential contexts across both tasks. Accuracy of definite and indefinite articles in generic contexts is problematic in both tasks and across levels, with the median TLU for definite article use at zero throughout, and with the TLU for indefinite article use accurate only at upper-intermediate level in the Part-time job task but not the Smoking ban task.

To determine any effects of task and L2 proficiency on TLU of particular article form/contexts, either Kruskal-Wallis (for L2 proficiency) or Mann-Whitney U tests (for task) were performed on the data. To avoid issues with multiple testing, an alpha value of 0.00625 was used (8 tests - 1DA to 4ZA). Where Kruskal-Wallis tests were significant, adjusted *p* values are presented for post-hoc multiple pairwise comparisons using Dunn's correction, while *p* values are adjusted for Mann-Whitney U test using Holm-Bonferonni sequential correction. There were significant effects of task on the accuracy of indefinite articles in generic contexts (U=2,954, Z=-3.446, *p*=.007) and of zero articles in referential indefinite contexts (U=5,353, Z=-4.529, *p*<.001) [Give examples]. There was also an effect of L2 proficiency on the TLU of indefinite article use in non-referential contexts, but only for the Part-time job task (H(3)=13.023, *p*=.005) with the increased TLU noticeable between Lower-Intermediate and Upper-Intermediate level (U=73.5, Z=-2.972, *p*=.003).

The following table describe median/MAD Target Language Use and associated orders of accuracy across all article contexts and both tasks, with comparisons performed using Friedman's test with an alpha value of 0.0125 for multiple testing correction (4 tests, 1 per L2 level) except for the value 'across all levels', and where significant, post-hoc pairwise comparison statistics are presented with corrected *p* values for multiple testing using Dunn's correction. The figures take into account TLUs of each article form across the four article contexts (i.e. the value for 'definite article' here includes TLUs for 1DA, 2DA, 'indefinite article' includes 1IA, 3IA, 4IA, etc.).

Table 8 – Target Language Use ratings and orders of accuracy across all article contexts for Mandarin L2 English group [both tasks]

Level	Definite article	Indefinite article	Zero article	Friedman / Pairwise comparison	Accuracy order
Beginner	M=1 AD=0	M=.79 AD=.18	M=.78 AD=.07	$F_r(2)=9.439, p=.009$ DA>ZA t(2)=-.500, p=.037 DA>IA t(2)=-550, p=.018	DA>ZA=IA
Lower-int.	M=1 AD=0	M=.80 AD=.20	M=.86 SD=.09	$F_r(2)=1.744, p=.418$	ZA=IA=DA
Intermediate	M=.50 AD=.11	M=.90 AD=.10	M=.84 AD=.08	$F_r(2)=10.242, p=.006$ DA<IA t(2)=-.633, p=.005	ZA=DA ZA=IA, DA<IA
Upper-int.	M=1 AD=.57	M=1 AD=.54	M=.96 AD=.34	$F_r(2)=1.241, p=.538$	ZA=IA=DA
Across all levels	M=.90 AD=.10	M=.89 AD=.10	M=.85 AD=.08	$F_r(2)=4.812, p=.090$	**ZA=IA=DA**

The results shown in Table 8 suggest an overall article accuracy order of zero = indefinite article = definite article for the Mandarin L2 English group, with some fluctuations at certain L2 proficiencies. At Beginner level, the definite article TLU is significantly higher than that of the zero/indefinite article, while at Intermediate level, the definite article TLU is significantly lower than that of the indefinite article. Overall, however, the findings here are different to that those cited for Mandarin L2 English learners in the corpus-based literature

(e.g. Diez-Bedmar & Papp, 2008), and appears to show that the Mandarin L2 English learners in the ICNALE data do not struggle with any one particular article form at the majority of L2 levels analysed, although there is still an issue with inappropriate use of the definite/indefinite articles in generic contexts as shown in tables 6 and 7.

4.3 - TLU ratings and accuracy orders for Korean L2 English group

The following tables describe the mean Target Language Use scores from the Korean L2 English data for both 'Part-time job' and 'Smoking ban' tasks, following the same statistical procedures as seen in the Mandarin L2 English data above.

