

Children's Use of English Articles in Intransitive and Transitive Sentences

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ABSTRACT

This study presents new evidence that young children use English articles in an adult-like fashion, suggesting that children seem to know the function of English articles from the earliest observable ages. In adult language, indefinite NPs tend to appear in the subject position of intransitive verbs and the object position of transitive verbs. The study analyzes children's early speech data for this pattern. The data consist of speech samples from six children, with mean lengths of utterances ranging from 2.0 to 3.1, and speech samples from six adults to provide a benchmark. The results demonstrate that in the data from both the adults and children, indefinite NPs with indefinite articles tend to appear in the subject position of intransitive verbs and the object position of transitive verbs, suggesting that very young children can use articles in similar patterns to those of adults.

Keywords: usage of articles, language acquisition, syntactic position

1. Introduction

Many previous studies regarding the acquisition of articles have been devoted to investigating whether the articles very young children produce are abstract syntactic categories or formulaic utterances. Some argued that children create the categories based on regularities in the input and context, while others claimed that children are born with some syntactic categories (or features making up the categories) and thus their task is merely mapping the categories onto the words belonging to each category (Bottari, Cipriani, & Chilosi, 1993/1994; Eisenbeiss, 2000; Ihns & Leonard, 1988; Joo & Yoo, 2018; Joo, Yoo, & Kim, 2020; Meylan, Frank, Roy, & Levy, 2017; Pine & Lieven, 1997; Pine & Martindale, 1996; Radford, 1990; Valian, 1986, 2014; Valian, Solt, & Stewart, 2009; Yang, 2013, among others). These studies, exploring in-depth the nature of articles at early stages, mainly focused on

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children's knowledge of syntax within the framework of either generativist models or constructivist models.

The present study focuses on investigating early English articles from a new, previously unexplored angle. Specifically, it explores the distribution of English indefinite and definite articles in early child language with respect to the subject and the object positions both in intransitive and transitive sentences. Du Bois (1987, 2003) illustrated a pattern of grammar in discourse in which arguments comprising new information are preferentially introduced into the discourse for the first time as an intransitive subject or a transitive object, but not as a transitive subject. In this regard, a pattern can be made when it comes to the use of articles: Indefinite noun phrases (NPs; i.e., with the indefinite article *a(n)*) will occur as intransitive subjects as well as transitive objects but not as transitive subjects; meanwhile, definite NPs (i.e., with the definite article *the*) will not show such a trend. This prediction, based on Du Bois, is testable in language acquisition studies, but remains unstudied. To test this prediction, we analyzed corpus data from six typically-developing English-speaking children, investigating the distribution of English indefinite and definite articles with respect to the subject and the object positions both in intransitive and transitive sentences. In addition, we analyzed speech samples from six adults, the caregivers of the children, in order to provide a benchmark for the study.

2. Background

2.1. Previous acquisition studies on articles

Prior studies investigating the development of articles from the perspective of syntax have employed a variety of methodologies and reported different results with regard to young children's syntactic knowledge. This section summarizes the various research methods and findings of the previous research. Articles belong to the determiners (e.g., the demonstrative pronouns *this* and *that*, the possessive pronouns *my* and *your*, the cardinal numbers *two* and *three*, and the indefinite and definite articles *a(n)* and *the*), and previous acquisition research has examined determiners (including articles) overall. However, the present study concentrates on articles only. Thus, the following focuses on discussing the previous acquisition studies concerning articles.

First, some studies used distributional analyses to identify the nature of articles in young children. For example, Valian (1986) analyzed six English-speaking children's data to examine whether the children produced articles in the correct order when sequenced with adjectives and nouns (i.e., articles preceding adjectives and nouns) and whether they ever used articles alone without a noun (e.g., **the*). Valian (1986) found an adult-like pattern in the children's data, with which she concluded that young children know the distributional properties of articles and thus have an adult-like knowledge of syntactic category.

Ihns and Leonard (1988) also used distributional analyses to investigate whether articles were sequenced correctly with a variety of nouns in spontaneous speech samples from a single child, Adam, from Brown (1973). They searched for the cases where the child used the definite article *the* only with a particular noun (e.g., *baby*); however, such cases were never found, suggesting that the child used *the* with a variety of nouns. Ihns and Leonard claimed that the child's productive use of *the* with various nouns suggests the child has adult-like knowledge of abstract syntactic category. In sum, both Valian (1986) and Ihns and Leonard (1988) claimed that their data support the view that articles are a syntactic category in early child language.

Pine and Martindale (1996) also examined the distribution in children's use of articles with respect to nouns, but differed in their conclusion from Valian (1986) and Ihns and Leonard (1988). Pine and Martindale speculated if children have knowledge of English indefinite and definite articles, knowledge of one category (e.g., the indefinite article *a/an*) should be applied to another category (e.g., the definite article *the*). Pine and Martindale thus examined an overlap test—i.e., the proportion of nouns used with both *a/an* and *the*, out of all the nouns used with either *a/an* or *the*—from seven children and their caregivers. They expected that children would show a high overlap if they acquire knowledge of English articles like adults. The children, however, showed a relatively low overlap compared to their caregivers, with which Pine and Martindale argued that children's knowledge of English articles is not adult-like.

