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Children's Acquisition of Negative Concord and Negative Polarity Items in English

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Abstract

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English-speaking children who do not speak dialects with negative concord constructions, in which two negative words in a sentence are interpreted as one force of negation, have been reported to produce these constructions between the ages of 2 and 6. Many of these sentences could also be constructed using negative polarity items, words such as *any* that are not negative, but require a negative environment to be grammatical. This paper examines the possibility that children who do not have a negative concord grammar are mistaking negative polarity items and negative words to be interchangeable. All corpora in the Childes corpus with children between the ages of 2 and 6 speaking either North American or British English were searched for constructions using negative words and negative polarity items to test this theory. They were first examined for the extent that children made this mistake within sentential negation and secondly to examine other contexts in which they may have made this mistake. Children made this mistake within sentential negation far less frequently than they would be expected to if they were producing a negative concord grammar, suggesting that they are making a different mistake, like the one proposed in this paper. Children also make this mistake in fragment answers, in which the negative polarity item or negative word stands alone, but did not make this mistake in if-clauses or questions. This suggests the possibility that children are not hypothesizing a negative concord grammar but may be judging negative polarity items and negative words to be interchangeable in some contexts, but not in others.

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1. Introduction

Children acquiring some dialects of English produce negative sentences that do not appear to correspond with their parents' grammar. In these sentences there are two negatives, but the second negative agrees with the first rather than acting as its own force of negation:

(1) "But he does **not** have **nothing** to eat." - CHI, Ellis Weismer Corpus

This child from the Ellis Weismer corpus (Weismer et al., 2013) has said a completely grammatical English sentence, but the meaning she intended to convey is a meaning that would not be interpreted in their parents' grammar. In their parent's grammar both *not* and *nothing* would have their own negation producing an interpretation along the lines of "he has something to eat." Based on context, this child meant to say that "he does not have anything to eat." In negative concord (to be defined below) dialects, this interpretation would be grammatical for both the parents and the children. However, the focus of this paper is the phenomenon of children producing these constructions in the absence of them from their parent's grammar.

This phenomenon typically occurs in English-speaking children between the ages of two and six. By the age of six, most children have been recorded to grow out of it (Thornton, Notley, Moscati, & Crain, 2016) and have the same interpretations of the above construction as their parents. However, this is still an unusual phenomenon because the children who produce this are producing constructions that they have not been exposed to. Since their communities do not speak dialects with these constructions, it is not clear why they should be producing them; given a lack of input for this stimulus an alternative explanation for why children produce this is required.

One proposed explanation, by Blanchette (2016, 2017, 2018), has been that the adults in these communities do have this construction in their grammar: standard English is a negative concord language. Adults do not produce, but can correctly interpret, the construction because "normative pressures shape its use and acceptability…as it remains heavily socially stigmatized in contemporary English- speaking society," (Blanchette, Nadeu, Yeaton, & Deprez, 2018. 13). Under this framework, children use negative concord because it is grammatical in standard English. They stop producing it because they learn that it is deemed socially unacceptable and, like their parents, refrain from producing it moving forward.

Due to a lack of evidence for a latent negative concord grammar, I propose that children are mistaking the category of certain negative words, believing them to be a class of words that in themselves are not negative, but must be licensed within a negative context. In other words, the child in (1) is confusing the licensing requirements of *nothing* and *anything* and intending to produce a sentence that means "he does not have anything to eat." This would lead them to create the constructions in (1) without having a different grammar from their parents.

(2) Proposal

a. Children are not acquiring a negative concord grammar, but instead are incorrectly judging n-words and *any* NPIs to have the same licensing requirements and to be interchangeable in producing an NPI construction.

Thus, I propose that children are mistaking the words *anything* and *nothing* to be of the same category and able to create the same constructions both within and without sentential negation.

To examine this, I use the North American and UK English corpora from the Childes Database (MacWhinney, 2000). I first look at the extent that children actually produce

constructions like (1) relative to the extent that they produce similar constructions using words like *anything*.

