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The Role of Presuppositionality in the Second Language Acquisition of English Articles

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This article investigates the role of *presuppositionality* (defined as the presupposition of existence) in the second language (L2) acquisition of English articles. Building upon the proposal in Wexler 2003 that young English-acquiring children overuse *the* with presuppositional indefinites, this article proposes that presuppositionality also influences article (mis)use in adult L2 acquisition. This proposal is supported by experimental results from the L2 English of adult speakers of Korean, a language with no articles. The experimental findings indicate that presuppositional indefinite contexts trigger overuse of *the* with indefinites in adult L2 acquisition, as in child L1 acquisition (cf. Wexler 2003). The effects of presuppositionality are teased apart from the effects of other semantic factors previously examined in acquisition, such as scope (Schaeffer and Matthewson 2005) and specificity (Ionin, Ko, and Wexler 2004). The results provide evidence that overuse of *the* in L2 acquisition is a semantic rather than pragmatic phenomenon. Implications of these findings for overuse of *the* in L1 acquisition are discussed. This article also has implications for the study of access to Universal Grammar in L2 acquisition, as well as for the number and type of semantic universals underlying article choice crosslinguistically.

Keywords: presuppositionality, definiteness, specificity, articles, determiners, second language acquisition, UG access

1 Introduction

Parallels between child first language (L1) and adult second language (L2) acquisition have been under intensive study in recent years (see Flynn 1983, 1987, Thomas 1989, Neeleman and Weerman 1997, Schwartz 2003, Flynn and Foley 2004, and Unsworth 2005, among many others,

for child-adult comparisons). The shared assumption underlying this research program is that parallels between L1 and L2 acquisition can deepen our understanding of the general human ability to acquire language. Child L1 data reveal language acquisition patterns unaffected by L1 transfer or explicit instruction. Adult L2 data in turn reveal the process of language acquisition uninfluenced by the concurrent cognitive growth of child L1 learners. Parallels between child L1 and adult L2 data thus may constitute evidence that the course of language acquisition is determined, at least partly, by universal linguistic factors—factors that come neither from cognitive growth nor from L1 transfer. One goal of this article is to investigate such L1-L2 parallels in the domain of English article usage and provide evidence for similar patterns in the L1 and L2 acquisition of article semantics.

We hypothesize that L2 learners have access to semantic universals provided by Universal Grammar (UG), just like child L1 learners. If L1 learners make certain types of article errors that are traceable to semantic universals, we expect L2 learners to make the same types of errors, as long as L1 transfer effects are controlled for. To test this hypothesis, we designed an experiment investigating L2 English article use in an area where child L1 English learners are known to make errors.

Specifically, child L1 English learners are known to make errors in *presuppositional* indefinite contexts, overusing *the* in place of *a* when referring to a member of a set whose existence is presupposed (see, e.g., Maratsos 1976, Schafer and de Villiers 2000). This error has received both pragmatic/psychological explanations (e.g., Maratsos 1976) and linguistic explanations (e.g., Wexler 2003). In our study, we examine whether adult L2 English learners make the same type of error. To control for L1 transfer effects, we tested speakers of Korean, a language with no articles. The results of a forced-choice elicitation task show that adult L1-Korean L2-English learners indeed overuse *the* in place of *a* in presuppositional indefinite contexts. We argue that these findings provide evidence for a semantic explanation of article misuse: pragmatic explanations are generally tied to the immature cognitive state of the child and thus cannot be extended to the adult data.

Furthermore, our study was designed to tease the effects of presuppositionality apart from those of other semantic factors, something not previously done by either L1 or L2 studies. We show that presuppositionality cannot be assimilated to either wide scope or specificity; rather, it operates as an independent factor. Building upon our earlier proposal (Ionin, Ko, and Wexler (IKW) 2004) that L2 English learners have access to the semantic concepts of *definiteness* and *specificity*, we add *presuppositionality* as a third independent factor that influences L2 English article use. We argue, on the basis of our results, that L2 English learners fluctuate in using *the* to mark definiteness, specificity, and presuppositionality, and that these semantic factors work independently from each other. We also provide evidence that the observed presuppositionality effects are truly semantic in nature, and not due to an extralinguistic strategy of associating *the* with prior mention.

Our findings have important implications for the study of UG access in both L1 and L2 acquisition, as well as for the number and type of semantic universals that can underlie article choice crosslinguistically (see section 7 for more discussion).

This article is organized as follows. In section 2, we briefly discuss the relevance of child/adult comparisons. In section 3, we present theoretical background on the semantic factors that, we will argue, contribute to article choice in L2 acquisition; and we discuss the semantics that we adopt for definiteness, specificity, and presuppositionality. In section 4, we review previous studies concerning acquisition of articles in child L1 and adult L2 acquisition. We then introduce our research questions and hypotheses. In sections 5 and 6, we present the details of our experiment. In section 7, we discuss the main findings and implications of the experiment and pose questions for further study.

2 Comparing L1 and L2 Acquisition

As discussed in section 1, comparing L1 and L2 acquisition allows us to tease universal developmental effects apart from a number of other influences on acquisition—in particular, age, cognitive maturity, and L1 transfer.

First of all, L1 learners are nearly always (except in rare circumstances of L1 deprivation) younger than L2 learners. This age difference has two distinct consequences for acquisition: critical period effects and the role of cognitive maturity.

On the one hand, as is well known, L2 learners are not as uniformly successful as L1 learners in acquiring the target language; the findings that, furthermore, child L2 learners tend to outperform adult L2 learners have led proponents of the *Critical Period Hypothesis* to argue that older learners have lost the natural ability to acquire new linguistic knowledge, or, in generativist terms, have lost access to UG or at least those aspects of it not instantiated in the L1 (see, e.g., Schachter 1988, Bley-Vroman 1989, Johnson and Newport 1989, 1991, Singleton and Lengyel 1995, Birdsong 1999). From the standpoint of neuroscience, one natural way of thinking about this possibility is to consider that past a certain critical period, humans lose a certain amount of plasticity (see Lenneberg 1967).

On the other hand, older L2 learners are cognitively more mature than L1 learners (or child L2 learners), giving them a potential advantage in acquiring those aspects of language that are intimately tied to pragmatic knowledge and/or experience. An illustration comes from the domain of binding and coreference. Chien and Wexler (1990) argue that child L1 English learners as old as 5 or 6 lack knowledge of pragmatic (discourse-related) constraints on pronoun coreference, while possessing full syntactic knowledge of binding. Lee and Schachter (1997) found that in the case of L2 acquisition, preadolescent L2 English learners (ages 11–13) were more successful at acquiring the pragmatic aspects of pronoun coreference than the youngest L2 learners (ages 6–7), who performed quite poorly on pronoun coreference and showed borderline knowledge of reflexive binding.[1]

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[1] More specifically, Lee and Schachter (1997) show that after about three years of U.S. residence, both younger (ages 6–7) and older (ages 14–24) age groups of L2 English learners failed to reach nativelike performance on pronoun coreference, in contrast to the middle age group (ages 11–13). Lee and Schachter argue for the Multiple Sensitive Periods Hypothesis, according to which there are different sensitive periods for acquiring linguistic phenomena; in the case of binding principles, the sensitive period is after age 7 but before adolescence. What Lee and Schachter leave unexplained

A second major difference between L1 and L2 acquisition has to do with the fact that L2 learners, by definition, already know another language. Transfer from the L1 to the L2 has been well documented in a variety of domains (see, e.g., Dechert and Raupach 1989, Odlin 1989, Gass and Selinker 1992, Schwartz and Sprouse 1994, 1996, Schwartz 1998). Thus, differences between L1 and L2 learners may often be traceable to L1 transfer rather than (or in addition to) age effects: for example, the study by Lee and Schachter (1997) discussed above also found that adult L2 learners had difficulties with reflexive binding, apparently as a result of the differences in binding possibilities between their L1 (Korean) and their L2 (English).

Given the differences between L1 and L2 learners outlined above—age, cognitive maturity, L1 transfer—one might be surprised that the two types of populations ever behave similarly. However, similarities between L1 and L2 learners are in fact attested once the focus shifts from the *end-state* of acquisition to the *processes* underlying acquisition (see Schwartz 1992). For instance, Unsworth (2005) found that child L1, child L2, and adult L2 learners of Dutch showed similar patterns in the acquisition of object scrambling; at the same time, the child and adult L2 learners also showed some differences from L1 learners, differences that were attributable to transfer from their L1 (English). Similarly, Song and Schwartz (2009) found that child L1, child L2, and adult L2 learners of Korean followed a similar developmental path in the acquisition of subtle semantic constraints on scrambling in *wh*-questions; while low-proficiency L2 learners were influenced by transfer from their L1 (English), more proficient L2 learners exhibited patterns similar to those of L1-acquiring children.

At the same time, differences between child and adult learners have also been attested. For instance, Blom, Polišenská, and Weerman (2008), examining the acquisition of gender marking on determiners and adjectives in Dutch, found that 3-year-old L1 Dutch learners and 4- to 8-year-old L1-English L2-Dutch learners followed a similar developmental path; in contrast, adult L1-English L2-Dutch learners were different from both child groups in their overreliance on bare adjectival forms. In a similar vein, Blom (2008), examining the acquisition of verb placement and verb inflection in Dutch, found that child L2 learners (ages 6–7) patterned with child L1 learners (ages 2–4), while adult L2 learners behaved differently: adult, but not child, L2 learners were influenced by transfer from their L1s (Turkish and Berber).

The above discussion suggests that it is possible to tease apart L1 transfer, age, and universal developmental factors in acquisition by comparing different populations. While differences between groups may reflect the role of age and/or L1 transfer, similarities suggest that the same developmental processes may be at work (see Schwartz 2003 for more discussion).

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is why adult L2 groups performed poorly on pronoun coreference. If in fact the problem with pronoun coreference is pragmatic in nature (per Wexler and Chien 1985, Chien and Wexler 1991), it would be odd to claim that adult L2 learners have trouble with pronoun coreference because they lack pragmatic knowledge. Moreover, Lee and Schachter did not test quantifier-variable binding in their study, whereas Chien and Wexler's (1991) main claim is based on children's differential performance on items with proper noun versus quantifier antecedents. Thus, Lee and Schachter's experimental results do not present clear evidence concerning the distinction between semantic and pragmatic knowledge. However, the fact that the older children in Lee and Schachter's study outperformed the younger children on a phenomenon that involves pragmatic knowledge is suggestive.

In our study, we examine adult L2 acquisition of English articles and compare our findings with existing findings on child L1 acquisition, in order to see whether in fact the same processes are at work in both populations.[2] Article semantics is a fruitful area for child-adult comparisons because, as we will discuss in section 4.1, the same error types have received both semantic and pragmatic (age-related) explanations. A comparison of child L1 and adult L2 learners will therefore allow us to tease age-related effects apart from more universal linguistic processes. We control for L1 transfer effects by considering a population whose L1 (Korean) does not have articles.[3]

3 Theoretical Background

The morphology of the DP may encode different semantic concepts, and articles in particular can be used to represent different semantic notions. In this article, we are particularly concerned with the semantic concepts of *definiteness*, *specificity*, and *presuppositionality*. Before we address how these concepts affect the acquisition of articles, we provide their definitions.

3.1 Definiteness

Throughout this article, we adopt the Fregean view of *definiteness*, according to which the definite article carries presuppositions of both existence and uniqueness (see Heim 1991 for discussion).[4] We adopt the definition of definiteness in (1), which is based on Heim 1991. In (1), we separate out the presupposition of *existence* and the presupposition of *uniqueness*, as this separation will be important for our later proposal. We also follow Heim 1991 in treating indefinites as quantificational (2).

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[2] In this article, we do not consider comparisons with child L2 acquisition, which has not been much investigated with regard to article choice (but see Ionin, Zubizarreta, and Philippov 2009 for child-adult L2 comparisons on article choice and specificity). A three-way comparison of child L1, child L2, and adult L2 acquisition of articles is a fruitful subject for further research.