Although Pine and Martindale (1996) claimed that their evidence demonstrated children's lack of a syntactic category of articles, the issue is far from settled. Valian, Solt, and Stewart (2009) conducted similar overlap tests with a corpus of 21 children's and adults' speech samples. However, contrary to the findings of Pine and Martindale (1996), Valian et al. found that the children used articles in adult-like ways, leading them to claim that children have an adult-like syntactic

category of articles. Yang (2013) also measured overlap using the Zipfian distribution of noun frequencies. The findings of the study revealed that low overlap is inevitable, indicating that there is virtually no evidence that children's grammar does not have this feature of adult grammar.

Nino (2017) examined whether or not 407 English-speaking children under 3;04 (mean MLU 1.93) knew the head and complement relationship of the determiner–noun combinations. In examining the syntactic relationships, she computed the correlations of determiner–noun combinations with verb–noun combinations (head–complement relationship) and adjective–noun combinations (adjunct–head relationship). The results showed a high correlation between determiner–noun combinations and verb–noun sentences, lending support for children's knowledge of the syntactic principle underlying the combinations.

Finally, some studies have analyzed the number of fixed article+noun units (e.g., *that's a X*, *where's the X*), adopting a set of three criteria proposed by Eisenbeiss (2000) to identify formulaic utterances in order to detect whether early articles are adult-like or not. Eisenbeiss (2000) analyzed data from seven German children and found that the use of articles in German child language is different from that in adult language to the extent that the proportion of potentially formulaic utterances in child data is relatively high. She thus concluded that early articles are impostors. Joo and Yoo (2018), however, examined the status of early articles using Eisenbeiss's criteria with six English-speaking children's speech data. Countering Eisenbeiss's claims, they reported more non-formulaic utterances in English child language, suggesting the presence of a syntactic category of articles in early child language. As this review demonstrates, the question of whether young children's articles are an adult-like syntactic category remains unanswered.

2.2 Use of indefinite and definite NPs in intransitive and transitive sentences

According to Du Bois (2003), there is a constraint on the constituent of a sentence that can come to the subject or object position, and verb types (i.e., intransitive versus transitive) are related with this constraint. An intransitive verb (e.g., *run*, *come*) calls for an argument structure with a single core argument NP, an intransitive subject. The intransitive subject allows NPs of any form and size without constraint. Du Bois (2003, p. 67) claimed that this absence of constraints allows the speaker “unhindered fulfillment of the more demanding cognitive tasks, such as introduction of a new referent.” Therefore, an indefinite NP, which carry

new information, can appear as the first mention of a new referent in the intransitive subject position.

A transitive verb (e.g., *enjoy*, *eat*) invokes two core arguments: its transitive subject and its direct object. Du Bois (2003) reported a strong tendency in discourse across numerous languages (e.g., Brazilian Portuguese, English, Hebrew, Papago) for lexical nouns to occur freely as the direct object, while pronouns are used far more frequently as the transitive subject. Du Bois contended that there is a constraint on the transitive subject but not the direct object and further proposed that “the free O (direct object) role admits the demands of new information, whereas the constrained A (transitive subject) role avoids them” (p. 69). Therefore, an indefinite NP that carries new information can appear as the transitive object but not as the transitive subject (Du Bois, 1987; Givón, 1979), with which we predict that indefinite NPs appear in transitive objects more frequently than in transitive subjects, if children have adult-like knowledge.

To sum up, adults’ knowledge of syntax and discourse together leads to a patterned use of indefinite NPs—that is, adults avoid indefinite NPs in a transitive subject NP (Du Bois, 1987, 2003), which in turn suggests the lack of indefinite articles in a transitive subject NP. Then, a question arises: Do children show such an adult-like pattern? First language acquisition studies have long explored children’s ability to manage the interplay of syntax and discourse (e.g., Joo & Deen, 2019; Otsu, 1994). In line of this, we would like to investigate that English-acquiring children will obey the constraints on articles in English, although to date this has not yet been addressed in the literature.

3. Present Study

This study differs from previous research in two main ways. First, it provides new findings by examining the syntactic position of definite and indefinite NPs that co-occur with intransitive or transitive verbs—an issue that has been under-investigated. Although some studies have examined the syntactic contexts of articles produced by young English-speaking children (e.g., nominative NPs or prepositional phrases; Joo & Yoo, 2018), none have investigated the combination of NPs’ syntactic position and verb type, such as indefinite NPs as intransitive subjects or transitive objects (Du Bois, 1987, 2003).