Table 9 – Target Language Use ratings by level and context for Korean L2 English group [Part-time job]

		Generic contexts			Referential definite contexts	Referential indefinite contexts		Non-referential contexts	
Level	Texts	1DA	1IA	1ZA	2DA	3IA	3ZA	4IA	4ZA
Beginner	25	M=0 AD=0	M=0 AD=0	M=.75 AD=.17	M=1 AD=0	M=.75 AD=.25	M=.93 AD=.07	M=.75 AD=.25	M=.50 AD=.25
Low-int.	25	M=0 AD=0	M=0 AD=0	M=.73 AD=.21	M=.50 AD=.36	M=.50 AD=.50	M=.85 AD=.15	M=.63 AD=.15	M=.45 AD=.22
Int.	25	M=0 AD=0	M=0 AD=0	M=1 AD=0	M=.45 AD=.15	M=.50 AD=.50	M=.89 AD=.11	M=.67 AD=.13	M=.5 AD=.17
Upper-int.	25	M=0 AD=0	M=0 AD=0	M=1 AD=0	M=.67 AD=.33	M=.60 AD=.40	M=.82 AD=.13	M=.67 AD=.33	M=.40 AD=.31

Table 10 – Target Language Use ratings by level and context for Korean L2 English group [Smoking ban]

		Generic contexts			Referential definite contexts	Referential indefinite contexts		Non-referential contexts	
Level	Texts	1DA	1IA	1ZA	2DA	3IA	3ZA	4IA	4ZA
Beginner	24	M=0 AD=0	M=0 AD=0	M=.86 AD=.08	M=.71 AD=.29	M=0 AD=0	M=.92 AD=.08	M=.50 AD=.50	M=.60 AD=.40
Low-int.	25	M=0 AD=0	M=0 AD=0	M=.88 AD=.12	M=.64 AD=.24	M=0 AD=0	M=1 AD=0	M=.71 AD=.29	M=.80 AD=.20
Int.	25	M=0 AD=0	M=0 AD=0	M=1 AD=0	M=.60 AD=.22	M=.71 AD=.21	M=.89 AD=.06	M=.60 AD=.40	M=.78 AD=.22
Upper-int.	25	M=0 AD=0	M=0 AD=0	M=.92 AD=.08	M=.78 AD=.22	M=.60 AD=.40	M=.91 AD=.09	M=.50 AD=.50	M=.75 AD=.18

The tables suggest that the Korean L2 English learners have little trouble with zero articles generally, although their use of indefinite and definite articles is problematic in all four article

contexts types. The very poor accuracy of indefinite/definite article use in generic contexts

follows that of their Mandarin counterparts, but unlike the Mandarin-speaking group, the

Korean L2 English group also struggle with article use in referential definite, referential

indefinite and non-referential contexts, with TLUs for indefinite/definite article accuracy in

these contexts showing medians of around 0.70. There were significant effects of task on the

TLUs of definite articles in generic contexts (U=5497, Z=3.147, $p=.014$) with the TLU of the

Smoking ban task significantly higher, as well as the TLU for zero articles in non-referential

contexts (U=6,596, Z=4.091, $p<.001$). There was also a significant effect of L2 proficiency

(across both tasks) for the TLU of zero articles in generic contexts (H(3)=21.151, $p<.001$)

across both tasks. Pairwise comparison shows a significant increase in TLU between Lower-

Intermediate and Intermediate levels (U=816, Z=-3.110, $p=.002$). Comparing within task type,

There was a significant effect of L2 proficiency on zero articles TLU in generic contexts in

the Part-time job task (H(3)=17.608, $p=.001$) although there were no significant pairwise

comparisons after correction. For the Smoking ban task, there was also a significant effect of

L2 proficiency on the same article/context (H(3)=18.975, $p<.001$) with significant differences

found between Lower-Intermediate and Intermediate levels (U=161, Z=-3.074, $p=.002$)

Table 11 – Target Language Use ratings and orders of accuracy across all article contexts for Korean L2 English group [both tasks]

