“SALISH PERIOD” IN THE DEVELOPMENT OF THE ENGLISH DETERMINER SYSTEM: THE CASE OF CHILDREN WITH AUTISM*

Marina Marukhnyak
University of Toronto

1. Introduction

An inappropriate/problematic use of the definite determiner the has been observed in two groups of English-speaking children: 1) young typically developing (TD) children (Matthewson, Bryant & Roeper, 2001; Schaeffer & Matthewson, 2005); 2) children with autism (Hewitt, 1997).

In the case of young typically developing children, it has been shown that they tend to “overuse” the definite article the, in that they produce definite particles (DPs) when the corresponding discourse referents are not yet familiar to all discourse participants. In the literature, this developmental stage is often referred to by the authors as the “Salish stage” or “Salish period” where the child’s article system is similar to the adult determiner system of Salish rather than to the adult determiner system of English. Although this specific term is not used in the studies examining the acquisition of determiners by children with autism, it has been shown that this particular group of children seem to experience similar difficulties in that they use the definite determiner the while introducing new referents into discourse.

The research presented in this paper explores the possible parallel between the development of the English determiner system in English-speaking children with autism versus English-speaking typically developing children and the adult determiner system of Salish languages. One of the

* I would like to thank Professor Ana Pérez-Leroux for her contribution to the initiation of the present paper. I would also like to thank Professor Yves Roberge and Michaela Pirvulescu for their guidance and insightful feedback.
original features of this analysis is that unlike earlier studies that examine the acquisition of English determiners exclusively in one group of children (either autistic or typically developing), the analysis presented here uses a matching technique, comparing the two groups. There are two major objectives in this study. First, we attempt to demonstrate that while acquiring the English determiner system, both children with autism and their typically developing counterparts go through a “Salish period” where their article system is similar to the adult determiner system of Salish rather than to the adult determiner system of English. Second, we attempt to investigate the extent to which a morpho-syntactic phenomenon such as production/comprehension of definite DPs can be incorporated into the study of pragmatic deficits found in children with autism. More specifically, we seek to answer the following question: what role does the inappropriate use of the definite determiner the play in conversational deficits found in children with autism?

The structure of the present paper is as follows. In section 2, we provide a brief contrastive analysis of the two adult determiner systems: Salish and English. Following this analysis, we briefly outline the hypothesis about a “Salish stage” in the development and the acquisition of the English determiner system. In the last part of this section, we describe the experiments and present the results from several similar studies that have examined the acquisition of English determiners in typically developing children as well as in children with autism. The last section of this paper (section 3) introduces a brief quantitative analysis, where, using the CHILDES corpora, we compare the use of determiners of a typically developing child (Brown database) with that of a child with autism (Flusberg clinical database) to see if they do indeed go through the “Salish period” in their acquisition of English determiners.
2. Background

2.1 English ≠ Salish Determiners

There are two major closely related distinctions between the two adult determiner systems. The first distinction is that while the English determiner system depends heavily on the familiarity-based definite/indefinite contrast, the Salish determiner system is completely independent of this contrast (Matthewson, Bryant & Roeper, 2001).

(1) *English:*

A girl sang [unfamiliar] ≠ The girl sang [familiar])

(2) *Salish:*

ít-em [ti smém’ḻhats-a]

Sing-INTR [DET girl-DET]

‘The/a girl sang.’

This has a direct impact on the second distinction between the two systems, which in fact is just an extension of the first one: the differentiation between different states of speaker and hearer beliefs. In English, the DP can be part of the shared beliefs between speaker and hearer (common ground of speaker and hearer - A-type context) either by having already been established in the previous discourse or by being a long-term shared belief between speaker and hearer. ¹

¹ This is a simplified description of the English determiner system, which suffices for current purposes. Namely, its main aim is to demonstrate how the English article system relates to the three states of speaker and hearer beliefs. Examples are taken from Matthewson, Bryant & Roeper, 2001 and from Schaeffer & Matthewson, 2005.
(3) **Previous Discourse:**

This is a story about *a girl*. *The* girl lived in a big castle.

(4) **Common Ground:**

*The sun* is shining.

There are also instances (B-type context) where the speaker, but not the hearer, believes in the existence of an entity corresponding to the noun phrase.