Second, we analyzed the naturalistic longitudinal corpora of the six children and

their mothers in a systematic way. Specifically, in order to scrutinize the nature of the articles that appear in the early stages of language development, all the data of the children in the present study were restricted by mean length of utterance (MLU), from roughly MLU 2.0 to MLU 3.1. The top of this range corresponds to stage IV of Brown's stages of the acquisition of articles (MLU 3.0–3.7). It thereby permits us to conduct a meaningful analysis of data from six children who are at the same developmental stage as a whole and compare them with the data from adults. This method differs from that of some previous studies on the acquisition of articles, which have used young children's spontaneous data, compiling and analyzing transcripts of each child, and in which the MLU ranges have differed across the children (e.g., Valian et al., 2009). Furthermore, although Pine et al. (2013) tried to categorize their child data into five phases based on Brown's stages of language development, the MLUs of their phases and Brown's stages do not correspond perfectly.

The research question that this study addresses is whether the way in which articles in young English-speaking children's language appear with intransitive subjects and transitive objects shows the adult-like pattern observed by Du Bois (1987). The present study hypothesized that, if the children's knowledge and usage of English articles is adult-like, their use of articles will be determined by the interaction of syntactic position and verb type. In other words, they will tend to produce the indefinite article *a(n)* with the subjects of intransitive verbs and objects of transitive verbs, but not with the subjects of transitive verbs. This study also hypothesized that the children's use of the definite article *the* will show no specific trend, based on the pattern observed by Du Bois (1987).

4. Method

4.1. Corpora

For the analysis, this study chose the data of six English-speaking children, Adam (Brown, 1973), Eve (Brown, 1973), Laura (Braunwald, 1995), Naomi (Sachs, 1983), Nina (Suppes, 1974), and Sarah (Brown, 1973), as well as the speech samples of their mothers, from the Child Language Data Exchange System (CHILDES; MacWhinney, 2000) archives. Longitudinal data that reflect the language development of typically developing children were selected. Among the data, this study focused on an MLU range of 2.0 to 3.1 to investigate the earliest

stages of article use, given that English-speaking children acquire articles between MLU 3.0 and 3.7 (Brown, 1973). On the other hand, we acknowledge a drawback of this restricted dataset: It did not serve a time-course analysis of the distribution of articles in subject NPs with intransitive and transitive verbs. When attempted, the time-course analysis provided such low numbers of relevant uses in each developmental stage that was difficult to interpret the findings. For this reason, the current study did not include a time-course analysis, but instead analyzed all the data in the selected MLU range of 2.0 to 3.1 as a whole. The six children chosen ranged in age from 1;09.00 to 3;09.03. In the case of the data from the six adults, we selected a number of speech samples from each mother that equaled the number of her child's utterances in order to match the sample size of the children and the adults. Table 1 presents the ages, range of MLUs, and number of utterances in the data from the six children.

Table 1. Ages, mean lengths of utterance (MLUs), and number of utterances of children

Child	Child's age	MLU range	No. of utterances
Adam	2;05.12-3;00.11	2.1-3.0	12,795
Eve	1;09.00-2;03.00	2.0-2.9	7,959
Laura	1;11.09-2;08.11	2.0-3.0	7,210
Naomi	1;11.29-2;09.11	2.0-3.0	7,687
Nina	1;11.29-2;04.12	2.0-3.0	10,714
Sarah	2;09.29-3;09.03	2.0-3.1	10450

4.2. Procedure

For the analysis, tokens of the articles *a(n)* and *the* followed by a noun were retrieved using Computerized Language Analysis (CLAN). Each article+noun combination was analyzed manually to identify its syntactic position with regard to the verb in a sentence, and the verb type (i.e., transitive or intransitive) was noted. The following cases were excluded from the analysis: (a) when a child produced two types of verbs at the same time, as in *I go make a train* (Eve, 2;01.00, Brown 15, MLU 2.9); (b) when a child produced an elliptical utterance such as a

verb-less sentence, as in *I a cow boy* (Adam, 2;05.12, Brown 06, MLU 2.1), or a standalone article+noun pair, as in *on the bed* (Sarah, 2;09.00, Brown 27, MLU 2.1); and (c) when a child repeated the caregiver's utterance. After these exclusions, the remaining article+noun combinations were categorized separately for each child and each mother.

For the data analysis, two coders independently coded and counted the data from the six children. The total number of young children's indefinite and definite articles in the subject and object positions occurring with either intransitive or transitive verbs was 1,803. In the case of mother's data, the total number of indefinite and definite articles in the same syntactic positions was 4,076.

5. Results

In order to ascertain whether articles produced by young English-speaking children showed a similar pattern to that of adults with respect to the combination of the grammatical relationships and verb types, all the instances of articles were divided into two categories based on the syntactic positions, subject or object, of the NPs in which they occurred. More specifically, both indefinite and definite articles were categorized into three types: (a) articles as the subject of an intransitive verb; (b) articles as the subject of a transitive verb; or (c) articles as the object of a transitive verb.