[3] Korean does not have any lexical item that directly encodes any of the semantic concepts discussed in this article. This, of course, does not preclude the possibility of indirect transfer from some other construction in Korean. It has often been argued that topic-focus information structure and word order in Korean are related to presuppositionality and/or specificity effects (see Lee 1992, 1999, and references cited in Choi 1996). Crucially, however, the ''presuppositionality and/or specificity effects'' observed in the literature are not identical to the concepts that we discuss here—they express discourse properties such as ''newness,'' ''prominence,'' or ''contrastiveness.'' Choi (1996), in particular, demonstrates that word order in Korean cannot be explained by appealing to Diesing's (1992) notion of presuppositionality. Lee (1992) shows that both definite and indefinite NPs can be topics in Korean, arguing against direct mapping between topicality and definiteness. We thus assume that there is no principled reason to expect indirect or general transfer from Korean to influence L2 English article use or to result in the precise patterns of article misuse that we report in this article. Furthermore, in follow-up studies, we have replicated the present findings with L2 English learners from two other article-less L1s, Russian and Serbo-Croatian, which are typologically unrelated to Korean (see section 7.3). Thus, it seems unlikely that L1 transfer is the main reason for article misuse by L1 Korean learners of English. For discussion of more direct L1 transfer effects, we refer the reader to recent work with L1-Spanish L2-English learners (Ionin, Zubizarreta, and Bautista Maldonado 2008), which suggests that when the L1 does have articles, learners transfer article semantics from their L1 to their L2 (see footnote 10 for further discussion).

[4] This discussion concerns singular DPs only. For plural DPs, uniqueness needs to be replaced by maximality (see Heim 1991).

(1) *Definiteness*
    A sentence of the form [def α] ζ *presupposes* that there exists at least one individual which is α and that there exists at most one individual which is α, and it *asserts* that the unique individual which is α is also ζ.

(2) *Indefiniteness*
    A sentence of the form [indef α] ζ *asserts* there is at least one individual which is both α and ζ.

The definiteness distinction receives morphological expression in the English article system. The article *the* has the semantics of definiteness (i.e., the presuppositions of existence + uniqueness), while the article *a* has the semantics of indefiniteness (i.e., lack of these presuppositions).

Importantly for our purposes, the presuppositions on the definite article are part of the common ground, that is, information available to speaker as well as hearer. There are many different ways in which existence and uniqueness can be established in the common ground, thus sanctioning the use of *the*. First, *the* can be used to refer back to a previously mentioned DP, as illustrated in (3).

(3) I saw *a black cat* in the street [. . .] I brought *the black cat* home.

Indefinite *a* is used with first-time referents: on the first mention of *a black cat* in (3), there is no presupposition that a unique black cat exists, so the conditions on definiteness given in (1) have not been met, and *a* rather than *the* must be used. When the same *black cat* is mentioned again, however, the definite article *the* is used because prior mention has established the cat's uniqueness in the discourse: the speaker can reasonably assume that the hearer shares the speaker's presupposition that there is a unique *black cat* under discussion (i.e., the same cat mentioned earlier).

However, prior mention is not always necessary for use of *the*. When the uniqueness presupposition is part of the common ground as a result of mutual world knowledge, *the* can be also used. Some examples are given in (4) ((4a–f) are adapted from Brown 1973:345; see also Hawkins 1978).

(4) a. Unique for all: *the moon*, *the Earth*, *the sky*, etc.
    b. Unique in a given setting: *the desk*, *the ceiling*, *the floor*, etc.
    c. Uniquely salient for a given social group: *the car*, *the boss*, *the Constitution*, etc.
    d. Uniquely salient by pointing/nodding/spotlighting: *the chair*, *the singer*, etc.
    e. Uniquely salient by entailment: *the engine*, *the head*, *the captain*, etc.
    f. Unique by definition: *the last sentence*, *the first of the month*, etc.
    g. Unique by inference: *the plumber who fixed my sink last week did a poor job*

For instance, *the moon* is unique for all speakers given our Earth-centric view; in a room containing just one desk, *the desk* is uniquely salient for the speaker and the hearer; for a given social group (e.g., family, work group, Americans), there can be a unique referent that is the only salient instance of the set; some elements can be made uniquely salient by being pointed at or attracting

the attention of the speaker and the hearer (e.g., *Get the dog out of here*); the uniqueness of *the engine* is made salient by our knowledge that there is usually only one engine in a car; ordinal expressions such as *the last X* satisfy the uniqueness presupposition by definition (i.e., there is only one last or first element in a set); *the* can also be used by the speaker to induce the listener to infer the uniqueness presupposition (as in (4g)). This last is a case of *presupposition accommodation* (see von Fintel 2008 for an overview of this topic).

3.2 Specificity

Distinct from definiteness is the concept of *specificity*, which makes reference only to the knowledge state of the speaker, rather than to the common ground. We follow the definition of specificity developed by Ionin (2003, 2006), who built upon Fodor and Sag's (1982) proposal of referentiality. This definition (from Ionin 2003:56) is given in (5).

(5) *Specificity*
A sentence of the form [sp α] ζ expresses a proposition only in those utterance contexts c where the following felicity condition is fulfilled: the speaker of c intends to refer to exactly one individual x_c in c, and there exists a property φ which the speaker considers noteworthy in c, and x_c is both α and φ in c. When this condition is fulfilled, [sp α] ζ expresses that proposition which is true at an index i if x_c is ζ at i and false otherwise.

Specificity is not marked by the Standard English article system, which encodes only definiteness, so that *the* is used in all definite and *a* in all indefinite contexts, regardless of specificity. However, Ionin (2003, 2006) shows that the demonstrative *this* on its indefinite referential use encodes the semantics of specificity in colloquial (spoken) English. This is illustrated in (6) and (7) (see Prince 1981, Maclaran 1982, Ionin 2003, 2006 for more discussion of the nature of referential *this*).

(6) a. Peter intends to marry *a/this merchant banker*—even though he doesn't get on at all with her.
 b. Peter intends to marry *a/??this merchant banker*—though he hasn't met one yet.
 (from Lyons 1999:176, (51))

(7) a. John has *a/this weird purple telephone*.
 b. John has *a/#this telephone*, so you can reach me there.
 (from Maclaran 1982:88, (85))

As illustrated in (6a) and (7a), *this* can be used with an indefinite when the speaker intends to refer to a unique individual and considers this individual to possess some noteworthy property. When it is clear that the speaker does not intend to refer to a particular individual, it is infelicitous to use *this*, as indicated by the awkwardness of (6b) and (7b).

The reality of specificity is supported by crosslinguistic evidence as well. Languages that mark the specificity distinction on indefinites include English, with referential *this*, Hebrew (Givón

2001, Borer 2005), Samoan (Mosel and Hovdhaugen 1992), and Sissala (Blass 1990). See Lyons 1999 and Ionin 2003, 2006 for more discussion.

It is important to note that on the definition we adopt, specificity is not identical to *wide scope* or *existence in the actual world*. In both sentences in (8), for instance, the DP may take widest scope in the sentence; on this reading, both sentences assert the existence of a particular merchant banker in the actual world. Only in (8a), however, does the speaker intend to refer to a particular individual, who has the additional property of ''noteworthiness''; use of referential *this* is consequently felicitous in (8a) but not in (8b), where the speaker does not intend to refer to a particular individual. The same contrast is observed in (7) (see Fodor and Sag 1982 for more evidence that wide scope indefinites and specific (referential) indefinites are not identical).

> (8) a. Peter intends to marry *a/this merchant banker*—even though he doesn't get on at all with her.
> b. Peter intends to marry *a/#this merchant banker*—I have no idea who it is.

As we will discuss shortly, much work on articles in L2 English has treated ''specificity'' as essentially corresponding to *existence in the actual world* or *wide scope* (e.g., Huebner 1983, Thomas 1989, Robertson 2000). We distinguish the notion of specificity from wide scope, and we employ the terms *specific* and *specificity* only when the condition in (5) is satisfied.

3.3 Presuppositionality

Finally, we consider the concept of *presuppositionality*, which we define as *presupposition of existence*. The semantics of presuppositionality is minimally different from the semantics of definiteness given in (1): it involves the existence presupposition without the uniqueness presupposition. The definition of presuppositionality in (9) is based on a proposal by Wexler (2003) (see section 4.1 for details), which in turn is based on Heim's (1991) semantics of definiteness (*pres* in (9) is what Wexler called *theC*).

> (9) *Presuppositionality*
> A sentence of the form [pres α] ζ *presupposes* that there exists at least one individual which is α and *asserts* that there exists at least one individual which is both α and ζ.

Presuppositionality plays a central role in the proposal by Diesing (1992) (building upon Milsark 1977), who argues that indefinite determiners have both presuppositional readings (as in (9)) and nonpresuppositional readings (as in (2)).[5] An example of this ambiguity, from Diesing 1992:59, is given in (10): while *some* is presuppositional in (10b), it is nonpresuppositional in

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[5] In Diesing's (1992) proposal, nonpresuppositional readings are derived differently than in (2), being treated as cardinal rather than quantificational. This is not relevant for our proposal, however.

(10a): (10b) presupposes that ghosts exist, while (10a) only asserts that ghosts exist. Diesing (1992) argues that all indefinite determiners have presuppositional readings.

(10) a. There are some ghosts in my house.
     b. SOME ghosts are in the pantry; the others are in the attic.

Whether presuppositional indefinites in fact exist has been quite controversial (see Reinhart 1995); von Fintel (1998) shows convincingly that presuppositional and nonpresuppositional readings of indefinites can be teased apart in certain contexts, such as in the antecedent of conditionals, as in von Fintel's example in (11).

(11) I'm not sure yet whether there are any mistakes at all in this book manuscript, but we can definitely not publish it . . .
     a.   if there turn out to be some major mistakes in there.
     b.   #if some mistakes are major.

While *some mistakes* is nonpresuppositional in (11a), it is presuppositional in (11b). The # sign in (11b) indicates presupposition failure: the presupposition that some mistakes exist clashes with the earlier assertion that there might not be any mistakes. In contrast, there is no presupposition failure in (11a), which does not presuppose the existence of mistakes.

While von Fintel (1998) provides evidence that presuppositional readings of indefinites are real, he remains neutral on whether presuppositionality is lexical, part of the meaning of an indefinite (as Diesing (1992) proposes, and as the semantics in (9) indicates), or sentence-level, due to such sources as the topic-focus structure of the sentence (cf. Reinhart 1995; in fact, Diesing's proposal ties presuppositionality to the subject (Spec,IP) position in the sentence).

A type of indefinite that expresses presuppositionality is the overt partitive: phrases such as *one of the books* or *two of the books* presuppose existence without presupposing uniqueness. Note that the presuppositional *some ghosts* in (10b) can be replaced by an overt partitive *some of the ghosts*, while the nonpresuppositional *some ghosts* in (10a) cannot be replaced by *some of the ghosts* (partitives are generally found to be incompatible with *there*-constructions, which assert rather than presuppose existence; see Diesing 1992). For a comprehensive discussion of partitives, see de Hoop 2003.[6]

The question that remains open is whether presuppositionality is ever encoded in the morphology. Overt partitives inherit presuppositionality from the definite DP inside the partitive (*one of the books*). On Diesing's analysis, indefinite determiners like *a* and *some* are ambiguous between presuppositional and nonpresuppositional readings. What is less clear is whether a single

[6] For different analyses of the syntax and semantics of overt partitives, see Ladusaw 1982, Hoeksema 1984, Barker 1998, Zamparelli 1998, Cardinaletti and Giusti 2006, and Ionin, Matushansky, and Ruys 2006, among many others.

lexical item in any language unambiguously encodes presuppositionality, corresponding to the determiner *pres* in (9). One such candidate is accusative case marking in Turkish: Enç (1991) argues that Turkish indefinites marked by accusative case are necessarily partitive, and hence presuppositional (Enç uses the term *specific*, but this is crucially a very different view of specificity than the one we adopt in (5)). However, Kelepir (2001) argues against Enç's proposal, showing that nonpresuppositional indefinites are also compatible with accusative case marking in certain contexts.

Presuppositionality is not marked by the Standard English article system. English articles (*the* and *a*) encode only definiteness, regardless of presuppositionality or specificity. It is worth noting, however, that the *wh*-determiner in D-linked *wh*-phrases has the same semantic characteristics as presuppositionality. As discussed by Pesetsky (1987, 2000), the answers to a D-linked *wh*-question are supposed to be drawn from a set of individuals previously introduced into the discourse, or from the set that forms parts of the ''common ground'' of speaker and hearer (Pesetsky 2000:16). The *wh*-determiner *which* favors this type of interpretation most often. Thus, the questions in (12) are most felicitous when context sets previously mentioned in the discourse contain a list of relevant persons from which the answer to *which person* should be drawn.

(12) a. Which person bought the book?
     b. Which person did John talk to ＿＿＿ about the topic?