(3) Research Question Number One

1. To what extent do English-speaking children produce negative concord constructions?

If children have a negative concord grammar, latent or otherwise, they would be expected to make mistakes in production. They would be expected to produce negative concord sentences within a context of sentential negation, but they would not be expected to use n-words in any other context where *any* NPIs are acceptable. In addition, *any* NPIs would not be expected to be used in contexts where n-words are acceptable, but *any* NPIs are not. However, if my prediction in (2) is correct, children should make mistakes in mixing up the use of *any* NPIs and n-words in multiple contexts, not simply sentential negation. After examining the extent that children make this mistake in sentential negation, I examine other contexts in which a n-words and NPIs are used to determine if children are making this mistake outside of the context of sentential negation.

This paper begins with an explanation of the terms and constructions discussed throughout. It then proceeds to previous research done on standard English-speaking children and adults' grammar and acquisition of NPIs and sentences with two negatives. I then explain my research questions and proposal more extensively, before discussing the corpus study conducted. In part one, I examine the extent to which English speaking children produce negative concord constructions. I continue in part two to examine places outside of sentential negation where children could also mix up NPIs and n-words.

2. Background

2.1. Defining NPIs and Negative Concord

In English, sentential negation licenses a specific class of words called negative polarity items (NPIs). These are words that in themselves are not negative, but that require a negative environment to be used grammatically such as *anything*, *any*, or *anyone* (Tieu & Lidz, 2016). In an affirmative context, these words either take on a different meaning or are ungrammatical, as in (8) through (11).

(4) "Let's not do **any** work yet" - CHI, Thomas Corpus (Liven et al, 2009)

(5) "I couldn't find **anywhere** to hide." CHI, Carterette Corpus (Caterette and Jones, 1974)

(6) "It's not blue **anymore**" - Carl, Manchester Corpus (Theakston, 2001)

(7) "You're not supposed to tell **anyone**" - VAL, Gathercole/Burns Corpus (Gathercole, 1986)

(8) ?Let's do **any** work yet

(9) ?I could find **anywhere** to hide.

(10) ?It's blue **anymore**

(11) ?You're supposed to tell **anyone**

In (4), (5), (6), and (7) the negation licenses the words *any*, *anywhere*, *anymore*, and *anyone* to expand the scope of the sentence (Tieu & Lidz, 2016). Yet, without the negation the sentences do not carry the same meaning. Example (8) is an ungrammatical construction. Example (9) could be interpreted as grammatical, but with a free-choice reading of *anywhere* rather than an NPI construction; this reading would mean something along the lines of "I can find any number of places to hide." Example (10) is grammatical in some dialects of English to mean that it used to

be blue but is no longer, but in many standard English dialects is ungrammatical. Example (10) is, once-again, a free choice meaning of any; rather than being licensed by negation, the word *any* allows the hearer to tell anyone they chose. None of these sentences are grammatical as NPI constructions, as the respective NPIs are not licensed by a negative context (Tieu & Lidz, 2016). These constructions, with NPIs, are only grammatical within the context of sentential negation.

Though this paper focuses largely on NPIs using the word *any*, not all NPIs use this word. Other NPIs in the English language include *yet*, *ever*, and *either.* These words are similarly only licensed within a negative context and are ungrammatical or elicit different interpretations without the negation. Even though some dialects of English have other constructions that overlap in meaning with certain NPIs, all dialects of English permit NPI use. These set of words are licensed by syntactic negation to create a construction that widens the domain of a sentence, for all English speakers (Tieu & Lidz, 2016).

2.2. Negative Concord

Negative concord (NC) is a form of negation in which additional negative words in a sentence agree with the sentential negation. Both negative words are interpreted together as one force of negation rather than two (Blanchette, 2016, 2017; Blanchette et al., 2018; Coles-White, 2004; Thornton et al., 2016).