Table 2 presents the distribution of the indefinite article+noun combinations in the subject position with intransitive verbs and transitive verbs as well as in object position with transitive verbs.

Of particular note in the results of the children depicted in Table 2 is that *a(n)*+noun combinations in the subject position occur only with intransitive verbs although the instances of them are rare (e.g., *A doll hurt*, Nina, 2;02.06; Suppes 13; MLU 2.3); of the 24 instances of *a(n)*+noun subjects, none appeared with a transitive verb. The same was true with the caregivers: All 74 instances of *a(n)*+nouns that the adults produced occurred with intransitive verbs rather than with transitive verbs. Overall, this pattern seems to be consistent with the pattern reported by Du Bois (1987)—that is, indefinite NPs tend to appear as intransitive subjects, but not as transitive subjects.

Table 2. Distribution of indefinite articles in subject NPs with intransitive and transitive verbs and in object NPs with transitive verbs

<i>a(n)</i>			
	Subject- intransitive verb	Subject- transitive verb	Object- transitive verb
Adam	3 (1.5%)	0 (0.0%)	201 (98.5%)
Eve	2 (1.2%)	0 (0.0%)	170 (98.8%)
Laura	1 (0.7%)	0 (0.0%)	144 (99.3%)
Naomi	1 (0.9%)	0 (0.0%)	106 (99.1%)
Nina	17 (6.5%)	0 (0.0%)	244 (93.5%)
Sarah	0 (0.0%)	0 (0.0%)	124 (100.0%)
Total	24 (2.4%)	0 (0.0%)	989 (97.6%)
Adam's mother	7 (2.4%)	0 (0.0%)	285 (97.6%)
Eve's mother	0 (0.0%)	0 (0.0%)	324 (100.0%)
Laura's mother	8 (3.3%)	0 (0.0%)	235 (96.7%)
Naomi's mother	39 (11.6%)	0 (0.0%)	297 (88.4%)
Nina's mother	0 (0.0%)	0 (0.0%)	186 (100.0%)
Sarah's mother	20 (6.3%)	0 (0.0%)	298 (93.7%)
Total	74 (4.4%)	0 (0.0%)	1,625 (95.6%)

As for the indefinite articles occurring in the object position of transitive verbs, both the child and the adult speech data showed notably great use of them. Of all the a+noun combinations that appear differently depending on the syntactic

position, the children produced *a(n)*+noun combinations in the object position of transitive verbs in 989 out of 1,013 (97.6%) instances (e.g., *Jenko has a rash*, Naomi, 2;01.00; Sachs 43; MLU 2.0). The adults showed the similar pattern for the objects of transitive verbs, producing 1,625 out of 1,699 (95.6%) instances of indefinite NPs.

We used descriptive statistics to provide an overall picture of the use of the indefinite article in the three positions (subject of an intransitive verb vs. subject of a transitive verb vs. object of a transitive verb) by the two participant groups (children vs. mothers). The results are summarized in Table 3.

Table 3. Means and standard deviations of the frequency of indefinite articles in subject NPs with intransitive and transitive verbs and in object NPs with transitive verbs

		<i>a(n)</i>		
		Subject intransitive verb	Subject transitive verb	Object transitive verb
Children	<i>M</i>	4.0	0	164.8
	<i>SD</i>	6.4	0	51.3
Mothers	<i>M</i>	12.3	0	270.8
	<i>SD</i>	14.9	0	50.8

The results of the descriptive statistics show that the children produced indefinite articles with the subjects of intransitive verbs (*M* = 4.0, *SD* = 6.4) and the objects of transitive verbs (*M* = 164.8, *SD* = 51.3), but not with the subjects of transitive verbs. Their mothers also produced indefinite articles with the subjects of intransitive verbs (*M* = 12.3, *SD* = 14.9) and the objects of transitive verbs (*M* = 270.8, *SD* = 50.8), but not with the subjects of transitive verbs.

Next, we looked at the use of definite articles by both the children and their mothers in the subject position with intransitive verbs and transitive verbs and also in object position with transitive verbs (see Table 4).

Table 4 shows that, although children produced definite articles in the subject position with transitive verbs in 10 instances (e.g., *The zebra bite my fingers*, Nina, 1;11.29; Suppes 03; MLU 2.0), it is a relatively low number of instances (10 out of 790, 1.3%). A similar trend was found in the adults' data, which showed 353 out of 2,377 (14.9%) instances of *the*+noun subjects in the position. On the other hand, note that intransitive subjects were produced much more frequently than

Table 4. Distribution of definite articles in subject NPs with intransitive and transitive verbs and in object NPs with transitive verbs