Pesetsky (2000) also mentions that phrases may qualify as D-linked when they denote sets whose salience is culturally determined even without prior discourse. For instance, *wh*-phrases such as *which day of the week* and *which sign of the zodiac* may qualify as D-linked and can be used without previously mentioned context sets, since the existence of a salient set of weekdays in one case and zodiac signs in the other is culturally agreed upon by speaker and hearer.

On this view, the semantics of D-linked *wh*-determiners is similar to the semantics of the definite article *the* in terms of how presuppositions are met. As shown in (3) and (4), the definite article may be used when the uniqueness presupposition is satisfied through prior mention or through world knowledge. The D-linked *wh*-determiner can be used when the existence presupposition is satisfied either through prior mention or through world knowledge. Given the parallel semantics of D-linking and presuppositionality, we take D-linked *wh*-phrases to encode presuppositionality in the context of *wh*-questions.

It is important to note that presuppositionality is independent of both scope and specificity. In the examples below, we use overt partitives as a clear example of presuppositional indefinites, and we show that they are compatible with wide and narrow scope, as well as with specific and nonspecific readings. First, (13) shows that partitives can take either wide or narrow scope: *one of the puppies* takes scope over the intensional element in (13a) (which states that one of the puppies is such that Aaron would like to buy it), but takes narrow scope in (13b) (which states that Aaron would like to buy any puppy from the set). Similarly, (14) shows that presuppositionality is distinct from specificity: in (14a) the speaker has a particular player in mind, but in (14b) she does not, yet the partitive is compatible with both contexts.

(13) a. This pet shop had five puppies and seven kittens. Aaron would like to buy *one of the puppies*: the one who is sitting in the corner and looking so sad.

    b. This pet shop had five puppies and seven kittens. Aaron would like to buy *one of the puppies*: any of the puppies would do, they are all so cute!

(14) a. James went to see our local softball team play. Afterwards, he met *one of the players*: she was very nice and friendly. And she played really well!

    b. James went to see our local softball team play. Afterwards, he met *one of the players*, but I don't know which one.

As shown by (13) and (14), presuppositionality is distinct from both scope and specificity. The example in (8) similarly shows that specificity is distinct from scope. Finally, all three factors are distinct from definiteness. In later sections, we evaluate the effects of these semantic concepts on article choice in acquisition and provide additional evidence that these concepts are independent of one another.

3.4 Terminology

In this article, we investigate the effects that *definiteness*, *specificity*, and *presuppositionality* have on L2 English learners' article choice. For ease of reference, we will label relevant contexts as *[±definite]*, *[±specific]*, and *[±partitive]*, defined as follows. A context labeled as *[+definite]* satisfies the conditions on definiteness in (1): presuppositions of uniqueness and existence have been met. Conversely, a context labeled as *[− definite]* does not satisfy the conditions on definiteness in (1); that is, it is not the case that the presuppositions of uniqueness and existence have both been met. In English, the definite article *the* encodes the semantics of definiteness in (1) and hence is inserted in [+definite] contexts. The indefinite article *a* encodes the semantics of indefiniteness in (2), which in principle makes it compatible with both [+definite] and [−definite] contexts. However, insertion of *a* in [+definite] contexts is ruled out by the Maximize Presupposition principle proposed by Heim (1991): this principle requires *the*, rather than *a*, to be used whenever the presuppositions on *the* are satisfied.

We furthermore subdivide [−definite] contexts into [±specific] and [±partitive]. A context labeled as *[+specific]* satisfies the conditions on specificity in (5): it is reasonable to suppose that in such a context, the speaker intends to refer to a particular individual. A context labeled as *[− specific]* does not satisfy these conditions. For native English speakers, a [−definite, +specific] context should be compatible with referential indefinite *this* (see section 3.2), while a [−definite, −specific] context should be incompatible with referential indefinite *this*.

Finally, we consider *partitivity*. As discussed in section 3.3, overt partitive indefinites such as *one of the dogs* are always presuppositional (see (13) and (14)). We thus classify an indefinite context as *[+partitive]* iff it is compatible with an overt partitive, and we classify an indefinite context as *[−partitive]* iff it is not compatible with an overt partitive. Consider (15) as an example: in (15a), a set of puppies is introduced, so it is felicitous to use either the overt partitive *one of the puppies* or a regular indefinite, *a puppy*; in contrast, in (15b), there is no set of puppies in

the discourse, so an overt partitive sounds odd, while a regular indefinite is fine. We therefore classify (15a) as a [+partitive] context, because it is compatible with partitivity, and (15b) as a [−partitive] context.

(15) a. Janet went to a pet shop and saw five puppies and six kittens there. After much deliberation, she chose *a puppy/one of the puppies*. [+partitive]
     b. Janet was walking down the street when she heard somebody whine. She looked down, and was surprised to see *a puppy/#one of the puppies*. [−partitive]

Importantly for our purposes, a [+partitive] context, as in (15a), is necessarily presuppositional: the existence of at least one puppy is presupposed. It does not follow that all [−partitive] contexts are nonpresuppositional: in principle, it is possible to establish presuppositionality without prior mention, for instance, through mutual knowledge. For example, one professor can say to another, ''A graduate student came by my office today,'' with both speaker and hearer sharing the presupposition that there is a relevant set of graduate students under discussion. It is not necessary for this set to be previously mentioned.

In all the examples constructed in our study, however, we operationalized presuppositionality with indefinites as partitivity: while all [+partitive] indefinite contexts are by definition presuppositional, all the [−partitive] indefinite contexts in our test are nonpresuppositional, with no shared knowledge between speaker and hearer. We will come back to the distinction between partitivity and presuppositionality in section 6.4.

4 Article Misuse in the Acquisition of English Articles

In this section, we briefly review previous studies of L1 and L2 acquisition of English articles and then set out our own research questions and hypotheses.

4.1 L1 Acquisition of Articles

Children's acquisition of the English article system has been extensively discussed. Naturalistic data suggest that children use articles productively in spontaneous speech at around 3 years of age (Bloom 1970, Brown 1973). Various attempts have also been made to elicit articles from children in experimental settings (e.g., Maratsos 1974, 1976, Warden 1974, 1976, Karmiloff-Smith 1979, 1985, Emslie and Stevenson 1981, Zheler and Brewer 1982, Schafer and de Villiers 2000, Matthewson, Bryant, and Roeper 2001, Schaeffer and Matthewson 2005).

Most of the previous studies cited above have found that children make errors in article usage. Notably, children often misuse the definite article in contexts where the indefinite article is required (for article omission in L1 acquisition, see Zheler and Brewer 1982, among others). In particular, Maratsos (1974, 1976) shows that English-acquiring children overuse *the* with indefinite DPs in contexts that under our definition would be classified as [+partitive], such as those in (16) (see Maratsos 1976:51 for the full contexts of the stimuli). The target (adult) response to the question in (16) is *a girl* or *a boy* (or *one of the girls/boys*), which denotes a member of the set introduced in the previous discourse. A definite response is infelicitous since there is no unique girl or boy under discussion. Four-year-old children in Maratsos's study, however, often overused *the* in [+partitive] contexts like (16).

(16) Once there was a lady. She had lots of girls and boys, about *four girls and three boys*. One of them started laughing and giggling. Let's see. Who was laughing and giggling like that? – Children's response: *The boy* (or *The girl*)

In contrast, the children in Maratsos's study were quite accurate in supplying *a* in [−partitive] contexts where set membership is not assumed, illustrated in (17) (see Maratsos 1976:53 for the full contexts of the stimuli).

(17) A man went to a jungle or forest, because he *wanted to see a lion or zebra*. He looked all over, to see if he could find a lion or zebra. He looked and looked. Who came running at the man? – Children's response: *A lion* (or *A zebra*)

Experimental results similar to Maratsos's have been obtained by many researchers using slightly different methodologies (see, in particular, Karmiloff-Smith 1979 for child French, Schafer and de Villiers 2000 for child English). It is important to note, however, that perspectives on the fundamental source of article misuse diverge depending on which component of the grammar or the cognitive system is thought to be responsible for such errors.

In particular, there is disagreement on whether errors of article misuse are due to a *semantic* or a *pragmatic* deficit. Following previous literature, we define these terms as follows. When a language learner has a *semantic* deficit in article choice, the learner's grammar assigns different semantics to articles than the target (adult native speaker) grammar (as proposed by Wexler (2003); see below). On the other hand, when the learner has a *pragmatic* deficit, the learner has correct article semantics, but has difficulty using articles appropriately in discourse as a result of an incomplete pragmatic system. For instance, Schaeffer and Matthewson (2005:87), in discussing acquisition of articles, place the pragmatic system outside the linguistic system and state that ''although pragmatics is a subcomponent of language, it is not part of the computational system (which UG is) (cf. Chomsky 1993). This leads us to believe that pragmatics can be learned, as opposed to UG, which is innate. The pragmatic system is gradually built up by gathering experience.''

The pragmatic deficit view has been quite influential in the literature on article misuse in L1 acquisition. Specifically, on the basis of Piaget's (1955) claim that children are egocentric and thus have difficulty in keeping track of their listener's referential knowledge, it has been argued that children use *the* when they have a salient referent in mind, ignoring the state of the listener's knowledge (e.g., Maratsos 1974, 1976, Warden 1974, 1976). In a similar vein, Karmiloff-Smith (1979) argues that children use *the* as a deictic expression like a demonstrative, so that the definite article points to an object under the child's focus of attention. Schaeffer and Matthewson (2005) further extend the egocentric account to overuse of *the* in existential contexts such as (18); they argue that children optionally use *the* when they want to assert existence of the referent of a DP in the actual world, regardless of whether or not their hearer shares this knowledge.[7]

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[7] Contrary to Schaeffer and Matthewson (2005), Matthewson, Bryant, and Roeper (2001) provide a linguistic account for similar phenomena. The latter authors, following Matthewson (1998), argue that the St'át'imcets (Lillooet Salish)

(18) Situation: picture of Mickey Mouse who just finished drawing a house
    A: . . . What did Mickey Mouse just do?
    B1 (adult): *He drew a house*
    B2 (child): *He drew a house* or *He drew the house*

Another line of approach, however, argues that children's article errors are due to a semantic deficit. In particular, Wexler (2003) proposes that children's lexical entry for *the* contains the presupposition of existence, but lacks the presupposition of uniqueness/maximality: while adult native English speakers treat *the* as a marker of definiteness, with the semantics in (1), child L1 English learners treat *the* as a marker of presuppositionality, with the semantics in (9). This proposal predicts that children should overuse *the* in [+partitive] contexts such as (16), contexts where the presupposition of existence but not uniqueness has been met. This is exactly the error that Maratsos (1974, 1976) found. Moreover, in [−partitive], nonpresuppositional contexts like (17), children are predicted to correctly use *a*, just as Maratsos found.

We believe that there are at least two reasons to favor Wexler's (2003) semantic account of children's errors over Maratsos's (1974, 1976) egocentricity account. First, as discussed by Heim (2003) and Wexler (2003), the egocentricity account faces nontrivial difficulty in explaining overuse of *the* in contexts like (16). In stories like (16), no individuation of the boys or girls takes place: no specific boy or girl is singled out. Though not entirely impossible, it seems unlikely that the child has focused on a particular girl or boy in the context, who is known to the speaker (the child) but not the hearer (the experimenter). The child would essentially have to imagine a particular girl or boy who is more important than the others. Furthermore, if the child is indeed creative enough to posit a particular mental entity in (16), we expect her to do so in (17) as well: for example, to imagine a particular zebra for the context in (17). We would then expect to see *the* overuse in nonpartitive contexts such as (17) as much as in partitive contexts such as (16), contrary to fact. The egocentricity view does not in fact predict any differences between performance in (16) and performance in (17), whereas Wexler's (2003) semantic deficit view does predict such a difference.