Level	Definite article	Indefinite article	Zero article	Friedman / Pairwise comparison	Accuracy order
Beginner	M=.50 AD=.30	M=.50 AD=.17	M=.76 AD=.12	$F_r(2)$=25.91, *p<.001* IA<ZA *t*(2)=-1.00, *p<.001* DA<ZA *t*(2)=-.622 *p=.006*	ZA>IA=DA
Lower-Int.	M=.36 AD=.14	M=.54 AD=.21	M=.79 AD=.12	$F_r(2)$=26.43, *p<.001* DA<ZA *t*(2)=-1.021, *p<.001* IA<ZA *t*(2)=-.670, *p=.003*	ZA>DA=IA
Intermediate	M=.43 AD=.11	M=.66 AD=.22	M=.83 AD=.11	$F_r(2)$=37.65, *p<.001* DA<ZA *t*(2)=-1.219, *p<.001* IA<ZA *t*(2)=-.750, *p=.001*	ZA>IA=DA
Upper-Int.	M=.50 AD=.26	M=.64 AD=.26	M=.83 AD=.10	$F_r(2)$=22.90, *p<.001* DA<ZA *t*(2)=-.847, *p<.001* IA<ZA *t*(2)=-.714, *p=.001*	ZA>IA=DA
Across all levels	M=.50 AD=.21	M=.58 AD=.25	M=.80 AD=.11	$F_r(2)$=101.728, *p<.001* DA<ZA *t*(2)=-.925, *p<.001* IA<ZA *t*(2)=-.785, *p<.001*	**ZA>IA=DA**

Unlike the Mandarin L2 English data, the findings shown in Table 11 suggest that the overall order of accuracy for the Korean L2 English group is zero>indefinite=definite. This most closely follows the findings of Diez-Bedmar & Papp (2008) for Mandarin L2 English in terms of accuracy order, but the finding that indefinite article and definite article TLUs are not significantly different in the Korean L2 English data is a novel finding. The median TLUs for definite and indefinite article use average at about 50%, or chance, even at Upper-Intermediate level.

4.4 - Target Language Use ratings and accuracy orders for Thai L2 English group

The following tables describe the mean Target Language Use scores from the Thai L2 English data for both 'Part-time job' and 'Smoking ban' tasks.

Table 12 – Target Language Use ratings by level and context for Thai L2 English group [Part-time job]

		Generic contexts			Referential definite contexts	Referential indefinite contexts		Non-referential contexts	
Level	Texts	1DA	1IA	1ZA	2DA	3IA	3ZA	4IA	4ZA
Beginner	25	M=0 AD=0	M=0 AD=0	M=.86 AD=.14	M=.78 AD=.22	M=.50 AD=.50	M=.86 AD=.08	M=.33 AD=.17	M=.67 AD=.17
Low-int.	25	M=0 AD=0	M=0 AD=0	M=.67 AD=.25	M=.80 AD=.20	M=.50 AD=.50	M=.89 AD=.11	M=.67 AD=.19	M=.69 AD=.14
Int.	25	M=0 AD=0	M=0 AD=0	M=.71 AD=.21	M=1 AD=0	M=.50 AD=.50	M=.85 AD=.15	M=.60 AD=.31	M=.67 AD=.11

Table 13 – Target Language Use ratings by level and context for Thai L2 English group [Smoking Ban]

		Generic contexts			Referential definite contexts	Referential indefinite contexts		Non-referential contexts	
Level	Texts	1DA	1IA	1ZA	2DA	3IA	3ZA	4IA	4ZA
Beginner	25	M=0 AD=0	M=0 AD=0	M=.80 AD=.19	M=.77 AD=.23	M=.10 AD=.10	M=.81 AD=.10	M=.50 AD=.17	M=.76 AD=.12
Low-int.	25	M=0 AD=0	M=0 AD=0	M=.86 AD=.11	M=.61 AD=.19	M=.50 AD=.50	M=.83 AD=.08	M=.37 AD=.37	M=.84 AD=.15
Int.	25	M=0 AD=0	M=0 AD=0	M=1 AD=0	M=.83 AD=.17	M=.60 AD=.27	M=.83 AD=.10	M=.50 AD=.50	M=.67 AD=.16