	<i>the</i>		
	Subject- intransitive verb	Subject- transitive verb	Object- transitive verb
Adam	0 (0.0%)	3 (3.3%)	88 (96.7%)
Eve	11 (9.3%)	1 (0.8%)	107 (89.9%)
Laura	15 (13.8%)	1 (0.9%)	93 (85.3%)
Naomi	21 (19.8%)	3 (2.8%)	82 (77.4%)
Nina	24 (10.3%)	2 (0.8%)	208 (88.9%)
Sarah	36 (27.5%)	0 (0.0%)	95 (72.5%)
Total	107 (13.5%)	10 (1.3%)	673 (85.2%)
Adam's mother	184 (44.5%)	58 (14.0%)	172 (41.5%)
Eve's mother	98 (27.8%)	45 (12.7%)	210 (59.5%)
Laura's mother	103 (30.1%)	36 (10.5%)	203 (59.4%)
Naomi's mother	137 (40.1%)	42 (12.3%)	163 (47.7%)
Nina's mother	342 (65.5%)	106 (20.3%)	74 (14.2%)
Sarah's mother	137 (33.9%)	66 (16.3%)	201 (49.8%)
Total	1,001 (42.1%)	353 (14.9%)	1,023 (43.0%)

transitive subjects when the definite article appeared. To the extent that the bias towards intransitive subjects over transitive subjects was also found with the indefinite article (see Table 2), this phenomenon seems no regards to definiteness.

In addition, the children produced *the*+noun combinations in the object position with transitive verbs in 673 out of 790 (85.2%) instances (e.g., *You read the book*, Naomi, 2;00.02; Sachs 35; MLU 2.1), and the adults produced 1,023 out of 2,377 (43.0%) instances of definite articles in the object position with transitive verbs.

When comparing the frequency between the usage of indefinite and definite articles in the objects of transitive verbs, the children more frequently produced *a(n)*+noun in the objects of transitive verbs than *the*+noun (i.e., 989 out of 1,013 vs. 673 out of 790). Adults also showed the similar pattern. These results, i.e., more frequent use of indefinite articles than definite articles in the object of transitive sentences, is consistent with the pattern described by Du Bois (1987)—namely, indefinite NPs tend to appear as transitive objects.

Next, we present descriptive statistics to provide an overall picture of the participants' use of the definite article in the three positions (subject of an intransitive verb vs. subject of a transitive verb vs. object of a transitive verb). The results are summarized in Table 5.

Table 5. Means and standard deviations of the frequency of definite articles in subject NPs with intransitive and transitive verbs and in object NPs with transitive verbs

		<i>the</i>		
		Subject intransitive verb	Subject transitive verb	Object transitive verb
Children	<i>M</i>	17.8	1.7	112.2
	<i>SD</i>	12.3	1.2	47.7
Mothers	<i>M</i>	166.8	58.8	170.5
	<i>SD</i>	91.2	25.6	50.8

The results of the descriptive statistics show that the children produced definite articles in all three positions: with the subjects of intransitive verbs ($M = 17.8$, $SD = 12.3$), the subjects of transitive verbs ($M = 1.7$, $SD = 1.2$), and the objects of transitive verbs ($M = 112.2$, $SD = 47.7$). The mothers also produced definite articles in all three positions: with the subjects of intransitive verbs ($M = 166.8$, $SD = 91.2$), the subjects of transitive verbs ($M = 58.8$, $SD = 25.6$), and the objects of transitive verbs ($M = 170.5$, $SD = 50.8$).

While the results presented in Tables 2–5 show that children's uses of articles are similar to those of adults (see Appendix A for all the results), consistent with

the pattern in Du Bois (1987), one may raise that the results are limited in that it only analyzed NPs with indefinite and definite articles. That is, whether the constraint (i.e., lack of indefinite NPs in transitive subjects) is still viable if all the NP types, regardless of whether they have articles or not (e.g., pronouns, proper nouns, demonstratives), are analyzed. We thus analyzed all the NP types children produced in the subject positions. Figure 1 shows the proportion of NP types in the subject positions with intransitive verbs by the six English-speaking children.

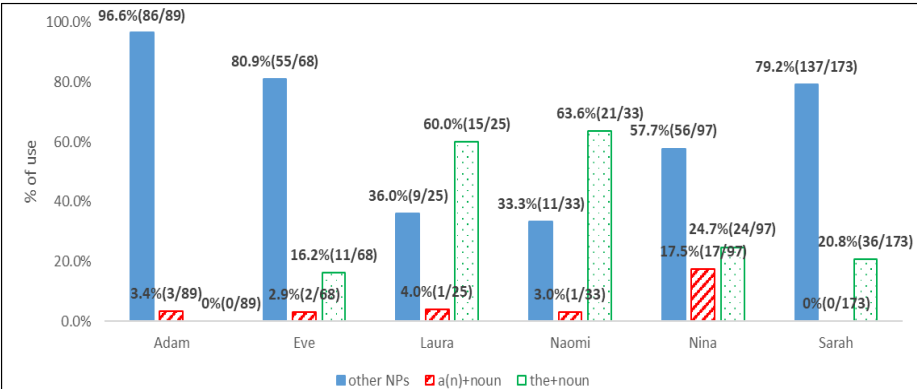


Figure 1. The proportion of NP types in the subject position with intransitive verbs: Children

Three children (Adam, Eve, and Sarah) produced far more other NP types (i.e., pronouns, proper nouns, demonstratives) than nouns with articles while the other three children (Laura, Naomi, and Nina) produced nouns with articles as frequently as other NP types. Notably, all the children except Sarah used *a(n)+noun* and all the children except Adam produced *the+noun* in the subject of intransitive sentences. This pattern also appears in their caregiver’s speech, as seen in Figure 2.