(5) I saw *a movie* last night.

Lastly, there are situations (C-type context) where neither the speaker nor the hearer has grounds for an existential assertion.

(6) My mother might write *a book*.

These three possible belief states in the English determiner system are summarized in Table 1 (Schaeffer & Matthewson, 2005).

Table 1: Three possible belief states in the English determiner system

<table>
<thead>
<tr>
<th>A-type context</th>
<th>believed by speaker and hearer</th>
<th>part of common ground</th>
<th>the</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-type context only</td>
<td>believed by speaker only</td>
<td>not part of common ground</td>
<td>a</td>
</tr>
</tbody>
</table>
Salish determiner system divides semantically into two classes: 1) existence-asserting determiners and 2) non-existence-asserting determiners. These are illustrated in Table 2.

Table 2: Salish determiner system

<table>
<thead>
<tr>
<th>C-type context</th>
<th>believed by neither speaker nor hearer</th>
<th>not part of common ground</th>
<th>a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>existential assertion</th>
<th>no existent. assertion</th>
</tr>
</thead>
<tbody>
<tr>
<td>present</td>
<td>absent</td>
</tr>
<tr>
<td>remote</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>- plural</th>
<th>ti...a</th>
<th>ni...a</th>
<th>ku...a</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ plural</td>
<td>i...a</td>
<td>nelh...a</td>
<td>kwelh...a</td>
</tr>
<tr>
<td>collective</td>
<td>ku (kwelh)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ collective</td>
<td></td>
<td>ki...a</td>
<td></td>
</tr>
</tbody>
</table>

Existence-asserting determiners result in an existential assertion and encode distinctions of number, as well as the referent’s distance from the speech situation. To mark the distance, a three-way distinction between ‘present’ (visible to the speaker at the time of utterance – 7a), ‘absent’ (invisible at the time of utterance – 7b) and ‘remote’ (invisible but sensed in some other way – 7c) has to be considered.²

² Once again, we present a simplified description of the Salish article determiner system, which suffices for current purposes. Namely, it aims to demonstrate how the Salish article system relates to the three states of speaker and hearer beliefs. Examples are taken from Matthewson, Bryant & Roeper, 2001 and from Schaeffer & Matthewson, 2005.
Non-existence asserting determiners, on the other hand, do not result in an existential assertion as illustrated in (8).

As can be seen from the above-mentioned examples, in the Salish determiner system the choice between the article *ti...a* (existence-asserting determiner) and *ku* (non-existence-asserting determiner) is independent of hearer beliefs and is consequently independent of the common ground. What is important is whether the existence of a referent corresponding to the relevant description is believed to exist by the speaker. So how does the Salish determiner system relate to the three states of speaker and hearer beliefs?

In the Salish determiner system, the determiner *ti...a* is used in the A-type context where the referent of the DP is part of the common ground of both speaker and hearer either by having already been introduced in the preceding discourse (9) or because it represents long-term shared knowledge between speaker and hearer (10).
The same determiner \textit{ti...a} is used in the B-type context where the referent of the DP is familiar to the speaker, but the hearer is unfamiliar with any referent satisfying the description. An example of the B-type context is given in (11).

\begin{align}
(11) & \quad \text{ka hál’h-a ti nkakúsent-a} \\
& \quad \text{OOC SHOW-OOC DET star-DET} \\
& \quad \text{‘A star appeared.’}
\end{align}

Lastly, the determiner \textit{ku} is used in the C-type context where neither the speaker nor the hearer believes the referent of the DP exists. An example of the C-type context is given in (12).

\begin{align}
(12) & \quad \text{cuz’ mets-cál ti n-skícez7-a ku pukw} \\
& \quad \text{going.to write-INTR DET 1SG:POSS-mother-DET DET book} \\
& \quad \text{‘My mother will write a book.’}
\end{align}

The three possible belief states in the Salish determiner system are summarized in Table 3 (Schaeffer & Matthewson, 2005).
Previous research studies demonstrate that in both children with autism and typically developing children acquiring English determiners, the article system parallels that of the adult Salish determiner system rather than that of adult English. According to these findings, this similarity can be explained by the fact that the Salish determiner system does not differentiate between common ground (A-type) contexts and speaker beliefs-only (B-type) contexts. It is precisely these two contexts that pose the greatest problems for both groups of children (evidently, much more for the autistic group because of their greater impairment in the Theory of Mind Hypothesis), as they believe that their own beliefs are shared by their interlocutor/hearer. As a result of this, English-speaking children with and without autism produce one article (the) in both adult A-type and B-type contexts and another one (a) in C-type contexts, which is similar to the use of determiners by Salish adult speakers. This next part of the paper will provide a slightly more detailed account of the previous research studies mentioned above.