(12) “I’m not gonna go nowhere” – Boo, Hall Corpus

(13) “That’s not no frisbee” – STE, Evans Corpus

A sentence in (12), under a negative concord reading, would be interpreted as saying that they are not going anywhere. Under the same reading, sentence two would be interpreted as saying that it is not a frisbee. The *nowhere* in (12) and *no* in (13) demonstrate agreement, rather than

acting as their own force of negation. Once native English-speaking children have an adult-like grasp on sentential negation, they have to determine if their dialect of English uses negative concord or not (Coles-White, 2004; Thornton et al., 2016).

The words used in NC constructions are known as n-words. N-words are a class of negative words that when licensed by sentential negation produce a negative concord sentence (Thornton et al., 2016). These include but are not limited to: nothing, no one, and nowhere. In (12) *nowhere* functions in agreement with the sentential negation in the sentence, it does not add its own force of negation. Similarly, in sentence (13) *no* adds emphasis, but it does not provide its own force of negation.

2.3. NPIs and Negative Concord in English

As previously noted, some dialects of English permit a NC construction while others do not. For the purposes of this paper, standard English refers to all dialects of English in which negative concord constructions are ungrammatical. This form of English is classified as a double negation language that does not allow expressions of negative concord (Thornton et al., 2016). Thus, sentences like those in (1), would be interpreted as meaning "he has something to eat."

(1) "But he does **not** have **nothing** to eat." - CHI, Ellis Weismer Corpus (Weismer et al. 2013)

Following, non-standard English refers to all dialects of English that permit negative concord constructions. These dialects include but are not limited to African American English, Appalachian English, and Belfast English (Thornton et al., 2016). In these dialects, sentences such as those in (1) would be interpreted as saying "he doesn't have anything to eat." The two negations in non-standard English are interpreted as only one force.

Although the above paragraph holds true for current variations of English, historically this has not been the case. In Old and Middle English texts negative concord constructions were used for academic and general contexts as in (14) (Blanchette, 2017).

(14) Old English (thirteenth century; ANCRIW, II.97.1168)

He ne cnaweð nan mon

He neg knows no man

“he knows no man”

Over time negative concord was dropped out of the grammar of some dialects and became prescriptively stigmatized.

Especially in light of the prescriptive stigmatization of negative concord, it is important to note that the terminology of standard and non-standard English is controversial and may carry implications for or value judgements on different dialects. I do not intend to make any such claims in this paper. The terminology of standard and non-standard English is solely used as umbrella terminology to refer to groups of dialects in the English language. The use of these terms does not endorse or reflect any sort of claims that make prescriptive judgments on these grammars or their speakers.

2.4. Licensing Conditions of NPIs and N-Words

Even in dialects of English without negative concord, sentences with two negatives are grammatical. In these dialects, a construction of this type elicits an interpretation in which both negatives are interpreted as a separate force (Thornton et al., 2016). This is called a double

negation reading. In (12), a double negation reading would mean “I’m going somewhere.” (13) would mean “that is a Frisbee.” In dialects without with double negation, NPIs can create the same meaning as NC as in (15).

(15) I’m not gonna go anywhere.

Negative concord constructions and NPIs can overlap in their usage and meaning, but they are not analogous structures (Carstens & Mletshe, 2016).

Recently it has been proposed by Giannakidou and Zeijlstra (2017) that n-words are a subset of NPIs due to their respective licensing conditions. NPIs occur, generally, in negative sentences (Sailer, n.d.; Tieu & Lidz, 2016). Within these sentences NPIs must be within the scope of negation, as in (16) but not (17) (Giannakidou & Zeijlstra, 2017).

(16) Bill didn’t see any student

(17) *Any student didn’t see bill

NPIs can also occur in some non-negative contexts such as questions and if clauses as in ((18)) and (19). (Giannakidou & Zeijlstra, 2017)

(18) Is there anyone here who knows calculus?

(19) If anyone knows calculus, let me know.

These are also places where n-words are acceptable, but without a negative concord reading, which elicits a different interpretation of the sentence, as in (20) and (21).

(20) Is there no one here who knows calculus?

(21) If no one knows calculus, let me know.