As in Figure 2, the caregivers productively used both *a(n)+noun* and *the+noun* in the subject position with intransitive verbs. Four out of six caregivers produced *a(n)+noun* while all the caregivers used *the+noun* in the subject position. Figures 1 and 2 suggest that no constraint seems to be present in the use of articles in intransitive sentences both in children and their caregivers, along with the claim of Du Bois (1897, 2003).

With regard to the proportion of NP types in the subject position with transitive verbs by children, see Figure 3.

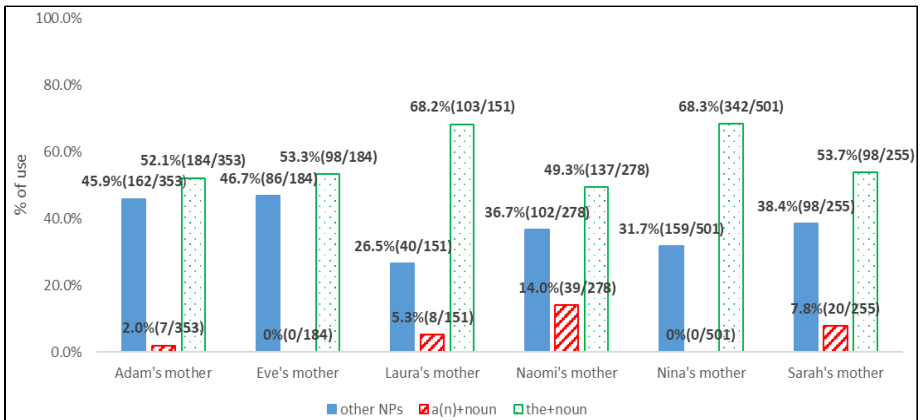


Figure 2. The proportion of NP types in the subject position with intransitive verbs: Caregivers

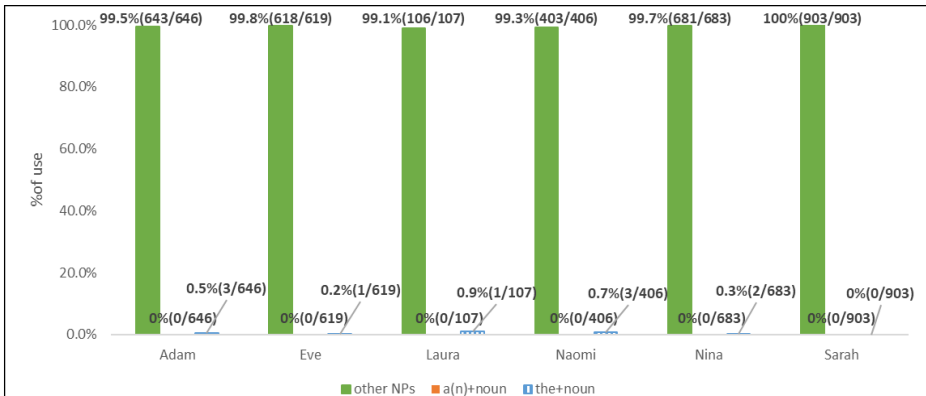


Figure 3. The proportion of NP types in the subject position with transitive verbs: Children¹⁾

In contrast to the pattern with intransitive verbs, no children produced *a(n)+noun* in the subject position with transitive verbs, while most of them produced *the+noun* in the subject position (Adam, Eve, Laura, Naomi and Nina), along with very high proportion of other NP types (e.g., pronouns, proper nouns and demonstratives). This pattern is also present in their caregiver's speech as seen in Figure 4.

1) As one of the reviewers correctly pointed out, an item analysis would help a clearer picture of the analysis. The author prepares such item analysis in a subsequent study.