As with the Korean and Mandarin L2 English data, TLU of definite / indefinite article use in generic contexts is very poor. From the table, the median TLUs for zero articles average .80. Accuracy of referential definite contexts averages .70, while accuracy of indefinite article referential indefinite/non-referential contexts averages .50, similarly to the Korean L2 English data. There was an effect of task for the TLU of zero articles in non-referential contexts in favour of the Smoking ban task (U=3557, Z=3.151, *p*=.016) but not for other forms/contexts. There was no pseudo-longitudinal progression of TLU accuracy for any article context. This suggests that while other areas of Thai L2 English production such as lexis, grammatical complexity etc. have improved[11], article production remains a problem for

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[11] At least, as taken into account in the standardized test results or Vocabulary Size Measure adopted in the construction of the ICNALE corpus – justifying the increase in ICNALE proficiency.

these learners across all proficiencies surveyed. Whether this is an effect of instruction or a

non-recoverable effect resulting from a lack of positive transfer requires further investigation.

Table 14 – Target Language Use ratings and orders of accuracy across all article contexts

for Thai L2 English group [both tasks]

Level	Definite article	Indefinite article	Zero article	Friedman / Pairwise comparison	Accuracy order
Beginner	M=.50 AD=.30	M=.50 SD=.25	M=.77 SD=.09	$F_r(2)=21.25, p<.001$ IA<ZA $t(2)=-.947, p<.001$ DA<ZA $t(2)=-.521$ $p=.035$	ZA>IA=DA
Lower-int.	M=.40 AD=.10	M=.50 AD=.20	M=.78 AD=.09	$F_r(2)=26.62, p<.001$ DA<ZA $t(2)=-.947, p<.001$ IA<ZA $t(2)=-.872, p<.001$	ZA>IA=DA
Intermediate	M=.50 AD=.23	M=.50 AD=.18	M=.76 AD=.09	$F_r(2)=22.74, p<.001$ DA<ZA $t(2)=-.918, p<.001$ IA<ZA $t(2)=-.673, p=.003$	ZA>IA=DA
Across all levels	M=.50 AD=.33	M=.50 AD=.33	M=.77 AD=.13	$F_r(2)=67.014, p<.001$ DA<ZA $t(2)=-.913, p<.001$ IA<ZA $t(2)=-.713, p<.001$	**ZA>IA=DA**

The findings in Table 14 suggest the same overall order of accuracy as that of the Korean L2

English data (zero>indefinite=definite article). There is no overall difference in TLU

between the indefinite and definite articles, with the median TLUs of both indefinite and

definite article use at chance (.50). As with the Korean L2 English group, there appears to be

significant fluctuation of indefinite / definite article use across all article contexts by Thai L2

English learners as they struggle to assign the correct L2 morphology depending on the

conditions of definiteness and/or specificity of a given reference during their production of

these written texts.

4.5 – Cross-L2 group article TLU accuracy (by task)

The following tables show cross-L2 group comparison regarding article TLU for each article

contexts, subdivided by task ('Part-time job' / 'Smoking ban'). Only results with significant

Kruskal-Wallis tests are reported, following an alpha value of 0.00625 (8 tests per L2 proficiency). Post-hoc multiple pairwise comparisons have adjusted *p* values following Dunn's correction.

Table 15 –Cross-L2 group Target Language Use pairwise comparison [Task: Part-time Job]

Level	Feature	Kruskal-Wallis	Pairwise Comparison
Beginner	1IA	*H(2)=15.50, p<.001*	M>K[12] *t(2)=16.13, p<.001*
			M>T *t(2)=13.85, p=.007*
	4IA	*H(2)=18.73, p<.001*	M>K *t(2)=16.70, p=.009*
			M>T *t(2)=26.20, p<.001*
Lower-Int.	2DA	*H(2)=15.02, p=.001*	M>K *t(2)=20.93, p<.001*
			M>T *t(2)=13.03, p=.049*
Intermediate	1IA	*H(2)=14.48, p=.001*	M>T *t(2)=16.84, p<.001*
	2DA	*H(2)=27.87, p<.001*	K<T *t(2)= -20.91, p=.001*
			M>K *t(2)=29.27, p<.001*
	4IA	*H(2)=21.79, p<.001*	M>K *t(2)=22.68, p=.001*
			M>T *t(2)=26.40, p<.001*