---

3 A Theory of Mind is a psychological theory used to describe the ability to attribute and predict mental states of others, such as beliefs, intentions, feelings, desires, knowledge and point of view.


2.2 Earlier Studies in Acquisition

In his book *A first language: the early stages* (1973), a psycholinguistic analysis of language acquisition, Brown found that English-speaking children often use the definite determiner *the* out of the blue, as illustrated in (13).

(13) Sarah: Where’s the black tape?
Mother: What black tape?

Similarly, in his study (1979) Karmiloff-Smith found that francophone children in his study produce, until the age of eight, substantial numbers (63%) of definite determiners in indefinite contexts. Lastly, similar results were found in a study by Zehler and Brewer (1982) where the authors observed an over generation (38%) of definite determiners in indefinite contexts by English-speaking children (ages 2;9-3;1).

2.3 Recent Studies in Acquisition

i. Schaeffer & Matthewson Study (2005)

The main objective of Schaeffer & Matthewson study is to describe and examine the striking similarity between the usage of the article system by English-speaking children and that of Salish adults. According to the authors’ hypothesis, young TD children lack the Concept of Non-Shared Assumptions (CNSA) that states that speaker and hearer are always independent. The lack of this pragmatic concept leads to the speaker automatically attributing his/her own beliefs to those of the hearer. As a result, if a child attributes his/her beliefs to those of the hearer, he/she will not be able to differentiate between context A (believed by both speaker and hearer) and context B
(believed by speaker only). Based on this hypothesis, one of the authors’ major predictions is that the English-speaking child will “over generate” the definite article *the* in (adult) B contexts, which require the indefinite article *a*. In order to undertake their study, the authors carry out an elicited production task with 26 monolingual English-speaking children (age 2-4 years old) and 38 adult native speakers of English. The results obtained in this study are summarized in Table 4.

Table 4: Over generation of *the* in B-type contexts

<table>
<thead>
<tr>
<th>Age group</th>
<th><em>the</em> in B contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (2:1-3:10)</td>
<td>25% (19/76)</td>
</tr>
<tr>
<td>Adults</td>
<td>2% (2/13)</td>
</tr>
</tbody>
</table>

The results show that unlike the adults who almost never “over generate” the definite article *the* in B contexts (2% occurrences), the 2-3-year-old children tend to “over produce” the definite article in B contexts much more often (25% occurrences), confirming the hypothesis that due to the lack of the pragmatic Concept of Non-Shared Assumptions, English-speaking children do sometimes fail to differentiate between B contexts and A contexts, which leads to their striking similarity with the adult Salish speakers. An example of this over generation is given in (14).
(14) Situation: picture of Minnie Mouse who just finished drawing a car

Elmo: Hey, who is this?

Child: Minnie Mouse!

Elmo: And what did Minnie Mouse just do?

Child: draw the car

Child: paint the car

ii. Matthewson, Bryant & Roeper Study (2001)

The main objective of this study is to conduct an experiment which tests English-acquiring children’s comprehension of definite and indefinite articles. The authors of the study propose the following hypothesis: English-acquiring children go through a “Salish stage” in their determiner system. Hence, during the experiment, these children should accept sentences containing the even when the “familiarity” condition is not met. The children participating in the study are 25 English-speaking children (3-7 years old). The adult participants are 25 university students. The participants are first presented with the acted-out scenarios that they have to watch and after each scenario they are asked a yes-no question. The experiment consists of four types of test questions: a NP (predicted answer for English – Yes, for Salish – Yes), the NP (predicted answer for English – No, for Salish – Yes), it (predicted answer for English – No, for Salish – No), out-of-the-blue NP (predicted answer for English - challenge, for Salish – challenge or No). During the experiment, the authors are particularly attentive to the cases involving uses of the definite article (the) that should lead to either a presupposition failure or to a “no” answer for English-speaking
adults, but to a “yes” answer for Salish-speaking adults. The results of the study as well as an example of the NP question are given in Table 5.