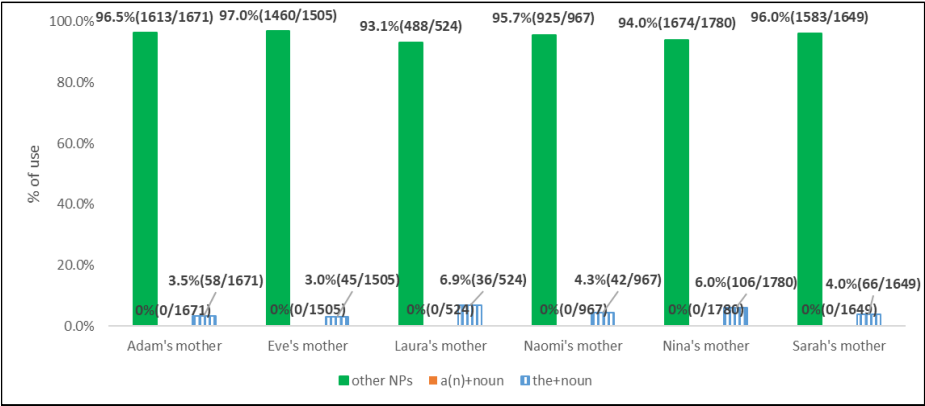


Figure 4. The proportion of NP types in the subject position with transitive verbs: Mothers

As seen in Figure 4, the caregivers produced no *a(n)+noun* in the subject position with transitive verbs while they produced *the+noun* in the subject position, along with high proportion of other NP types. The results in Figures 3 and 4 suggest that a constraint, no use of indefinite NPs in transitive subjects, seems to appear both in children and their caregivers, along with the claim of Du Bois (1897, 2003).

6. Discussion and Conclusion

This study aimed to examine whether young English-speaking children follow a trend—Indefinite NPs occur as intransitive subjects and transitive objects but not as transitive subjects; meanwhile, definite NPs do not show such a trend (Du Bois, 1987, 2003)—by investigating the use of articles in intransitive and transitive sentences. To this end, speech data from six children, with MLUs ranging from 2.0 to 3.1, and their caregivers were analyzed for article uses.

The findings indicated that the English-speaking children's patterns of production of English articles are similar to those of adults: Namely, indefinite articles tend to appear with nouns in the subject position of intransitive verbs and in the object position of transitive verbs, although it must be acknowledged that both groups rarely produced indefinite articles in the subject position of intransitive verbs (i.e., only 2.4 % for the children and 4.4% for the adults). Notably, neither the children nor their adult caregivers produced indefinite articles in the subject position of

transitive verbs, observing the constraint that indefinite NPs rarely appear in the transitive subjects (Du Bois, 1987, 2003). In addition, in the subject position, an ordinary place for old information, *the*+noun subjects appeared far more often than *a(n)*+noun subjects in both groups (children: 117 vs. 24; adults: 1,354 vs. 74). These results can be taken as evidence that children may acquire two types of knowledge: First, the children had acquired the functions of articles (i.e., the indefinite article introduces a new referent). Second, they had acquired the information structure of sentences (i.e., the subject of a transitive verb should be old information). Furthermore, in the object position of transitive verbs, a typical place for new information, both groups produced more indefinite NPs than definite NPs (children: 989 vs. 673; adults: 1625 vs. 1023), although the results of the adults showed a greater difference between the two conditions than did those of the children. These results show that the children's use of articles with regard to syntactic position was similar to that of the adults, even at the children's earliest stage of article use. (Recall that the children's MLU range is between 2.0 to 3.1, the earliest stages of article use.)

On the other hand, note that the children's use of both definite and indefinite articles in object positions was not identical to the adults' usage. The children overwhelmingly used English definite articles in object position (85.2% of all definite article uses), while adults did so at a much lower rate (43.0% of all definite article uses). In addition, the children produced an even larger proportion of their indefinite articles in object position (97.6% of all indefinite article uses). One possible explanation for these results is that children may prefer to restrict articles to object position uses. The fact that these young children's data showed a high proportion of their uses of other NPs, such as pronouns and proper nouns, in subject position seems to support this possibility (see Figures 1 and 3).

Although the group results showed similarity between the children and the adults, the comparisons between each individual child and his/her mother did not always show such a similarity. For example, Nina produced 17 instances of *a(n)*+noun as the subject of an intransitive verb whereas her mother did not use such a pattern. Conversely, Sara never produced *a(n)*+noun as the subject of an intransitive verb, yet her mother produced 20 instances of *a(n)*+noun as the subject of an intransitive verb. This absence of correspondence between an individual child's and his/her caregiver's production patterns suggests that English-speaking children's use of definite NPs and indefinite NPs is not based solely on what they hear in the input.

With regard to the input, note that children used definite articles in the subject position of transitive verbs, such use was extremely rare (only 10/790, 1.3%) compared to adults' data (353/2377, 14.9%). Again, this discrepancy seems to suggest that input alone does not explain children's use of articles. A question then arises as to why young children, unlike adults, seldom use definite articles (1.3%, 10/790) in the subject position followed by a transitive verb. One possible reason has to do with the naturalistic interaction, which is composed of an answer to a question between a child and a caregiver: To answer a question from his/her mother, children typically used pronouns or proper names rather than *the*+common noun. For example, when a mother asked a child, "*Who gave you that one?*", the child answered, "*Sandra did*" (Sarah, 3;01.24; Brown 46; MLU 2.4). In addition, the pronouns *I* and *you* and the demonstratives such as *this* and *that* were frequently used in conversations between a child and the adult caregiver. For example, in one example, the child said that "*I got lollipop for you*" and the mother responded by asking, "*You got a lollipop for me?*" (Naomi, 2;03.19; Sachs 54; MLU 2.8). Additional examples included: *You use it.* (Adam, 2;09.18; Brown 14; MLU 2.4); *I put sugar in it.* (Eve, 1;09.00; Brown 07; MLU 2.0); *I don't like it too.* (Laura, 2;00.00; Braunwald 07; MLU 2.4); *Do you want a drink?* (Naomi, 2;00.02; Sachs 35; MLU 2.1); *That's mommy holding the baby.* (Nina, 2;00.24; Suppes 07; MLU 2.1); and *You throw it away?* (Sarah, 3;00.18; Brown 40; MLU 2.2).