For the Part-time job task, the Mandarin L2 English data contains significantly higher TLUs than the Korean or Thai L2 English data for indefinite articles in generic and non-referential contexts, as well as for definite articles in referential definite contexts. Korean and Thai L2 English TLUs are statistically equal with the exception of definite articles in definite referential contexts at Intermediate level, where the Thai L2 English learners have a significantly higher median TLU than the Korean data (1 compared to .45). Here, Korean L2 English learners frequently omitted articles for '[the]library', '[the] students' (when referring definitely) and '[the] future'.

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[12] M= Mandarin L2 English, K=Korean L2 English, T=Thai L2 English

Table 16 –Cross-L2 group Target Language Use pairwise comparison [Task: Smoking ban]

Level	Feature	Kruskal-Wallis	Pairwise Comparison	
Beginner	3IA	*H(2)=17.36, p<.001*	M>T	*t(2)=19.61, p<.001*
			M>K	*t(2)=14.55, p=.016*
	3ZA	*H(2)=17.26, p<.001*	K>T	*t(2)=15.58, p=.021*
			M>T	*t(2)=23.36, p<.001*
Lower-Int.	2DA	*H(2)=10.17, p=.006*	M>K	*t(2)=16.42, p=.017*
			M>T	*t(2)=16.44, p=.018*
Intermediate	1ZA	*H(2)=19.01, p<.001*	M<K	*t(2)= -25.30, p<.001*
			M<T	*t(2)= -17.48, p<.001*
	3IA	*H(2)=10.92, p=.004*	M>K	*t(2)=15.19, p=.031*
			M>T	*t(2)=19.33, p=.004*
	3ZA	*H(2)=14.04, p=.001*	M>K	*t(2)=17.48, p=.011*
			M>T	*t(2)=21.12, p=.001*

For the Smoking ban task, Mandarin L2 English learners have significantly higher TLUs for indefinite and zero article use in referential indefinite contexts than Korean or Thai L2 English learners at Beginner and Intermediate levels, as well as a higher referential definite TLU at Lower-Intermediate level. As with the Part-time job task, Thai and Korean L2 English TLUs are roughly equal for all article contexts, with the exception for the Smoking ban task being a higher TLU for zero articles in referential indefinite contexts for the Korean L2 English data over the Thai data. Here, Thai L2 English learners omitted required articles in examples such as 'We need [a] new law about banning smoking' or 'We can make [a] better society'.

4.6 – Cross-L2 group article TLU accuracy (across tasks)

Across tasks, for the definite article TLU, there was a significant effect of L2 group as measured via significant Kruskal-Wallis tests (Alpha=0.0125) at Lower-Intermediate level (H(2)=38.98, *p<.001*), Intermediate level (H(2)=10.10, *p=.005*), and across all L2 proficiencies (H(2)=45.53, *p<.001*). Post-hoc multiple pairwise comparisons (with Dunn's

adjusted *p* values) suggested significant differences between L2 groups at Lower-Intermediate level [M>K] (t(2)=44.34, *p*<.001), [M>T] (t(2)=44.48, *p*<.001), Intermediate level [M>K] (t(2), *p*=.004), and across all L2 proficiencies [M>K] (t(2)=95.89, *p*<.001) [M>T] (t(2)=86.10, *p*<.001). Mann-Whitney U test at Upper-Intermediate level showed significantly higher TLUs for the Mandarin L2 English group over the Korean group (U=289, Z=-4.025, *p.*<001).