### Table 5: Over generation of the in B-type contexts

<table>
<thead>
<tr>
<th>Experimental question</th>
<th>Adult English prediction</th>
<th>Salish stage prediction</th>
<th>Adult English Results</th>
<th>Child Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did Earnie wear the necklace?</td>
<td>no</td>
<td>yes</td>
<td>24/148 (16%)</td>
<td>108/1 50 (72%)</td>
</tr>
</tbody>
</table>

The results show that 72% of children examined answered “yes” to the NP questions, which is unacceptable in the English determiner system but acceptable in the Salish. Based on these results, the authors conclude that younger English-speaking children do indeed go through a “Salish stage” in their acquisition of the English determiner system.

### iii. Hewitt Study (1997)

The main objective of the study is to examine the relationship between a deficit in the ability to consider the mental state of the listener and the pragmatic difficulties found in children with autism. One of the domains selected for the analysis is the use of definite vs. indefinite articles. The authors hypothesize that children with autism will not have any difficulty introducing referents into discourse with indefinite articles, but that definite articles will pose a greater problem due to their heavier inferential burden. In order to undertake this study, the authors explore a large corpus of naturalistic conversational data, where the children with autism share their personal experiences in a naturalistic context. The children participating in this study are 6
young adult males with autism, ranging in age from 18 to 21. The results obtained in this study are summarized in Table 6.

Table 6: The misuse of *the* by young adults with autism

<table>
<thead>
<tr>
<th>Referring Expressions</th>
<th>Percent problematic</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>a/an</em></td>
<td>3% (7/227)</td>
</tr>
<tr>
<td><em>the</em> (definite references)</td>
<td>27% (48/180)</td>
</tr>
</tbody>
</table>

The results confirm the authors’ hypothesis and show that the autistic children have much more difficulty using definite reference (*the*), at 27% problematic, than indefinite reference (*a/an*), at 3% problematic. An example of this problematic use of the definite determiner ‘*the*’ is shown in (15).

(15) A: I went on the train ride.

L: Oh, you went on the train ride too?

A: Come out the tunnel, train

L: Was there a tunnel?

A: Train

3. Present Analysis

The objective of the present analysis is to explore whether children with autism and their typically developing counterparts go through the “Salish period” in their acquisition of English determiners. Similarly to the results of the previous studies, the use of definite articles poses a
particular challenge for both typically developing children and for children with autism. While children with autism misuse the definite article (*the*), in that they use it even when introducing new referents into discourse, typically developing children “over generate” definite article (*the*) in B contexts which leads to the striking similarity between the article use of English-speaking children and the article use of Salish-speaking adults. In the brief quantitative analysis presented here, we will examine if this is also the case when comparing the two groups of children: the English-speaking children with autism and the English-speaking typically developing children. This analysis will allow us to investigate how a grammatical phenomenon such as definite DPs can be incorporated into the study of pragmatic deficits in children with autism.

3.1 Method

In order to undertake this brief quantitative analysis, we selected two corpuses from the CHILDES corpora: one corpus from the Flusberg clinical database (a child with autism - Rick 4;7 years old) and one corpus from the Brown database (a typically developing child - Eve 1;6–2;3). The two corpuses were matched based on their MLU. We analyzed the use of the definite articles in five files from each corpus. We identified the problematic use of the definite determiner by isolating cases where a subject used the definite DP in the indefinite context (B context – when it is not part of common ground between the speaker and the hearer). During the analysis, we excluded utterances involving the definite DPs that were imitated. In order to see whether an entity has been introduced earlier in the discourse, we took into account the contextual information.
3.2 Results

The results of the analysis for the corpus Rick (4;7) show that the autistic child uses the definite determiner *the* in B-type context (believed by speaker only – not part of common ground). These results are summarized in Table 7.