The results of this study provide a novel finding that children may know the distribution of English articles in the subject and object positions of both intransitive and transitive sentences. More importantly, the findings of the study have an implication for our understanding of children's English article acquisition: They suggest that young children may have syntactic knowledge regarding English articles at the earliest stages of language development (e.g., Ihns & Leonard, 1988; Joo & Yoo, 2018; Valian, 1986; Valian, Solt, & Stewart, 2009; Yang, 2013).

There are several limitations in this study. First, while Du Bois (1987, 2003) discussed the definite/indefinite NPs, the current study only explored NPs with definite/indefinite articles. A further study, including a wider range of indefinite NPs and definite NPs (e.g., proper nouns, pronouns), is called for. Second, this study investigates six children and their caregivers. Future research should examine a more extensive set of naturalistic data containing children's utterances to provide more comprehensive view on children's knowledge and usages in relation to the articles in English. Third, this study found examples of article-less utterances in obligatory conditions such as *I got book* (Sarah, 2;03.07; Brown 02; MLU 1.7),

remaining no further discussion. A further study, exploring whether article-less utterances is related with a syntactic position, is worthwhile to explore. Fourth, this study did not examine whether unaccusatives differ from unergatives in the use of articles. In unaccusatives the theme argument base-generated in the direct object position moves to the subject position; in this regard, a further study is called for whether Du Bois's (1987, 2003) argument holds in unaccusatives.

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Appendix

The overall distribution of indefinite and definite articles in subject NPs with intransitive and transitive verbs and in object NPs with transitive verbs

	Subject-intransitive verb			Subject-transitive verb			Object-transitive verb		
	<i>a(n)</i>	<i>the</i>	Total	<i>a(n)</i>	<i>the</i>	Total	<i>a(n)</i>	<i>the</i>	Total
Adam	3 (100%)	0 (0%)	3 (100%)	0 (0%)	3 (100%)	3 (100%)	201 (70%)	88 (30%)	289 (100%)
Eve	2 (15%)	11 (85%)	13 (100%)	0 (0%)	1 (100%)	1 (100%)	170 (61%)	107 (39%)	277 (100%)
Laura	1 (6%)	15 (94%)	16 (100%)	0 (0%)	1 (100%)	1 (100%)	144 (61%)	93 (39%)	237 (100%)
Naomi	1 (5%)	21 (95%)	22 (100%)	0 (0%)	3 (100%)	3 (100%)	106 (56%)	82 (44%)	188 (100%)
Nina	17 (41%)	24 (59%)	41 (100%)	0 (0%)	2 (100%)	2 (100%)	244 (54%)	208 (46%)	452 (100%)
Sarah	0 (0%)	36 (100%)	36 (100%)	0 (0%)	0 (100%)	0 (100%)	124 (57%)	95 (43%)	219 (100%)
Total	24 (18%)	107 (82%)	131 (100%)	0 (0%)	10 (100%)	10 (100%)	989 (60%)	673 (40%)	1,662 (100%)
Adam's mother	7 (4%)	184 (96%)	191 (100%)	0 (0%)	58 (100%)	58 (100%)	285 (62%)	172 (38%)	457 (100%)
Eve's mother	0 (0%)	98 (100%)	98 (100%)	0 (0%)	45 (100%)	45 (100%)	324 (61%)	210 (39%)	534 (100%)
Laura's mother	8 (7%)	103 (93%)	111 (100%)	0 (0%)	36 (100%)	36 (100%)	235 (54%)	203 (46%)	438 (100%)
Naomi's mother	39 (22%)	137 (78%)	176 (100%)	0 (0%)	42 (100%)	42 (100%)	297 (65%)	163 (35%)	460 (100%)
Nina's mother	0 (0%)	342 (100%)	342 (100%)	0 (0%)	106 (100%)	106 (100%)	186 (72%)	74 (28%)	260 (100%)
Sarah's mother	20 (13%)	137 (87%)	157 (100%)	0 (0%)	66 (100%)	66 (100%)	298 (60%)	201 (40%)	499 (100%)
Total	74 (7%)	1,001 (93%)	1,075 (100%)	0 (0%)	353 (100%)	353 (100%)	1,625 (61%)	1,023 (39%)	2,648 (100%)