Second, egocentricity accounts do not make a proper distinction between acquisition of *the* and deictic expressions, unlike Wexler's (2003) account. Modyanova and Wexler (2007) provide further support for Wexler's (2003) semantic approach by comparing children's knowledge of *that* and *the*. In their study, children manipulated two puppets, Kanga and Froggy, in the context of several balloons, and were told ''Kanga, push a balloon . . . and then Froggy, push the/that balloon.'' For an adult, the target response is to make Froggy push the same balloon as Kanga,

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determiner system encodes whether or not the speaker is able to make an existential assertion. On their proposal, English-acquiring children misuse *the* to assert existence of a DP in the world (regardless of hearer knowledge) because they go through a Salish stage along the path of acquiring the English determiner system. Matthewson, Bryant, and Roeper (2001) further support this proposal by providing evidence that pragmatically mature children still overuse *the*. Schaeffer and Matthewson (2005) argue against the idea that children go through a Salish stage, claiming that such a stage would result in consistent overuse of *the* with indefinites that assert existence; the fact that children's errors are optional leads Schaeffer and Matthewson to argue for a pragmatic explanation.

in response both to *the balloon* and *that balloon*. If egocentrism is to blame for children's overuse of *the*, there should be no difference in children's responses to conditions with *the* and with *that*, since both determiners require children to be aware of other people's knowledge of referents in a given context. A child who disregards other people's knowledge is expected to be at chance in choosing the balloon for Froggy to push. In contrast, if children's errors with *the* are due to a semantic deficit, more errors are expected with *the* than with *that*. On Wexler's (2003) account, *the balloon* would simply mean 'one of the balloons', so the child is expected to be at chance in picking a balloon for Froggy to push. Unlike *the*, *that* carries a familiarity presupposition that indicates high saliency of the referent and thus would guide children to a correct identification. If children have a problem with the uniqueness presupposition on *the*, but no problem with the familiarity presupposition on *that*, they should be more accurate with *that balloon* than with *the balloon*. This is in fact what happened: Modyanova and Wexler (2007) tested 101 English-speaking children (ages 3–10) and found greater accuracy with *that* than with *the* at all ages. The egocentricity approach does not predict this result.[8]

4.2 *L2 Acquisition of Articles: The Role of Specificity*

It has been well established that L2 English learners make errors in article choice: in addition to article omission, article substitution is also common. A particular oft-noted error is L2 learners' overuse of the definite article *the* in place of the indefinite article *a* (e.g., Huebner 1983, Master 1987, Parrish 1987, Thomas 1989, Kaneko 1996, Ionin 2003, IKW 2004).

Many studies that have looked at L2 acquisition of definite and indefinite articles have classified articles on the basis of two features, which have to do with *specific referent* [±SR] and *hearer knowledge* [±HK] (based on Bickerton 1981:146–148) (e.g., Huebner 1983, 1985, Parrish 1987, Thomas 1989, Young 1996, Murphy 1997, Robertson 2000). The term *specific referent* is not precisely defined in these studies. Roughly speaking, however, a [+SR] context is a context where the speaker asserts the existence of a referent in the actual world, as in (19a). A [−SR] context is a context where the speaker does not assert the existence of a referent in the actual world, as in (19b). A [+SR, +HK] context is essentially definite (an individual is asserted to exist and is furthermore known to the hearer), as in (19c). This framework also assigns the

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[8] More support for Wexler's (2003) proposal is obtained from Modyanova and Wexler's (2008) paper on children's comprehension of free relatives, as follows. Plural definites in English carry the maximality presupposition in place of the uniqueness presupposition, so that *the books*, for instance, denotes the maximal individual that contains all other individuals in the salient set of books. If children lack the notion of uniqueness or maximality, *the books* in child language should denote a *subset* consisting of two or more salient books, rather than the maximal set of books. Free relatives, like definite plurals, also carry the maximality presupposition: for example, the statement *What is on the table is red* conveys that the maximal set of things on the table is red, rather than a proper subset of the things on the table. Thus, if children overuse *the* because they lack the uniqueness or maximality notion, we expect that they will also perform poorly with free relatives. This is exactly what Modyanova and Wexler (2008) found in comprehension tests of free relatives. Most children (ages 3–8) had difficulty rejecting violations of the maximality presupposition in free relatives, in contrast to adults. This result goes against Munn, Miller, and Schmitt's (2006) claim that children do not have problems with maximality in general, but only with domain restriction. That children make parallel errors in use of *the* and free relatives is also unexpected under the egocentricity view, which mainly concerns production data and makes no particular predictions for comprehension.

[−SR, +HK] specification to generics such as (19d) (see Thomas 1989 and Ionin 2003 for detailed reviews of the previous studies).

(19) a. Chris approached me carrying *a dog*. [+SR, −HK]
     b. I guess I should buy *a new car*. [−SR, −HK]
     c. (Chris approached me carrying a dog.)
        The dog jumped down and started barking. [+SR, +HK]
     d. The Grenomian is an excitable person. [−SR, +HK]
        (Thomas 1989)

Various diverging conclusions have been drawn in this framework. Some researchers have argued that L2 learners, at least initially, associate *the* with the [+HK] feature (e.g., Huebner 1983, Master 1987). Some researchers have argued that L2 learners associate *the* with assertion of existence in the actual world (the [+SR] feature) (e.g., Thomas 1989). Other researchers have argued that there is no association between use of *the* and either of these features (e.g., Murphy 1997).

Taking a somewhat different perspective from earlier L2 literature on article misuse, we have argued (Ionin 2003, IKW 2004) that articles crosslinguistically may encode the semantic concepts of definiteness and specificity (see section 3). We have further argued (IKW 2004) that L2 learners have full access to these semantic universals through UG (see Schwartz and Sprouse 1994, 1996, and Epstein, Flynn, and Martohardjono 1996 for general discussions of the full-access view for L2 acquisition) and have shown that L2 article choice is systematically constrained by these semantic factors.

More concretely, we have shown (IKW 2004) that L2 learners whose L1s (Russian and Korean) lack articles overuse *the* with [+specific] indefinites, as in (20): here, the speaker intends to refer to a particular *friend from college* and considers this individual to possess a noteworthy property. In contrast, L2 learners rarely overuse *the* with [−specific] indefinites, as in (21): the speaker does not know the identity of *a friend* in (21) and does not consider this individual to have a particular noteworthy property (only the target sentences are given here; see Ionin 2003 and IKW 2004 for the full contexts of the stimuli).[9]

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[9] Additionally, L2 learners were found to correctly use *the* with definites when the speaker in the discourse context clearly intended to refer to a specific unique individual (i), but to overuse *a* with definites when the speaker did not know the individual's identity (ii). In IKW 2004, we argued that L2 English learners made the specificity distinction with definites as well as with indefinites: *the* was correctly used with [+specific] definites (i) as well as overused with specific indefinites (20), while *a* was correctly used with nonspecific indefinites (21) as well as overused with nonspecific definites (ii).

(i) *[+specific] definites ⇒ found correct use of* the *in L2 English*
    Laura: I would like to meet *the author of that book* someday—I saw an interview with her on TV, and I really liked her!

(ii) *[−specific] definites ⇒ found overuse of* a *in L2 English*
    Sarah: I would like to meet *the author of that painting*—unfortunately, I have no idea who it is, since the painting is not signed!

However, in a more recent paper, Ionin, Zubizarreta, and Philippov (2009) modify the proposal made in IKW 2004. On the basis of new crosslinguistic evidence (data from Samoan, by Fuli (2007)), these authors conclude that while L2

(20) *[− definite, + specific] context ⇒ found overuse of* the *in L2 English*
William: I am here for a week. I am visiting *a friend from college*—his name is Sam Brown, and he lives in Cambridge now.

(21) *[− definite, − specific] context ⇒ found correct use of* a *in L2 English*
Clara: I don't really know [where Jonathan is]. He is staying with *a friend*—but he didn't tell me who that is. He didn't leave me any phone number or address.

Importantly, departing from the earlier L2 literature, in IKW 2004 we show that specific indefinites cannot be viewed simply as wide scope indefinites (cf. Thomas 1989). The distinction between (20) and (21) is not one of scope: both contexts are extensional, and in both cases, a relevant friend is asserted to exist. What makes (20) [+ specific] but (21) [− specific] is the speaker's intention to refer in the former but not in the latter. L2 English learners were found to distinguish between specific and nonspecific indefinites even when there was no scope-related difference.

As discussed in Ionin 2003 and IKW 2004, the findings from L1 Russian and L1 Korean speakers cannot be attributed to L1 transfer, since neither language has articles or obligatorily encodes definiteness or specificity through other means. The similarities in behavior from speakers of two such typologically different L1s led us to conclude in IKW 2004 that in the absence of articles in their L1, L2 learners draw on UG for article specifications and entertain the options of both definiteness and specificity.[10]

While the role of specificity in L2 acquisition has been widely investigated, less attention has been paid to the role of *presuppositionality* in L2 acquisition. Presuppositionality (though not called by that name) was investigated by Kaneko (1996), who observed that L1 Japanese learners of L2 English overused *the* with an indefinite in partitive contexts such as (22).

English learners' errors of *the* overuse with indefinites (20) are consistent with natural language patterns, errors of *a* overuse with definites (ii) are not. While many languages morphologically mark specificity on indefinites, as described in section 3.2, none appear to do so with definites (see Lyons 1999). Ionin, Zubizarreta, and Philippov (2009) conclude that L2 English learners make use of the UG universal of specificity, but also use explicit strategies to overextend the specificity distinction to definites as well as indefinites (cf. Trenkic 2008). This proposal is supported by two empirical findings: (a) the fact that in Ionin, Zubizarreta, and Philippov's (2009) study, child L1-Russian L2-English learners, unlike adults, made the specificity distinction with indefinites but not with definites; (b) the fact that a more implicit task (narrative production) reported in IKW 2004 had shown that adult learners overuse *the* with indefinites, but do not overuse *a* with definites. Ionin, Zubizarreta, and Philippov (2009) conclude that child L2 learners always make direct use of semantic universals, while adults make use of both semantic universals and explicit strategies, depending on the task.

In this article, we focus on errors with indefinites rather than errors with definites, so the modification to our proposal in IKW 2004 is not directly relevant: we follow IKW 2004 and Ionin, Zubizarreta, and Philippov 2009 in treating errors of *the* overuse with specific indefinites as a consequence of UG access to semantic universals. The source of *a* overuse with definites is not of immediate concern here.

[10] Furthermore, specificity effects have since been attested with L2 English learners from other article-less L1s, namely, Japanese (Hawkins et al. 2006) and Mandarin Chinese (Trenkic 2008). These researchers' empirical findings, together with those reported in IKW 2004, show that specificity effects are not a result of L1 transfer (but Trenkic (2008) explains the findings in terms of learner strategies rather than universal semantic factors; see Ionin, Zubizarreta, and Philippov 2009 for a response). All these findings taken together suggest that L2 learners access semantic universals in the absence of direct L1 transfer—which, together with the findings of Ionin, Zubizarreta, and Bautista Maldonado (2008) on direct L1 transfer in article semantics, further supports the Full Transfer/Full Access model (Schwartz and Sprouse 1994, 1996).

(22) Context: Once there was a boy. He wanted to write a letter. He went to his mother.
     She showed him some pencils.
     Question: So, he took (*the pencil*). And he wrote his letter.
     (Kaneko 1996)

Kaneko also observed that L1 Spanish learners of English showed significantly reduced presuppositionality effects, compared with L1 Japanese learners of English (a finding consistent with Ionin, Zubizarreta, and Bautista Maldonado's (2008) finding that L1 Spanish learners of English correctly divided articles on the basis of definiteness, as a result of L1 transfer). Ionin (2003) also reports a preliminary finding that L1 Korean learners of L2 English overused *the* in partitive contexts. Ionin also found, however, that unlike L1 Korean speakers, L1 Russian speakers showed no or very little effect of partitivity in L2 article choice.[11]

4.3 Research Questions to Be Addressed

On the basis of previous studies in L1 and L2 acquisition, we conclude that *specificity* and *presuppositionality* (in the form of *partitivity*) play a significant role in the acquisition of articles. In particular, these studies show that [+ specific] contexts are associated with overuse of *the* in adult L2 English and that [+ partitive], presuppositional contexts are associated with overuse of *the* in child L1 English. These findings in turn raise many interesting research questions.

First, it is reasonable to ask whether child learners are influenced by specificity and conversely, whether adult L2 learners are influenced by presuppositionality—and if this is the case, whether the best explanation for the errors is a pragmatic or a semantic one. In this article, we will focus on only one side of this issue, looking at whether adult L2 learners are influenced by presuppositionality. We leave investigation of the role of specificity in child English for future research.

Second, there is the question of whether specificity and presuppositionality are independent semantic factors operating in acquisition: whether we would find effects of presuppositionality even when specificity is not present, and vice versa.

Third, on a methodological level, we need to investigate whether effects of presuppositionality are semantically real and not simply a result of second mention: it is possible that a learner who sees mention of *five puppies* in (23a) and then encounters the word *puppy* would use *the* with it because she thinks that *the* is always used with the second mention of a noun, regardless of the singular/plural distinction (or alternatively, because she fails to notice the singular/plural distinction, a possibility especially for learners whose L1 does not mark plurality on the noun).