Table 7: Use of definite articles by a subject with autism

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>AGE</th>
<th>MLU</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rick 11</td>
<td>4;7</td>
<td>2.93</td>
<td>55% problematic (11/20)</td>
</tr>
<tr>
<td>Rick 10</td>
<td>4;7</td>
<td>2.48</td>
<td>45% problematic (5/11)</td>
</tr>
<tr>
<td>Rick 09</td>
<td></td>
<td>2.67</td>
<td>33% problematic (2/6)</td>
</tr>
<tr>
<td>Rick 07</td>
<td></td>
<td>2.29</td>
<td>20% problematic (1/5)</td>
</tr>
<tr>
<td>Rick 06</td>
<td></td>
<td>2.50</td>
<td>7% problematic (2/28)</td>
</tr>
</tbody>
</table>

In other words, the child introduces a new referent by using the definite article *the*, which leaves the listener confused and obligated to request clarification. This confusion can, in turn, lead to a significant number of conversational breakdowns. An example of this is given in (16).

(16) CHI: Where’s the bonnet?

MOT: The bonnet? (Rick 11)

It is worthwhile to note that in the case of the file Rick 06, the use of the definite determiner (*the*) is only problematic 7% of the time due to the presence of an entity in the speaker’s visual fields.
Similarly, the results of the analysis for the corpus Eve (1;6–2;3) show that a typically-developing child uses the definite determiner (*the*) in indefinite B-type context (believed by speaker only – not part of common ground). These results are summarized in Table 8.

Table 8: Use of definite articles by a typically developing subject

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>AGE</th>
<th>MLU</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eve 10</td>
<td></td>
<td>2.86</td>
<td>20% problematic (5/24)</td>
</tr>
<tr>
<td>Eve 09</td>
<td>1;6–2;3</td>
<td>2.84</td>
<td>18% problematic (4/22)</td>
</tr>
<tr>
<td>Eve 08</td>
<td></td>
<td>2.51</td>
<td>40% problematic (8/20)</td>
</tr>
<tr>
<td>Eve 07</td>
<td></td>
<td>2.25</td>
<td>50% problematic (2/4)</td>
</tr>
<tr>
<td>Eve 06</td>
<td></td>
<td>2.27</td>
<td>0% problematic (0/2)</td>
</tr>
</tbody>
</table>

Once again, the child introduces a new referent by using the definite article *the*, leaving the listener disoriented and obliged to request clarification. An example of this is given in (17).

(17) MOT: Where are you going to be writing?

CHI: Write the paper

MOT: Oh, on Frasier’s paper. (Eve 08)
In the case of the file Eve 06, the problematic use of the definite determiner (*the*) is listed at 0% due to the omission of the articles in this file.

### 3.3 Discussion and Conclusion

The results of the research presented in this paper confirm the hypothesis that both groups of children examined go through a “Salish stage” in their acquisition of the English determiner system. Both the typically developing child and the child with autism acquiring English determiners go through a stage where their article system parallels that of the adult Salish determiner system rather than that of the adult English system. This similarity can be explained by the fact that the Salish determiner system does not differentiate between common ground (A) contexts and speaker beliefs-only (B) contexts. It is precisely these two contexts that pose significant problems for both groups of children, as they mistakenly believe that their own beliefs are shared by their interlocutor/hearer. As we have shown in our preliminary analysis, the use of the definite determiner *the* in B-type contexts leaves the hearer confused which, in turn, causes certain social awkwardness in the conversation. Since children with autism show a particular difficulty in conversational skills, further studies examining the use of definite determiners by these children may be of value. More particularly, a morpho-syntactic phenomenon such as production/comprehension of definite DPs could be incorporated into the study of pragmatic deficits in children with autism in the sense that it could allow us to see whether the problematic use of the definite DPs by children with autism results in the significant number of conversational breakdowns observed in this population.
3.4 Limitations

In interpreting these findings, it is important to take into consideration the following limitations. First, a far more detailed data analysis and a larger sample size are needed to deliver more definite conclusions. Second, because we are using data from a pre-existing database, we are unable to control for any of the contextual variables which may or may not have contributed to the choice of the determiner used. Finally, in order to allow for a more complete analysis, future studies should take into account not only the use of definite DPs, but also the use of indefinite DPs.

References