For the indefinite article, there was a significant effect of L2 group as measured via significant Kruskal-Wallis tests (Alpha=0.0125) at Beginner level (H(2)=30.25, *p*<.001), Lower-Intermediate level (H2=12.94, *p*=.002), Intermediate level (H(2)=36.87 *p*<.001), and across all L2 proficiencies (H(2)=94.65, *0*<.001). Post-hoc pairwise comparisons suggested significant differences between L2 groups at Beginner level [M>K] (t(2)=36.20, p<.001) [M>T] (t(2)=34.24, P<.001), Lower-Intermediate level [M>K] (t(2)=23.75, *p*=.030), [M>T] (t(2)=29.20, *p*=.004), Intermediate level [M>K] (t(2)=35.39, *p*<.001), [M>T] (t(2)=51.43, *p*<.001), and across all L2 proficiencies [M>K (t(2)=116.61, *p*<.001), [M>T] (t(2)=153.65, *p*<.001). A Mann-Whitney U test at Upper-Intermediate level showed significantly higher TLUs for the Mandarin L2 English group over the Korean group (U=287, Z=-4.027, *p.*<001).

For the zero article, there was a significant effect of L2 group as measured via significant Kruskal-Wallis tests (alpha=0.0125) across all L2 proficiencies (H(2)=19.68, *p*<.001) but not for any specific L2 proficiency. The post-hoc pairwise comparison test suggests results of [M>K] (t(2)=44.36, *p*=.014), [M>T] (t(2)=72.49, *p*<.001).

5 – Discussion

The present study is one of the largest such studies of L2 article use by Mandarin, Korean and Thai L2 English speakers, providing an insight into how learners of English from article-less languages manage the assignment of L2 morphology when referring definitely and/or

specifically. Through the use of the Integrated Contrastive Model, the difficulties (and successes!) of L2 English article use by speakers of article-less languages can now be quantifiably determined. The two most important findings were related to the significant effects of L1 background on L2 article accuracy orders and cross-linguistic performance, as well as the struggles of L2 learners with article use in generic contexts regardless of L1 background.

The concerns related to L1 transfer are encapsulated in the present study in terms of the two different orders of L2 article accuracy between three so-called 'article-less' languages. The finding that the accuracy of definite and indefinite article use is equivalent to that of zero article use in the Mandarin L2 English data is a novel finding and is the clearest corpus-based evidence yet that Mandarin L2 English learners (generally) are not struggling with article use in the majority of article contexts, even at relatively low L2 proficiencies. The TLU performance of the Mandarin L2 English group was consistently higher than that of other L2 groups for definite, indefinite and zero article production. Given the (non-corpus) based claims regarding definiteness marking in Mandarin alongside the higher use of demonstratives in definite referential contexts in the small sample of L1 data provided in the present study, the higher TLUs of the Mandarin L2 English data may be explained as a significant effect of positive L1 transfer into L2 English article production. These findings provide further evidence (for the already burgeoning body of research) that Mandarin does, in fact, have an article-*like* system (following Li and Thompson, 1981; Chen, 2004; Snape, Leung and Ting, 2006, among others). This system apparently benefits these L2 English learners greatly, compared with other speakers of other article-less L1s that are not at equivalent stages of grammaticalisation for article-like form/function relationships.

This stands in stark contrast to the findings for Korean and Thai L2 English groups, who show accurate use of the zero article compared with indefinite or definite article use, but struggle with indefinite / definite article use in the majority of contexts and at each L2 proficiency. Performance of Korean and Thai L2 English groups is almost identical for definite/indefinite article use at each L2 proficiency, with TLUs averaging 50% accuracy for each article form. These findings suggest that these L2 learners have similar (poor) opportunities for L1 transfer. Despite the previous claims made in the literature that L1 Korean and Thai may have the ability to mark indefinite reference via numerals / classifiers, they very rarely do so, at least not to the extent that L1 Mandarin speakers do. In particular, there is no effect of L2 level on the pseudo-longitudinal development of Korean or Thai L2 English definite or indefinite article accuracy. Such accuracy is presumably only improved at levels beyond those sampled here. These findings clearly indicate that it is difficult to meaningfully compare L2 article use between speakers of article-less languages without taking into consideration the respective relative states of grammaticalisation in terms of the devices used to mark (in)definiteness, which as the L2 evidence found here suggests, may be significantly different between Mandarin on one end of the scale, and Korean/Thai on the other.