The use and licensing of NPIs is always strict, meaning when it occurs in a negative environment, the negative marker must be explicit. They cannot self-license, nor can the negative marker be unspoken (Giannakidou & Zeijlstra, 2017). This is different from n-words, which can self-license (Giannakidou & Zeijlstra, 2017). This is particularly notable in English with regard to fragment answers to questions.

(22) Q: Who here knows calculus?

A: No one.

(23) Q: Who here knows calculus?

A: *Anyone.

The response in (22) is grammatical because n-words do not need an explicit negative marker in order to be licensed. Example (23) is ungrammatical because NPIs cannot self-license.

N-words share similar licensing requirements to NPIs. However, they can also exist in a NC structure and, unlike NPIs, as a fragment answer with negative meaning (Giannakidou & Zeijlstra, 2017). N-words are easiest to define based on their usage and environment in that they can exhibit agreement with negation creating a single negation reading. It has been proposed that "n-words are NPIs because they require a negative marker to be present" (Giannakidou & Zeijlstra, 2017). They exist as a special kind of NPIs because they can self-license, but the requirement of a negative environment in order to be grammatical makes them NPIs.

3. Previous Studies on Acquisition of Negation in English

Though some dialects of English do not use negative concord interpretations, native speaking children in the early stages of learning standard English have been observed using negative concord constructions in addition to negative polarity items to elicit the same meaning

(Blanchette et al., 2018). They produce these despite a lack of input from surrounding adult speakers of standard English and eventually, typically before the age of 5, stop producing these constructions and instead use NPIs exclusively in these contexts (Thornton et al., 2016).

3.1. Blanchette's Studies on Negative Concord in English-Speaking Adults

Blanchette (2016) tested adult's interpretation of ambiguous DN or NC sentences. Participants were given sentences with two negatives, one group with contexts that favored either DN or NC and one group with no context. They were asked to rate their acceptableness. Overall, adult speakers of standard English interpret negative concord readings easier than a double negative reading, but the use of only one negative is preferred to both DN and NC interpretations. For example, participants were given a situation in which nobody invited to a party showed up and were asked if it would be natural for them to say, "nobody didn't come to my party." They were also asked if it would be more natural for them to respond with either (24) or (25) in the appropriate context.

(24) "I didn't have no dessert"

(25) "I didn't have any dessert"

Blanchette repeated this experiment but with only one negative in the sentence. She found that while sentences with one negative were acceptable as a whole, sentences with two negatives were overall rated as unacceptable. For sentences with two negatives, participants still rated sentences in NC contexts as unacceptable, but generally found them more acceptable than sentences in DN contexts.

Blanchette (2017) replicated the study in Blanchette (2016) with additional considerations for the position of negative words in subject or object positions. The same results

as in Blanchette (2016) were found, suggesting a gradient acceptability for negative phrases in English with adults of all dialects favoring a NC interpretation. The NC interpretation was found to be the default interpretation when no context was given, regardless of the position on the negative word.

Blanchette et al. (2018) once again, replicated the same study with additional considerations for how auditory cues and speaker intent affected the listener's interpretation of a sentence with two negatives. Sentences such as (26) and (27) were recorded with context that favored one interpretation.

(26) "no one will love nothing when it gets cold"

(27) "Line won't load nothing on the truck"

Participants then listened to the sentences without context and were asked to interpret them. They found that both speaker intent and auditory cues affect listener's interpretations of the sentences, but that listeners still favor a NC interpretation overall. They found that in general, sentences that contain two negatives were unacceptable for all English speakers, but that when two negatives occurred in a sentence, adults favored a NC interpretation (2016, 2017). Though adults favored a NC interpretation, both DN interpretations and NC interpretations were available to all English-speaking adults regardless of dialect (2018). In all three papers, Blanchette expands these findings to hypothesize that all dialects of English are NC languages, but that social pressure has shifted some dialects of English to use double negatives against natural grammaticality judgements. For the purposes of this paper, the main implications of Blanchette's studies are that individuals prefer an NC interpretation over a DN interpretation, but that overall all sentences with two negatives are judged as ungrammatical. In addition,

Blanchette's extrapolation that NC and DN are both grammatical in standard English will be addressed and disputed in later sections.