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[11] Ionin (2003) also reported that L1 Korean learners of English (but not L1 Russian learners) overuse *the* in D-linked *wh*-sluicing contexts (e.g., *a man . . . I don't know which man*), but did not provide a conclusive account of this error. Although we focus here on L1 Korean learners of English, in Ko, Ionin, and Wexler 2009b we tease the role of the L1 apart from the role of proficiency and show that speakers of different article-less L1s are sensitive to effects of partitivity and specificity but that the strength of these effects is related to the L2 proficiency level.

To control for this possibility, it is important to test items such as (23b), where partitivity is implicit: there is no prior mention of players, yet a set of players is presupposed to exist, as a result of the prior mention of a team. If learners make the same kind of error on the two item types represented in (23), we will know that semantics rather than simple repetition of the noun is responsible.

(23) a. This pet shop had five puppies and seven kittens, and Aaron loved all of them. It was difficult for him to make up his mind. But finally, he got *a puppy*.
   b. Jamie went to see our local softball team play. She had a good time. Afterwards, she met *a player*.

Finally, it is important to disentangle effects of presuppositionality from effects of partitivity. If learners overuse *the* in contexts such as those in (23), we can conclude that they associate *the* with partitivity, or membership in a previously mentioned set, whether explicitly or implicitly indicated. This in itself is not enough, however, to conclude that learners associate *the* with presuppositionality: it is possible that partitivity effects are due to an explicit strategy along the lines of ''Use *the* with prior mention,'' rather than sensitivity to the semantics of presuppositionality. To examine this possibility, we need to look at definites. If learners form the strategy ''Use *the* with prior mention,'' then they will correctly use *the* with definite DPs that involve prior mention, but not as much with definite DPs that involve no prior mention (e.g., *I need to talk to the owner of this store*, where no owner has been previously mentioned; see (4) on many different ways of establishing definiteness in English). On the other hand, if learners treat *the* as marking presuppositionality, they should correctly use *the* with all definite DPs, since all definites carry a presupposition of existence (1). If learners use *the* to mark presuppositionality instead of definiteness, they will overuse *the* when the presupposition of existence has been met but the presupposition of uniqueness has not—that is, with partitive indefinites—but they will also be accurate in supplying *the* with all definites.

To sum up, the research questions we will address in this article are listed in (24).

(24) *Research questions*
   A. Are there L1-L2 parallels in the acquisition of articles? Are adult L2 learners affected by presuppositionality, just like child L1 learners? Is presuppositionality a *semantic factor* that can affect adult L2 acquisition as well as child L1 acquisition?
   B. Is presuppositionality, in the form of partitivity, an independent factor, or can it be assimilated to other factors such as specificity or scope? If presuppositionality is an independent factor, what is the relationship among the semantic factors that affect article choice by learners?
   C. Do partitivity effects arise from repetition of the noun, or are they semantically real? Are learners equally sensitive to explicit partitivity and implicit partitivity?
   D. Ultimately, is partitivity or presuppositionality the relevant factor that determines L2 English article choice? How do learners perform on definites with versus without prior mention?

Neither of the L2 acquisition studies on presuppositionality discussed in section 4.2 (Kaneko 1996, Ionin 2003) draws a conclusion concerning parallels between L1 and L2 acquisition of articles with respect to partitivity effects (Question A in (24)). Furthermore, the previous studies did not pay attention to the issues addressed in Question B. Kaneko (1996) did not make a distinction between specificity and presuppositionality effects at all. Ionin (2003) correctly distinguished the semantics of specificity and presuppositionality, but left for future research the question of whether these two semantic factors are independent. Neither study considered the relationship between presuppositionality and scope. The issues addressed in Question C are completely new as well. Neither L1 nor L2 studies have compared explicit and implicit partitivity. As for Question D, there is evidence from prior studies (IKW 2004, Ionin, Zubizarreta, and Bautista Maldonado 2008, and Ionin, Zubizarreta, and Philippov 2009) that L2 English learners are quite accurate in supplying *the* with definites even in the absence of prior mention (provided that specificity is held constant; see footnote 9). However, since these studies did not look at partitive indefinites in any detail, our study will be the first to directly compare presuppositional indefinites and definites.

Note also that our questions have some implications for the nature of *presuppositionality effects* in acquisition. If young children's overuse of *the* in presuppositional indefinite contexts stems from egocentricity, as argued by Maratsos (1976) (see discussion in section 4.1), we do not expect adult learners to make the same type of error. There is no a priori reason to think that adult L2 learners lack the pragmatic knowledge concerning the role of the speaker and the hearer in a discourse. Therefore, if presuppositionality effects are purely pragmatic in nature, we do not expect adult L2 learners to exhibit similar errors of *the* overuse in partitive contexts as children. In contrast, if presuppositionality effects in L1 acquisition of articles are semantic in nature (Wexler 2003), it is reasonable to hypothesize that L1 and L2 learners may make the same type of error. Adult L2 learners may go through an acquisition process similar to that of child L1 learners, moving from using *the* to encode the existence presupposition to using it to encode the uniqueness presupposition, as the input accumulates. Thus, if adult L2 learners do exhibit error patterns similar to those of child L1 learners, it is possible that the source of errors in both populations is semantic rather than purely pragmatic.

Of course, as an anonymous reviewer points out, L2 data by themselves can never falsify the egocentricity view for L1 data: it is always possible that child L1 learners and adult L2 learners make the same error for different reasons (e.g., pragmatic in the former case, semantic in the latter). What the L2 data *can* do, however, is to make the egocentricity explanation less likely, because applying the same explanation to the same phenomena in different populations is more parsimonious (see section 7.2 for further discussion).

5 The Experiment: Hypotheses and Methods

In this article, we aim to address the questions raised in (24) through an experimental study and to evaluate our experimental results against those of previous L1 and L2 studies. To this end, we lay out our hypotheses and predictions in the next section.

5.1 Hypotheses

Extending our proposal in IKW 2004, we hypothesize that article choice by language learners is not random, but constrained by semantic universals. In IKW 2004, we restricted the discussion to *specificity* and *definiteness* in L2 acquisition. Here, we add *presuppositionality* as an independent semantic concept that may affect article choice in both L1 and L2 acquisition of articles. More specifically, we propose the hypotheses in (25) for our questions in (24).

(25) *Hypotheses*
   A. Presuppositionality effects are semantic, not pragmatic, and hence operative in language acquisition by adults.
   B. Presuppositionality, in the form of partitivity, is a semantic concept that is independent of both scope and specificity.
   C. Partitivity effects are due to presuppositionality; they are not simply a result of noun repetition.
   D. Presuppositionality rather than set membership and/or prior mention is responsible for L2 English article choice: since all definites are presuppositional, learners do not distinguish between definites with versus without prior mention.

5.2 Methods

We tested our hypotheses in a forced-choice elicitation study with a group of L1 Korean learners of English.[12] Korean does not have articles or other morphological items to encode the semantic concepts of definiteness, specificity, presuppositionality, or scope discussed here (see footnote 3). Hence, we assume that the issue of direct L1 transfer in article choice is not relevant here. Twenty adult L1 Korean speakers took a forced-choice elicitation test along the lines of a test used in IKW 2004. This section describes the participants' characteristics and the nature of the task.

5.2.1 Participants   The target participants in this study were 20 adult L1 Korean learners of L2 English. All had received English instruction before arriving in the U.S. However, they did not experience intensive exposure to English until they arrived in the U.S. All of the learners arrived in the U.S. as late adolescents or adults (except for one, who was born in the U.S. but grew up primarily in Korea, not returning to live in the U.S. until the age of 20). All spoke Korean as their first and primary language. Most learners were international students and their spouses; some were foreign workers and their spouses. All resided in Gainesville, Florida, at the time of the study. The details of the participants' characteristics are given in table 1.

The forced-choice elicitation task was also administered to 6 adult native speakers of English, who served as controls. All of the native speakers performed as expected, using *the* in all definite

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[12] A subset of this study's findings are briefly summarized in Ko, Ionin, and Wexler 2006, 2009a, but without the corresponding theoretical discussion.

Table 1
Characteristics of L2 learners

	L1 Korean participants
Number	20 (14 male, 6 female)
Age range	20 to 37 (mean 28.7, median 29)
Age of first exposure to English	0 to 14 (mean 11.3, median 12)
Years of residence in the U.S.	0;6 to 8;10 (mean 2;2, median 1;7)

contexts and *a* in all indefinite contexts reported below. Since the controls' results were 100% correct, as expected, we do not discuss them in the results section, but focus on the learners' performance instead.

5.2.2 Tasks   The participants completed two tasks: a forced-choice elicitation task and the written portion of the Michigan test of L2 proficiency. The Michigan test is a standard test of L2 proficiency; only the written portion, consisting of 30 multiple-choice items, was used in the experiment. The test comes with a standardized scale that places L2 learners as beginner, intermediate, or advanced. The Michigan test scores show that among the 20 L1 Korean speakers, there were 4 intermediate and 16 advanced L2 learners. The average Michigan test score was 24.3.

The forced-choice task consisted of 80 short English-language dialogues. The target sentence in each dialogue was missing an article: the learner had to choose among *a*, *the*, and the null article (notated as (—) in the task), basing his or her response on the preceding context. This format was chosen to allow the investigators maximal control over the contexts and to examine L2 learners' performance in a particular context type. Furthermore, since the same test format was employed in IKW 2004, the current experimental results can be compared directly with results reported there concerning specificity, scope, and definiteness.[13]

The 80 stimuli for the forced-choice task fell into 20 context types: 10 context types targeted the indefinite article *a*, and 10 context types targeted the definite article *the*. Each context type was represented by 4 tokens. The 10 indefinite context types were designed to test our hypotheses on presuppositionality in the form of partitivity: 6 context types were designed to test the effect of partitivity and scope (and their interactions), as well as the effects of implicit versus explicit partitivity, and 4 types were included to test the effect of partitivity and specificity (and their interactions). We discuss the results from these two groups of context types separately in the following sections, and we provide examples of the relevant contexts there as well.

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[13] Besides the 20 learners who took the forced-choice test, 20 L1-Korean L2-English learners (plus 4 native speakers of English) took a different version of the test, in which the choice of articles was not provided and the participants had to fill in the blank with the right word or phrase. This test was administered to see what types of lexical items (in addition to articles) L2 learners supply when they encounter bare singular NPs. The main effects of the fill-in-the-blank test and the forced-choice test were very similar, but there were some differences. We summarize the results from the fill-in-the-blank test in footnote 16.

The definite items included definite contexts designed to test our Hypothesis D, by teasing apart presuppositionality and prior mention. Other definite contexts—inalienable possession, part-whole relations, singular generics, idiomatic expressions, and proper names, as well as specific and nonspecific definites—were included as fillers (cf. IKW 2004 and footnote 9).

In section 6, we first focus on the findings from the indefinite items, which are most directly relevant to Hypotheses A–C. We then discuss performance on some of the definite categories relevant to Hypothesis D.

5.3 Procedure

For all participants, testing took place in a laboratory or classroom environment. Participants were tested singly or in small groups. The investigator (who spoke the participants' L1, Korean) asked each participant to fill out a short questionnaire that collected such information as age of first exposure to English, and type and length of exposure. Then the investigator administered the tests to the participants.

The Michigan test was always administered to the L2 learners after the forced-choice test. This was done so that the Michigan test's emphasis on grammar did not force the L2 learners into a grammatical rule–based mode of thinking: the major goal of the study was to elicit the learners' intuitions about article choice, rather than their knowledge of explicit rules. Native speaker controls took only the elicitation test, not the Michigan test.

The forced-choice task was arranged into two pseudorandomized test orders, each of which was given to 10 subjects. The forced-choice task was accompanied by a translation sheet, which translated potentially unfamiliar lexical items from English to Korean. No translation sheets were provided for the Michigan test. Testing took place in a single session. The participants completed the entire testing session within about two hours. All participants were reimbursed monetarily at the end of the testing session.

6 The Experiment: Specific Predictions and Results

In this section, we present the details of our forced-choice study with L1-Korean L2-English learners. In sections 6.1 and 6.2, we present the specific hypotheses, predictions, and group results for the indefinite context types testing partitivity (an operationalization of presuppositionality), specificity, and scope. In section 6.3, we discuss the individual results. In section 6.4, we turn to the results with definite contexts, which allow us to tease apart presuppositionality and partitivity.