However, it is also apparent from the data that L2 English learners from article-less languages struggle with the TLU of definite and indefinite articles in generic contexts, massively oversupplying inappropriate definite or indefinite articles where zero articles are required. These findings correspond with those in Ting (2005), Snape, Leung and Ting (2006), Snape, García-Mayo and Gürel (2013), Ionin et. al. (2011) etc. in that because article-less languages generally use zero article bare NPs for all forms of generic reference, they overextend the use of the zero article into definite singular (*'[the] lion is dangerous') or indefinite singular (*'[A] lion is dangerous') contexts, or provide false specific readings with

inappropriate definite article use (i.e. *the students need part time jobs), or false referential

non-specific readings (i.e. *a students need part time jobs). Taking into account the cross-

linguistic analyses of the present study, the purported L1 transfer effects seen in the Mandarin

L2 English for definite / indefinite article use for other contexts is restricted to that of a

higher TLU for indefinite article use in generic contexts. Generic reference in definite

singular contexts remains very poor throughout for each L2 group. It is perhaps unsurprising,

however, that TLU for this article context remains poor given that in the L1 English data

presented here, there were only 5 recorded uses of the definite article in generic definite

singular contexts compared to 295 uses of the definite article in definite referential contexts, a

significant difference also highlighted in Biber et al. (1999). L2 learners are thus much more

likely to associate the definite article with definite referential contexts via frequency of input

(as seen in the relatively higher TLUs for this context by all three L2 groups), despite learners

still overusing the definite article in other contexts. Snape García-Mayo and Gürel (2013)

suggest that these learners have two issues to overcome; firstly, that they must move from a

context-based system of assigning generic reference to a morphological one; and secondly,

that EFL instruction has neglected article use in generic reference in favour of a one-form

one-function mapping of the definite article to specific definite readings. For improvements

to both issues, it may be potentially useful to continue an initial one-form to one-function

approach with teachers suggesting that should a singular definite/indefinite generic reference

be required (e.g. '*the potato* was first cultivated in South America' / 'It is usual for *a person*

from Italy to drink wine with his/her meal'), such reference should be converted to a bare

plural/mass generic (i.e. '*potatoes* were first cultivated in South America' / 'It is usual for

people from Italy to drink wine with their meals'). This would then leave the use of the

definite article reserved for referential definite contexts, and the indefinite article reserved for

referential indefinite / non-referential contexts, potentially improving L2 learnability of all three article forms across their respective contexts.

6. Conclusion

It is hoped that the findings of the study should be considerable interest to researchers working on future accounts of L2 article acquisition, and for educators who are interested in solving 'the article problem' faced by their students, who, from the evidence, are apparently more diverse in nature than their previous categorization as speakers of article-less languages previously suggested. The findings will hopefully lead to increased awareness of the difficulties encountered by L2 English learners during the acquisition of the article system, which, if properly recognized by language professionals, should lead to improvements in materials design and pedagogy, and perhaps lead to increased motivation amongst students (and teachers) who feel overwhelmed by the complexity of the English article system as part of their L2 development.

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8. Appendix A

Annotated file sample - Mandarin L2 English from Upper-Intermediate level, 'Smoking Ban' task.

```
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 <header>
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  <lang>english</lang>
 </header>
  <body>
```

?I agree with the point. Nowadays, there is a hot discussion about whether smoking should be banned all the restaurants[13] . People who smoke argue that it takes away their freedom. However nonsmokers advocate it is a good rule. From my perspective, I think smoking should be banned in all restaurants. Firstly, smoking which will bring many diseases does harm to our health. Besides, smoking gives much gas off into air, which pollutes our environment. What's more, many people cannot put up with the smoking gas, which makes them sick. It is not surprising that smoking banned in all restaurants will promote workers efficiency. Therefore, it is very important and necessary to us to ban smoking in all restaurants. If one wants to smoke, he can smoking in private. My suggestion is that they should give up smoking. It is beneficial to both our health and environment. Smoking should be banned in all restaurants. Only in this way can we breathe more flesh air in the future!Today more and more people all over <segment id='20' features='articleuse2;correct;2da'

---

[13] 'all the restaurants' uncoded as text matches prompt

state='active'>the world want to give up smoking. If you're not a smoker, don't start. In fact, smoking is a bad habit, which has great harm to people's health.   </body>

</document>