To explain distinctions between standard and non-standard English, Blanchette proposes a micro-parametric approach (Blanchette, 2016, 2017; Blanchette et al., 2018). Blanchette proposes that all English speakers have access to NC, but the level of access depends on both the dialect and the given sentence. For example, some dialects of English allow NC in which the n-word is in the subject position and some do not. However, Blanchette claims that all English speakers have access to NC at some level and that "while NC may be unacceptable and unrealized in standardized English, it continues to be grammatical" (Blanchette, 2017). In the case of standard English "normative pressures shape [NC's] use and acceptability" Blanchette, 2017). Thus, speakers of standard English do not use NC constructions because they have been socialized not to. They are still able to correctly interpret them, but they do not produce them because of sociolinguistic pressure.

Though this paper does not address the ability of adults who do not produce negative concord to successfully interpret negative concord constructions, it is possible to account for these findings within the context of the given hypothesis. English is spoken all over the world and in many countries in which it is spoken, particularly the United States and United Kingdom, dialects that do and do not have negative concord exist in the same geographic communities. Thus, it is possible that adults who do not produce negative concord can successfully interpret it simply because they are exposed to it. Even though, in my hypothesis, it would not be in their grammar they would be able to interpret it because they have learned its meaning through context clues and interactions with speakers of negative concord dialects.

3.2. *Sentential Negation in Early Child English* (Thornton and Tessan, 2013)

Thornton and Tessan (2013) finds evidence to suggest that children, regardless of their exposure to negative concord and double negation, acquire an NC interpretation of sentences with two negatives. They focus on children's shift between NC and DN grammars. Pulling data from three corpora, they found that a shift between grammars occurs in native English-speaking children. All children produced sentences with both NC and DN such as "he won't have anything." And "I just don't want nothing in there." They found that children acquire negative concord at different times and that this interacts with children's use of negative polarity items in different ways. One child continued to use NC and NPIs in parallel, while another had NPIs drop out of their speech in the brief period where they used negative concord. This study is most relevant for the purposes of this paper in that it shows that children acquiring standard English do produce and interpret sentences with NC readings. This study was done using a subset of the data that I use. My study expands this research to look at NC use and NPIs across a significantly larger set of data from the childes corpus to examine the extent that this occurs among children ages 2 to 6.

3.3. *Two Negations for the Price of One* (Thornton et al. 2016)

Thornton et al. (2016) also tested English speaker's preferences for NC interpretations of sentences. Both children and adults were read a story then given test sentences, spoken by a puppet, about said story that were ambiguous between DN and NC readings. The puppet would be asked questions like "in that story, did the girl who skipped buy nothing?" and the puppet would respond along the lines of "the girl who skipped didn't buy nothing." Participants were then asked to provide a true or false judgement for the sentence. Adults overwhelmingly accepted the DN reading, but children accepted it only 25% of the time, supporting the

hypothesis that children favor semantic negation in initially hypothesizing English as a NC language. Both papers extend these findings to suggest that children initially hypothesize that English has solely a NC interpretation, but their input then corrects this hypothesis. This authorizes double negation, eventually leading to a strong preference for double negation over NC in standard English speakers.

3.4. *The Emergence of Barrier to Wh-Movement, Negative Concord, and Quantification* **(Coles-White, 2004)**

Coles-White (2004) found that both children speaking English dialects with either NC or DN were able to understand both interpretations of the sentences such as (28) and (29):

(28) He didn't feed the baby with no hair.

(29) He didn't feed the baby with no bottle

It was easier for all children, however, to understand sentences presented in an NC context than a double negation context. These studies have implications for this paper in that they show that children acquiring standard English favor an NC interpretation over a DN interpretation. However, Thornton et al. (year) notes that this perceived favor toward an NC interpretation may be skewed as a DN reading may be more complex to process than an NC negation. Thus, children would simply be favoring the easier interpretation to process rather than indicating a key aspect of their grammar.