6.1 Presuppositionality and Scope

6.1.1 Stimuli and Predictions   Six of the indefinite context types were designed to test Hypotheses A–C on the relationship between presuppositionality and scope as well as explicit versus implicit partitivity. The context types are exemplified in (26)–(31). To test the effects of presuppositionality with indefinites, we compared three types of contexts, the first two of which are presuppositional: *explicit partitive* (e.g., *puppies – a puppy*) versus *implicit partitive* (e.g., *team – a player*) versus *nonpartitive*. The effects of scope were tested with *extensional* and *intensional*

contexts. In extensional contexts, the target DP does not interact with any operators. In intensional contexts, the target DP takes narrow scope under an intensional operator provided by the matrix verb (e.g., *want*, *decide*, *plan*). The three partitivity types were crossed with the two scope types, for a total of six contexts.

(26) *[−definite, +partitive]: extensional context, partitivity established explicitly*
Elissa: How is your nephew Aaron doing? He is such a nice little boy!
Robert: He has some good news—his parents finally allowed him to get a pet—just one! So last week, he went to our local pet shop. *This pet shop had five puppies and seven kittens*, and Aaron loved all of them. But he could get only one!
Elissa: Oh, so what did he do?
Robert: Well, it was difficult for him to make up his mind. *But finally, he got (a, the, —) puppy.* Aaron went home really happy!

(27) *[−definite, +partitive]: extensional context, partitivity established implicitly*
Jane: Your friend Lucy looks really excited. What's going on?
Mary: Well, last Sunday was a really a big day for her. She went to the airport to see her mother off, *and ran into the Boston Red Sox team*. You know what? She was very lucky—*she got an autograph from (a, the, —) player.* And afterwards, she met some friends at the airport! What a day!

(28) *[−definite, −partitive]: extensional context*
Elissa: How is your nephew Joey doing? He is such a nice boy!
Robert: Well, he was a bit depressed the last few days. So, his parents decided to get him a pet. So last week, he went to our local pet shop.
Elissa: Oh, so did he buy some animal there?
Robert: No, he did not like the puppies in the pet shop, in fact. But then he was walking home, and *he found (a, the, —) kitten in the street*! So now he has a new pet after all![14]

(29) *[−definite, +partitive]: intensional context, partitivity established explicitly*
Elissa: How is your niece Amy doing?
Robert: Great! Her parents finally allowed her to get a pet at the local pet shop. *Amy knows that this pet shop has five puppies and six kittens.*
Elissa: Oh, so which one of these animals is she going to buy?
Robert: She has not quite decided yet. But *she definitely wants to buy (a, the, —) puppy.* She is going to the pet shop on Friday.

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[14] The context in (28) is ideal to test partitivity effects in the sense that the target *kitten* is not part of the previously mentioned set although (unrelated) *pets* were mentioned before. Thus, this context really teases true partitivity apart from prior mention not involving partitivity. Unfortunately, however, the other nonpartitive items, extensional as well as intensional contexts (see (31)), were not designed in this fashion: they lack any prior mention altogether, which results in lack of partitivity.

(30) *[−definite, +partitive]: intensional context, partitivity established implicitly*
Jane: Hi, how are you? I heard that your brother Jason is going to the airport tomorrow morning. Is he going somewhere?
Mary: Oh, no! *Jason will go there to meet the Boston Celtics team.* The team will be leaving Boston on the 7 a.m. flight. *Jason wants to get the autograph of (a, the, —) player.* Any player would do—this would make him really happy!

(31) *[−definite, −partitive]: intensional context*
Clark: I heard that your husband has a very long commute to work. What does he do in the train?
June: Well . . . nothing. That is a bit of a problem now. He gets so bored in the train. *He plans to buy (a, the, —) long novel.* Then, he will have something to do during his long commute.

Given Hypotheses A–C, we predict the following patterns in L2 English. First, we predict main effects of presuppositionality in adult L2 English article choice. If presuppositionality effects are semantic rather than pragmatic (Hypothesis A), we expect to find that presuppositionality will trigger overuse of *the* in adult L2 English, as in child L1 English. Hence, we predict overall more overuse of *the* in partitive contexts ((26), (27), (29), (30)) than in nonpartitive contexts ((28), (31)).

Second, if presuppositionality effects cannot be assimilated to scope effects (Hypothesis B), we predict that the effects of presuppositionality will be independent from the effects of scope. We thus predict overuse of *the* in partitive contexts in both extensional contexts ((26), (27)) and narrow scope intensional contexts ((29), (30)). Furthermore, given the previous findings that scope itself (in the absence of specificity) does not trigger overuse of *the* in L2 English (IKW 2004), we predict that there will be no significant difference between extensional and narrow scope intensional contexts when presuppositionality effects are controlled for. In other words, in the absence of partitivity, extensional and narrow scope intensional contexts ((28), (31)) will both not trigger *the* overuse.

Third, if partitivity effects are a semantically real result of presuppositionality, rather than a result of noun repetition (Hypothesis C), we predict overuse of *the* in explicit as well as implicit partitive contexts, but crucially not in nonpartitive contexts. We thus expect to see overuse of *the* in implicit partitive contexts ((27), (30)) as much as in explicit partitive contexts ((26), (29)).

6.1.2 Results   The overall results for the stimulus types illustrated in (26)–(31) are given in table 2. The cells where *the* overuse was expected are highlighted. L2 learners overused *the* with partitive indefinites more than with nonpartitive indefinites. This pattern was observed with indefinites in both extensional and intensional (narrow scope) contexts.

To test the statistical significance of the main effects, we conducted mixed analyses of variance (ANOVAs) on *the* use and on *a* use, using partitivity and scope as within-subjects factors, and test order as the between-subjects factor (the choice of statistical test is based on Tabachnick and Fidell 2001:321–384). The main ANOVA results are summarized in table 3.

Table 2
The effects of partitivity and scope for each level (mean percentage)

Indefinite contexts		(Incorrect) use of *the*	(Correct) use of *a*	Article omission
Extensional	Explicit partitive (26)	*26.25% (21/80)*	73.75% (59/80)	0% (0/80)
	Implicit partitive (27)	*32.50% (26/80)*	63.75% (51/80)	3.75% (3/80)
	Nonpartitive (28)	6.25% (5/80)	92.50% (74/80)	1.25% (1/80)
Intensional, narrow scope	Explicit partitive (29)	*28.75% (23/80)*	62.50% (50/80)	8.75% (7/80)
	Implicit partitive (30)	*22.50% (18/80)*	67.50% (54/80)	10.00% (8/80)
	Nonpartitive (31)	2.50% (2/80)	93.75% (75/80)	3.75% (3/80)

The ANOVA results in table 3 show that there was a significant main effect of partitivity both with use of *the* and with use of *a*. There was no main effect of scope for either use of *the* or use of *a*. There was no significant interaction between partitivity and scope. In addition to the main results reported in table 3, we found a significant interaction among scope, partitivity, and test order on *the* use [$F(2, 36) = 3.316$, $p = .048$]. The source of this interaction is not clear. No other effects or interactions were significant.

To localize the main effects of partitivity, we also performed planned contrasts over each context type. The comparison results are given in table 4. These results demonstrate that the effects of partitivity are statistically significant. More specifically, L2 learners overused *the* with explicit partitives significantly more than with nonpartitives. Similarly, L2 learners overused *the* with implicit partitives significantly more than with nonpartitives. Crucially, however, there was no significant difference between explicit and implicit partitive contexts, either in use of *the* or in use of *a*. This indicates that both explicit and implicit partitive contexts contribute to overuse of *the* with indefinites, compared with nonpartitive contexts.

These results support our predictions presented in section 6.1.1. The partitive contexts triggered significantly more overuse of *the* than nonpartitive contexts, as predicted. There was no effect of scope, and no interaction between partitivity and scope, which in turn supports the hypothesis that presuppositionality is an independent semantic factor at work in L2 article choice. Implicit partitivity triggered overuse of *the* as much as explicit partitivity, supporting the hypothesis that partitivity effects are semantically real, not a result of noun repetition.

Table 3
The effects of partitivity and scope: ANOVA results

	(Incorrect) use of *the*	(Correct) use of *a*
Partitivity	$F(2, 36) = 16.538$, $p < .0001$	$F(2, 36) = 18.894$, $p < .0001$
Scope	$F(1, 18) = 1.8$, $p = .196$	$F(1, 18) = .603$, $p = .447$
Partitivity * scope	$F(2, 36) = 1.692$, $p = .199$	$F(2, 36) = 1.516$, $p = .233$

Table 4
Tests of within-subjects contrasts for the effect of partitivity

Contrasts	Use of *the*	Use of *a*
Explicit partitive vs. nonpartitive	$F(1, 18) = 23.469, p < .0001$	$F(1, 18) = 23.684, p < .0001$
Implicit partitive vs. nonpartitive	$F(1, 18) = 28.991, p < .0001$	$F(1, 18) = 36.729, p < .0001$
Explicit partitive vs. implicit partitive	$F(1, 18) < .0001, p = 1.00$	$F(1, 18) = .236, p = .633$

6.2 Presuppositionality and Specificity

6.2.1 Stimuli and Predictions

Four of the indefinite context types were designed to test Hypothesis B concerning the role of presuppositionality and its relationship to specificity in L2 English article choice. Here again, we employed partitive contexts to test the effects of presuppositionality. Two of the context types, exemplified in (32) and (33), are [+partitive] through prior mention. All the partitives in these context types are implicit partitives. The two contexts differ with respect to whether or not the speaker intends to refer to a particular individual. The other two contexts, exemplified in (34) and (35), are nonpartitive and nonpresuppositional. The two contexts differ with respect to presence versus absence of specificity.

(32) *[−definite, +partitive, +specific]*
Molly: So what did your guest Mr. Svenson do over the weekend?
Jamie: *Well, he went to see our local softball team play.* He had a good time. *Afterwards, he met (a, the, —) player—she was very nice and friendly.* And she played really well!

(33) *[−definite, +partitive, −specific]*
Ben: I just saw Tom, and he looked really excited. Do you know why?
Melissa: *Yes—he was able to see the Boston Red Sox team while they were practicing.* And he is a huge fan! *He even got a signature from (a, the, —) player*—I have no idea which one. Tom was really excited!

(34) *[−definite, −partitive, +specific]*
Jennifer: Hello, Helen? This is Jennifer!
Helen: Hi, Jennifer! It's wonderful to hear from you. I suppose you want to talk to my sister?
Jennifer: Yes, I haven't spoken to her in years! I'd like to talk to her now if possible.
Helen: I'm very sorry, but she doesn't have time to talk right now. *She is meeting with (a, the, —) very important client from Seattle.* He is quite rich, and she really wants to get his business for our company! She'll call you back later.

(35) *[− definite, − partitive, − specific]*

 Wife: Where is Peter? I haven't seen him all evening.

 Husband: He is on the phone—he has been on it for hours.

 Wife: That's not like Peter at all—he almost never uses the phone.

 Husband: *But this time, he is talking to (a, the, —) girl—I have no idea who it is, but it's an important conversation to Peter.*

Given Hypothesis A, we expect that there will be main effects of partitivity for the context types in (32)–(35). In particular, we predict that partitive contexts ((32), (33)) will trigger more overuse of *the* than nonpartitive contexts ((34), (35)). Furthermore, Hypothesis B leads us to predict that the effect of partitivity will be independent of the effects of specificity. In other words, we expect that partitivity will trigger overuse of *the* across the board, both in [+ partitive, + specific] and in [+ partitive, − specific] contexts. Conversely, given our findings in IKW 2004, we also expect that specificity will trigger overuse of *the* both in [+ partitive, + specific] and in [− partitive, + specific] contexts. Furthermore, all things being equal, we expect additive effects from two context types, so that the [+ partitive, + specific] context (32) will trigger more overuse of *the* than the [+ partitive, − specific] (33) or [− partitive, + specific] (34) contexts.

Note that we make a finer-grained prediction than we did in IKW 2004 concerning the four context types shown in (32)–(35). In the previous study, we did not consider the possibility that presuppositionality may lead to overuse of *the*. Thus, we predicted that L2 learners would overuse *the* only in specific indefinite contexts such as (32) and (34). Under the current proposal, however, we expect that presuppositionality will also contribute to overuse of *the* independently. Hence, we expect that L2 learners will overuse *the* in both (32) and (33) even though the context in (33) contains *explicit denial of speaker knowledge*.