Overall experimental work with children has shown that children initially prefer a NC interpretation of sentences but has found a mix of results for standard English-speaking adults. Though standard English-speaking children's production has not been significantly measured,

their interpretation has strongly supported theories that they initially hypothesize English is a negative concord language.

3.5. *Sociolinguistic Variation in Brown's Sarah Corpus* (Miller, 2012)

Focusing on both NPIs and negation, Miller (2012) looked through the Brown corpus (Brown, R, 1973) and compared the speech of Sarah, a speaker of a NC dialect, with her parents, also speakers of a NC dialect. Sarah produced negative concord and NPIs beginning at around 3;6 and maintained their usage throughout the recordings. Sarah preferred to use NC when using the words nothing or anything but preferred to use NPIs when using the words none or any. Overall, Sarah preferred to use NC over NPIs. This shows that children can produce both NC and NPIs can use them in similar contexts and that children who produce NC also produce NPIs.

4. Research Questions

This research is designed to do two things: to determine the extent native English-speaking children produce negative concord and negative polarity item constructions and to determine, if possible, an alternative explanation to Blanchette's for standard English-speaking children's production of negative concord.

(30) Research Questions

a. To what extent do English-speaking children produce negative concord constructions?

b. Do English-speaking children make similar mistakes in other contexts where *any* NPIs or n-words are acceptable?

As summarized in previous sections, the two main theories of why standard English-speaking children produce negative concord are that children either hypothesize a negative concord grammar and then correct to a double negation grammar or Blanchette's theory that they have and retain a negative concord grammar but that social pressures prevent adults and children from producing negative concord.

I, first, believe that sociolinguistic pressure is not strong enough to prevent children or adults from producing a construction that is grammatical in their dialect. Other constructions, such as split-infinitives and the usages of *who* versus *whom*, are prescriptively stigmatized but still occur across standard English; sociolinguistic pressure is not strong enough to prevent speakers from producing them. Thus, a different explanation is needed for why standard-English speaking adults do not produce negative concord, but why children acquiring standard-English produce it.

Secondly, I believe that standard-English speaking children producing a negative concord grammar do not need to be acquiring a negative concord grammar in order for them to produce sentences with negative concord. Their negative concord grammar would not explain children's use of *any* NPIs in contexts where n-words would be grammatical in this construction. I believe that there is an explanation for this phenomenon that does not involve children correcting their grammar in regard to negation in standard English.

Previous research has established that children are able to interpret utterances with negative concord but have not researched the extent to which children produce these constructions. The sole studies that have examined standard-English speaking children's production of negative concord have focused on a small subset of children that do produce negative concord. Previous research has also not substantially examined negative concord's

relationship to NPIs in children's acquisition in standard English. The majority of studies focusing on negative concord in standard English examine it in relationship to double negation. This, as multiple studies have noted, is confounded by the additional processing required in interpreting and producing sentences with double negation. It is unclear whether children actually prefer a negative concord grammar to a double negation grammar or if children simply do not have the processing ability to interpret a double negation reading.

In this study, I compare *any* NPIs to n-words in the context of sentential negation. I compare them to NPIs, rather than double negation, because NPIs and n-words in negative concord constructions can occur in minimal pairs and can be used to mean similar things in negative concord and double negation dialects as in (31) and (32).

(31) "I'm not playing no more" - Mig, Hall Corpus (Hall et al, 1984)

(32) "I'm not joking anymore" - Rob, Hall Corpus (Hall et al, 1984)

Both of the above sentences mean the same thing and require similar processing levels to interpret and produce. If (32) was interpreted in a double negation grammar, it would be difficult to process and would elicit a meaning such as "I am still playing," which, in standard English would rarely be used. Standard English speakers overwhelmingly prefer to use sentences with just one negative (Blanchette, 2017). In addition, speakers of both types of dialects have and produce NPI constructions using multiple different types of NPIs. Thus, my study compares two grammatical constructions that occur regularly in speech and differ between negative concord and double negative dialects to produce the same meaning using differing constructions.