6.2.2 Results   The overall results for stimuli types (32)–(35) are summarized in table 5. The cells where *the* overuse was expected are highlighted. As this table shows, L2 learners overused *the* with indefinites most often (38.75%) when the context was both partitive and specific. Importantly, when only one of these factors (partitivity or specificity) was present, we still found overuse of *the* with indefinites: 16.25% overuse of *the* with [+ partitive, − specific] contexts, and 30%

Table 5
The effects of partitivity and specificity for each level (mean percentage)

Indefinite contexts		(Incorrect) use of *the*	(Correct) use of *a*	Article omission
[+ partitive]	[+ specific] (32)	*38.75% (31/80)*	58.75% (47/80)	2.50% (2/80)
	[− specific] (33)	*16.25% (13/80)*	78.75% (63/80)	5.00% (4/80)
[− partitive]	[+ specific] (34)	*30.00% (24/80)*	68.75% (55/80)	1.25% (1/80)
	[− specific] (35)	3.75% (3/80)	93.75% (75/80)	2.50% (2/80)

Table 6

The effects of partitivity and specificity: ANOVA results

Effects	(Incorrect) use of *the*	(Correct) use of *a*
Partitivity	$F(1, 18) = 8.641, p = .009$	$F(1, 18) = 14.286, p = .001$
Specificity	$F(1, 18) = 13.567, p = .002$	$F(1, 18) = 11.004, p = .004$
Partitivity * specificity	$F(1, 18) = .168, p = .686$	$F(1, 18) = .324, p = .576$

overuse of *the* with [−partitive, +specific] contexts. When both partitivity and specificity were absent, overuse of *the* was rarely found.[15]

   To test the statistical significance of the main effects, we conducted a mixed ANOVA on *the* use and on *a* use, using partitivity and specificity as within-subjects factors and test order as a between-subjects factor. The main ANOVA results are summarized in table 6. These results show that the main effects of partitivity and specificity were significant whether use of *the* or use of *a* was measured. In particular, L2 learners overused *the* with partitive indefinites significantly more than with nonpartitive indefinites. L2 learners also overused *the* with specific indefinites significantly more than with nonspecific indefinites. Crucially, there was no significant interaction between partitivity and specificity. No other effects or interactions were significant. This result suggests that both partitivity and specificity are semantic concepts at work in L2 acquisition of English articles and that the effects of these two semantic factors are independent (but see the planned contrasts in table 7 for further discussion).

   To examine the statistical significance of the effects of partitivity and specificity for each level, we also performed planned contrasts on individual pairs of contexts. The results are summarized in table 7.

   Overall, the experimental results reported here support our predictions. In particular, there were main effects of partitivity and specificity in L2 article choice, and these main effects were independent of each other. The partitive contexts triggered significantly more overuse of *the* than the nonpartitive contexts, as predicted. The specific contexts triggered significantly more overuse of *the* than the nonspecific contexts, as expected (also replicating the findings reported in IKW 2004). Furthermore, the partitive effects were obtained in both specific and nonspecific contexts. This indicates that even in [−specific] contexts, L2 learners may overuse *the* because of partitivity—which supports our predictions. The results also support our expectation that when partiti-

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[15] Note that *the* was rarely used in [−partitive, −specific] contexts (e.g., (35)). This fact has an important implication for the role of scope in article choice. All our [−partitive, −specific] contexts were extensional. If ''assertion of existence'' triggered overuse of *the*, as often claimed in L2 literature (see Thomas 1989), we would expect that our [−partitive, −specific] contexts would trigger overuse of *the*, contrary to the facts. Furthermore, the 3.75% overuse of *the* here (i.e., in extensional [−partitive, −specific] contexts) is comparable to the 2.5% overuse of *the* in intensional narrow scope nonpartitive contexts such as (31) (see table 2). This again supports our proposal that scope does not play a role in article choice when specificity and partitivity are controlled for.

Table 7
Tests of within-subjects contrasts for the effect of partitivity and specificity

Contrasts	(Incorrect) use of *the*	(Correct) use of *a*
[+partitive, +specific] vs. [+partitive, −specific]	$F(1, 18) = 6.943, p = .017$	$F(1, 18) = 5.236, p = .034$
[+partitive, +specific] vs. [−partitive, +specific]	$F(1, 18) = 1.830, p = .193$	$F(1, 18) = 2.215, p = .154$
[+partitive, +specific] vs. [−partitive, −specific]	$F(1, 18) = 20.160, p < .0001$	$F(1, 18) = 19.820, p < .0001$
[+partitive, −specific] vs. [−partitive, +specific]	$F(1, 18) = 3.570, p = .075$	$F(1, 18) = 1.920, p = .183$
[+partitive, −specific] vs. [−partitive, −specific]	$F(1, 18) = 6, p = .025$	$F(1, 18) = 14.727, p = .001$
[−partitive, +specific] vs. [−partitive, −specific]	$F(1, 18) = 12.212, p = .003$	$F(1, 18) = 11.538, p = .003$

vity and specificity are both absent (i.e., in [−partitive, −specific] contexts), there will be no overuse of *the*.

There is one important caveat to be addressed here, however. Our experimental results do not show statistically significant *additive effects* of specificity and partitivity. In particular, under the assumption that partitivity and specificity are independent, we expected that [+partitive, +specific] contexts would trigger significantly more overuse of *the* than either [−partitive, +specific] or [+partitive, −specific] contexts. As shown in table 5, we indeed found that the [+partitive, +specific] contexts triggered the most frequent overuse of *the*. Under our planned contrasts (table 7), however, we found a significant difference between [+partitive, +specific] and [+partitive, −specific] contexts, but not between [+partitive, +specific] and [−partitive, +specific] contexts (this difference did go in the right the direction, but without reaching statistical significance). We speculate that many factors may contribute to this result; simply, our sample size could be too small to detect such a difference, or the erroneous use of *the* in [+partitive, +specific] contexts may have reached ceiling. At this moment, we do not have a satisfactory answer for the lack of additivity. We will investigate this issue in future research. Importantly, however, we do have evidence that specificity and partitivity are independent of each other and that both trigger overuse of *the*.[16]

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[16] Besides the 20 learners who took the forced-choice test presented in this article, we tested 20 L1-Korean L2-English learners (2 beginners, 6 intermediate, and 12 advanced) with a different task: a fill-in-the-blank test (see footnote 13). Taking into account the fill-in-the-blank test data from the 18 nonbeginners, we obtained the following results (beginners were excluded in order to allow comparison with the forced-choice task, where all participants were nonbeginners): as in the forced-choice test, we obtained a main effect of partitivity on *the* use regardless of scope and specificity ($F(2, 32) = 12.710, p < .0001$ (adjusted by Hyunh-Feldt), and $F(1, 16) = 4.763, p = .044$, respectively), and both

Table 8
Individual analysis

Error types	No. of subjects
Targetlike	10
Partitivity errors	2
Specificity errors	5
Mixed errors	3

6.3 Individual Results

In this section, we report individual results in order to ensure that the effects of semantic factors found at the group level also hold at the level of individual L2 learners. We have looked at individual performance on the four indefinite contexts investigating the effects of partitivity and specificity ((32)–(35)). To understand the effect of partitivity and specificity for each individual learner, we categorized the individual learners into four patterns: (a) targetlike, (b) partitivity errors, (c) specificity errors, and (d) mixed errors. Every participant fell into one of these patterns; that is, no participant exhibited random or unexpected performance (such as more *the* overuse in nonpartitive than in partitive contexts, or in nonspecific than in specific contexts).[17] The result of the individual analysis is given in table 8.

The results support the hypothesis that each factor—*definiteness*, *specificity*, and *partitivity/presuppositionality*—plays a role in article choice at the individual level as well as at the group level. No subject made random errors in choosing articles. The average proficiency score out of

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explicit and implicit partitive contexts triggered significantly more use of *the* than nonpartitive contexts ($F(1, 16) =$ 6.817, $p = .019$, and $F(1, 16) = 16.318$, $p = .001$, respectively). There was no main effect of scope on *the* use ($F(1, 16) = .095$, $p = .762$). Interestingly, however, there was no main effect of specificity on *the* use ($F(1, 16) = 1.914$, $p = .186$), and implicit partitivity triggered more use of *the* than explicit partitivity ($F(1, 16) = 9.941$, $p = .006$), unlike in the forced-choice task. The lack of specificity effects with this task poses an important challenge to our hypotheses. One thing to note is that in fill-in-the-blank tests, unlike in forced-choice tests, participants have the option of using other lexical items in place of articles. In our fill-in-the-blank test, subjects used possessives (9%), the pronoun *one* (1%), and other miscellaneous items (3%) in place of articles. Possessives were often used with [+partitive] or [+specific] contexts, which may contribute to less overall overuse of *the*. This, however, raises another question: why did use of possessives not lower the use of *the* in [+partitive] contexts as well? We leave this issue open for future research.

[17] The individual analysis was conducted as follows. First, we selected participants who made errors less than 25% of the time for the relevant contexts (0–2 errors in total). They belong to the targetlike pattern (i.e., they are essentially nativelike). For the remaining participants, we computed the effects of specificity and partitivity. If the participant made more errors in [+specific] than in [−specific] contexts (difference of at least 2 errors), and if there was no or little (1 error) difference between [+partitive] and [−partitive] contexts, we categorized that participant into the specificity error pattern. Similarly, if the participant made more errors in [+partitive] contexts than in [−partitive] contexts (difference of at least 2 errors), and if there was no or little (1 error) difference between [+specific] and [−specific] contexts, we categorized him or her into the partitivity error pattern. If the participant made at least 2 errors in both [+specific] and [+partitive] contexts, we categorized him or her into the mixed-error pattern. We acknowledge that the cutoff points that we chose are necessarily somewhat arbitrary. But our analysis suffices to examine whether the effects of specificity and partitivity hold on the individual level.

30 (from the Michigan test) of each group was as follows: (a) targetlike pattern: 25.4; (b) partitivity error pattern: 23.5; (c) specificity error pattern: 21.2, and (d) mixed-error pattern: 26.3. Because of the rather small number of participants in each pattern, we did not perform a statistical test on the relationship between proficiency and individual pattern. However, it would be interesting to examine in future research how L2 proficiency affects individual article choice patterns (see Ko, Ionin, and Wexler 2009b for some preliminary results).

6.4 Partitivity versus Presuppositionality: Performance on Definite Items

As discussed in section 3.3, partitivity is only one way of operationalizing presuppositionality. While our findings with indefinites indicate that L2 English learners overuse *the* in the context of partitivity, they do not allow us to tease partitivity apart from the more general notion of presuppositionality. To tease apart the effects of presuppositionality and partitivity, we need to consider definite items.

6.4.1 Stimuli, Hypotheses, and Predictions   In (36), we repeat our hypothesis concerning performance on definites. If learners associate *the* with presuppositionality, they should correctly use *the* with all definites, since all definites presuppose existence (as well as uniqueness). In contrast, if learners associate *the* with set membership and/or prior mention, which underlie partitivity, they should supply *the* more often in prior-mention contexts than in other definite contexts.

(36) *Hypothesis: Presuppositionality versus partitivity*
     Presuppositionality rather than set membership and/or prior mention is responsible for L2 English article choice: since all definites are presuppositional, learners do not distinguish between definites with versus without prior mention.

To test this hypothesis, we compare performance on two categories of definite DPs in our test. The ''prior mention'' category, exemplified in (37), involved prior mention of a set and was the definite equivalent of our implicit partitive indefinite items (see (27)). The ''no prior mention'' category, exemplified in (38), established uniqueness through world knowledge rather than set membership. Each category comprised 8 items rather than 4: half of the items in each definite category were set up as [− specific], with the speaker not having a particular individual in mind (as in (37) and (38)), and half were set up as [+ specific], with the speaker having a particular individual in mind. For the purposes of this article, the specificity distinction with definites is not relevant (see Ionin, Zubizarreta, and Philippov 2009, and footnote 9 of this article).

If L2 English learners associate *the* with presuppositionality, they should be equally accurate on supplying *the* in (37) and (38); if they associate *the* with prior mention, they should be more accurate on (37).

(37) *[+definite], prior mention: existence of coach presupposed; existence established through prior mention of a set (team → coach)*
     Sally: I heard that your daughter Karen is a big fan of the Chicago Bears team!
     Roger: Yes, she is. She went to Chicago to see them play. *And she got a signature from (a, <u>the</u>, —) head coach*. I have no idea who that is, but Karen was really happy.

(38) *[+definite], no prior mention: existence of governor presupposed; existence established through world knowledge, not prior mention*

Husband: So who should we invite to dinner this Saturday night?

Wife: How about Alex and Kate?

Husband: No, that won't work. Kate won't be in town—her company needs her to fly west on an assignment. *She is meeting with (a, <u>the</u>, —) governor of Oregon*—you know, I can't remember who that is.

6.4.2 Results   We found that L2 learners correctly use *the* with both types of definites as long as specificity effects are controlled for:[18] use of *the* was 80.6% (129/160) for definites involving prior mention, and 87.5% (140/160) for definites not involving prior mention. There was no significant effect of prior mention (a mixed ANOVA on use of *the* with partitivity as the within-subjects factor and test order as the between-subjects factor: $F(1, 18) = 2.829$, $p = .110$). The lack of any prior-mention effects with definites suggests that L2 learners are not linking *the* to set membership or prior mention. Rather, learners are linking *the* to a presupposition of existence; since all definites presuppose existence, use of *the* is stable across different categories of definites. In contrast, indefinites do not carry an existence presupposition except when it has been established through prior mention: therefore, we see *the* overuse with [+partitive] indefinites but not with [−partitive] ones. While the results with indefinites do not allow us to tease the effects of partitivity (prior mention) apart from the effects of presuppositionality, the results with definites suggest that L2 learners' *the* use is linked to a presupposition of existence in general, rather than confined to prior-mention contexts.

7 Discussion

7.1 Summary of Main Findings

Our experimental results show that L2 learners' article errors are not random, but systematic and traceable to semantic universals. In particular, our hypotheses in (25) concerning the role of presuppositionality, repeated here in (39), are supported by the experimental results.

(39) *Hypotheses*

    A. Presuppositionality effects are semantic, not pragmatic, and hence operative in language acquisition by adults.

    B. Presuppositionality, in the form of partitivity, is a semantic concept that is independent of both scope and specificity.

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[18] Learners exhibited higher *the* use on [+specific] definites (93.75%, 150/160) than on [−specific] definites (74.38%, 119/160), consistent with the findings reported in IKW 2004. As for *a* overuse, [+specific] definite contexts triggered a little overuse of *a* across the prior-mention (2.5%, 4/160) and no-prior-mention contexts (3.13%, 5/160), but nonspecific contexts triggered more overuse of *a* with prior-mention (16.88%, 27/160) than with no-prior-mention definites (8.13%, 13/160). This pattern is not expected under our proposal, and we leave the source of *a* overuse in definite contexts open (but see footnote 9, and Ionin, Zubizarreta, and Philippov 2009 for the role of explicit strategy in *a* overuse in L2 English).

    C. Partitivity effects are due to presuppositionality; they are not simply a result of noun repetition.

    D. Presuppositionality rather than set membership and/or prior mention is responsible for L2 English article choice: since all definites are presuppositional, learners do not distinguish between definites with versus without prior mention.

Our data show that L1-Korean L2-English learners overuse *the* with indefinites in [+ partitive] contexts more than in [− partitive] contexts, supporting Hypothesis A. Our results also show that presuppositionality effects are independent of scope or specificity effects, supporting Hypothesis B. There was no interaction between partitivity and scope; partitivity, not scope, clearly triggered overuse of *the* with indefinites. There was no interaction between partitivity and specificity; both factors independently contributed to overuse of *the* with indefinites.

We have also attested another new fact, namely, that partitivity effects are observed regardless of whether partitivity is established explicitly or implicitly, supporting Hypothesis C. This result shows that one cannot simply attribute overuse of *the* with partitive indefinites to a confusion of singular and plural forms in L2 English. Furthermore, we have shown that L2 learners rarely overuse *the* when there is no semantic trigger for associating *the* with indefinites (e.g., in [− partitive, − specific] contexts). Individual results also support the present conclusion.

Finally, the results with definites support Hypothesis D and suggest that learners attend to presuppositionality rather than partitivity, correctly using *the* with all definites as well as overusing it with presuppositional indefinites.

7.2 Further Implications for L1 and L2 Acquisition

Our results show that adult L2 English learners systematically make the same type of error as L1-acquiring children, overusing *the* with partitive indefinites. In the case of L2 acquisition, we have argued that this error pattern is *semantic* rather than pragmatic in nature. Given the similarity of error patterns in L1 and L2 acquisition, it is possible that the same semantic explanation applies in both cases: that both L1 learners and L2 learners are influenced by the semantic factor of *presuppositionality* (cf. Wexler 2003). Alternatively, it is possible that different explanations apply to the two populations: a semantic explanation in the case of L2 acquisition, but a pragmatic explanation, based on egocentricity, in L1 acquisition (cf., e.g., Maratsos 1974, 1976, Karmiloff-Smith 1979, Schaeffer and Matthewson 2005). However, this alternative is less parsimonious, as it provides two different explanations for the same phenomenon. At the same time, in order to be certain that we are in fact dealing with the same phenomenon, we need to test article choice in both L1 and L2 acquisition using the same methodology.

Our findings also have implications for issues in parameter setting. In particular, they call for reevaluation of the article-choice-parameter models developed in previous studies (see, e.g., Ionin 2003, IKW 2004, Schaeffer and Matthewson 2005). Schaeffer and Matthewson (2005:66) propose the parameter in (40) for the determiner system on the basis of common-ground/non-common-ground distinctions.

(40) *Parameter of article semantics*
       If a language semantically distinguishes more than one article, the distinction relies on
       either: I. Speaker belief (e.g. St'át'imcets, . . .), or II. Common ground (e.g. English).

Schaeffer and Matthewson further argue that the parameter in (40) restricts the range of possible
article systems and that there can be no language that bases its article distinction neither on
common ground nor on speaker beliefs. Though this parameter successfully accounts for the
crosslinguistic difference between the article systems of Salish and English, it is not clear how,
if this parameter were extended to L2 acquisition, it would account for the current acquisition
data concerning the effects of partitivity and specificity in article choice.

        In particular, we have shown that L2 learners overuse *the* in partitive contexts whether the
context is extensional or intensional. This is not expected under the model in (40). If the learner
must choose between speaker beliefs (about existence of the referent of the DP) and common
ground as possible parameter options, we expect that the learner will not overuse *the* in narrow
scope contexts, even [+ partitive] ones, contrary to our findings. The fact that L2 learners overuse
the in [+ specific] contexts cannot be straightforwardly explained by (40), either. As we showed
in IKW 2004, and as the current data confirm, learners overuse *the* in [+ specific] extensional
contexts significantly more than in [− specific] extensional contexts. This subtle distinction cannot
be accommodated under (40), which groups all extensional indefinites together, regardless of
specificity or noteworthiness.

        Previously (Ionin 2003, IKW 2004), we proposed the article choice parameter (41) for two-
article languages, arguing that this parameter governs *discourse-related* distinctions, namely,
definiteness and specificity (scope, in contrast, is a purely grammatical distinction, not a discourse-
related one; see Ionin 2003, 2006 for more discussion).

(41) *The article choice parameter* (for two-article languages)
       A language that has two articles distinguishes them as follows:
       The definiteness setting: Articles are distinguished on the basis of definiteness.
       The specificity setting: Articles are distinguished on the basis of specificity.

        The article choice parameter captured crosslinguistic variation between languages like Sa-
moan, which mark specificity, and languages like English, which mark definiteness (see Ionin
2003, 2006 for extension of this discussion to three-article languages, which mark both definiteness
and specificity; see Ionin, Zubizarreta, and Philippov 2009 for modifications to the two-article
language model). The finding that L2 learners are affected by definiteness and specificity in article
choice was thus traced to a UG parameter. On this view, errors associated with specificity in L2
English article choice can be attributed to an optional adherence to the specificity setting of the
parameter.

        Our data, however, demonstrate that more than two factors are at work in article choice.
Thus, the current data suggest that the article choice parameter must be revised to embrace all
the relevant semantic factors in article acquisition—namely, definiteness, specificity, and pre-
suppositionality—or that article choice in acquisition is not governed by parameter setting at all.

The present study raises many further questions. First, are there exact parallels between L1 and L2 learners' article misuse? Our results show that L1 and L2 learners alike are affected by partitivity, but whether L1-L2 parallels are also attested with respect to specificity remains an open question. Second, our results show that L2 learners overuse *the* in both explicit and implicit partitive contexts. Our findings lead to a new research question: do child L1 learners also overuse *the* in implicit partitive contexts? Third, since adult errors cannot be pragmatic in nature, we have argued that it would be more parsimonious to advance the same semantic explanation for partitivity-related errors in both child and adult acquisition. Before we can definitely conclude that children's article errors are semantic rather than pragmatic, however, we need to test child and adult learners using exactly the same experimental materials. In light of these considerations, our findings leave us with a working hypothesis rather than a definitive conclusion: namely, the hypothesis that acquisition of articles by both L1 and L2 learners is influenced by several distinct semantic factors, *definiteness*, *specificity*, and *presuppositionality*. Future work should test this hypothesis, using similar methodologies with both populations.

Another important challenge is to investigate how language learners make the transition to the target state: that is, how they recover from overusing *the* with partitives and constrain *the* to definite contexts only. In the case of children, Wexler (2003) suggests that this transition may be due to maturation. However, the maturational view is not applicable to adult L2 acquisition. Instead, we suggest that transition to a targetlike grammar takes place with the help of triggers in the input.

We believe that the relevant trigger would be use of *a* and of overt partitive expressions like *one of*/*some of* to refer to members of a previously mentioned set. As discussed in Heim 1991, the Maximize Presupposition principle requires *the* to be used whenever possible, that is, whenever its presuppositions are satisfied (see also section 3.4). Thus, if *the* carried only a presupposition of existence without a presupposition of uniqueness (the learner's hypothesis), it should be used in all presuppositional contexts, including partitive indefinite contexts. Assuming that the learner's grammar is constrained by Maximize Presupposition, the fact that *a* or *one of* is used in presuppositional indefinite contexts in place of *the* should lead the learner to realize that the presuppositions on *the* are not being met. The learner should conclude from this that the presupposition of existence by itself, without uniqueness or maximality, is not enough to license use of *the*. The result would be changing the semantic specifications of *the* from presupposition of existence to presuppositions of existence + uniqueness. To test this hypothesis, it would be necessary to conduct developmental studies on the (co)occurrence of *a*, *one of the*, and *the*. We leave this for future research.

7.3 The Role of the L1

Finally, whether language groups other than L1 Korean speakers would show the effects of presuppositionality in L2 English article choice remains an open question (as discussed earlier in this article, specificity effects have been attested for multiple L1 groups). If our hypothesis that L2 learners have access to semantic universals in article choice is correct, we expect that L2 English learners from other article-less L1 groups are also affected by presuppositionality. Evidence collected so far speaks in favor of our proposal. Data from L1 Serbo-Croatian learners of

English suggest that presuppositionality effects are not limited to L1 Korean speakers (Ko et al. 2008). Preliminary data from L1 Russian learners of English suggest that presuppositionality as well as specificity effects are present for this group also (Ko, Ionin, and Wexler 2009b).

At the same time, some studies report crosslinguistic variation concerning the role of presuppositionality in article choice. For instance, in Kaneko's (1996) study, L1 Spanish speakers showed rather limited effects of presuppositionality, compared with L1 Japanese speakers. Since Korean lacks articles while Spanish has them, this difference is compatible with the view that L2 English learners whose L1s do have articles transfer article semantics from their L1 onto their L2: thus, Spanish speakers transfer the semantics of definiteness from Spanish to English and are not influenced by presuppositionality. This is consistent with the findings of Ionin, Zubizarreta, and Bautista Maldonado (2008) that L1 Spanish learners of English, unlike L1 Russian learners of English, do not show effects of specificity.

More puzzling is the finding reported in Ionin 2003:app. 4 that L1 Russian speakers showed rather limited effects of presuppositionality, compared with L1 Korean speakers (while both groups showed effects of specificity). In Ko, Ionin, and Wexler 2009b, we tease apart the role of the L1 from the role of proficiency and show that effects of presuppositionality and specificity are present for speakers of different article-less L1s, but that the strength of these effects is related to proficiency level. Here, we have shown that presuppositionality effects are real, and we have traced similarities between L1 and L2 acquisition. We hope that the current study will provide a useful background for addressing these important issues in future research.

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