This research initially looks at the extent to which children do produce negative concord constructions in order to provide statistical evidence, beyond the anecdotal evidence already

present, for this phenomenon. This will be relevant in generalizing a theory of standard English-speaking children's production of negative concord as the theory should not only explain why it happens, but why either all or only a portion of standard-English speaking children produce these constructions. This study then looks to explain the first findings with a theory of acquisition apart from the above-mentioned theories that accounts for the production and loss of negative concord and the maintenance of *any* NPIs.

5. Part One

If children do have a negative concord grammar, they would be expected to produce sentences with a negative concord construction as opposed to sentences using *any* NPIs in contexts where both are acceptable. Though they may not produce negative concord constructions all the time given that they do have an NPI grammar, they would be expected to make a significant number of mistakes in also producing negative concord sentences. This part examines the extent that children make these mistakes.

5.1. Methods

Using the Childes database (MacWhinney, 2000), a collection of language acquisition data from other linguists' studies, all studies with either North American or British English with children between the ages of 2 and 6 were searched. Both North American and British English were searched because both varieties of English contain standard dialects and the Childes database had a large collection of studies from both, providing a wide basis for analysis. Of all of the corpora used, only two, Brown and Hall, included children speaking non-standard dialects of

English. Of the remaining corpora 15[1] were confirmed speakers of standard English. The remaining corpora did not show any marked features of a non-standard dialect and were assumed to be children acquiring a standard dialect of English. Children between the ages of 2 and 6 were searched as these are the range of ages in which standard English-speaking children have been observed to produce negative concord constructions. All corpora which had children between these ages were searched; some corpora included ages either above or below this. If the data was from the same child and included in the same file it was also searched and included, even if the child was slightly above or below the target age range.

These corpora were searched for five morphological constructions coding for NPIs or NC using the CLAN program (MacWhinney, 2000). All words categorized as indefinite pronouns or quantifiers occurring in utterances with negative words, and all utterances with two negative words were searched for. Quantifiers included words such as *any* that quantify the number of things or individuals involved. Indefinite pronouns included words such as *anyone* and *anything* that indicate a person or object. Negative words included were both words like *no* and *not*, which license NPIs and n-words such as *nobody* and *nothing*. These three categories of words encompassed all *any* NPIs, n-words, and other negative words that would license them. They were searched for in both contexts where the negative word occurred initially and well as contexts where the negative word occurred in the sentence after the NPI or n-word.

These combinations of search strings pulled a large amount of utterances from the corpora, most of which were excluded from the study. If an indefinite pronoun or quantifier was not an *any* NPI or an n-word, such as the words *one* and *some*, the utterance was excluded. If an

[1] These fifteen are: Brown, Braunwald, Carterettem Clark, Demetra, Ellis Weismer, Gleason, Haggerty, Hall, Kuczaj, MacWhinney, Sprott, Warren, and Weist.

utterance was a sentence fragment, such as the utterance "not anyone," it was also excluded; without a verb it was unclear if a sentence was an NPI or NC construction or what the speaker intended to mean. The resulting utterances were all clear cases of NPI or NC constructions in complete sentences. These utterances were then analyzed for construction, NPI/n-word position, licensing conditions, age, and dialect.

5.2. Results

Across all 118 children in North American and UK English corpora, 95 produced NPIs, while 45 produced negative concord. The 95 children producing NPIs had 527 utterances. The 45 children producing negative concord had 104 utterances. The average age that each utterance with NPIs was produced NPIs was 3.28. The average age that each utterance with NPIs that children produced negative concord was 3.59.

Results for All Children		
	NPIs	**Negative Concord**
Number of Utterances	522	103
Number of Children Producing	95	46
Average Age Produced	3.28	3.59

Across the 95 children producing NPIs, 73 of them produced exclusively NPIs across 191 utterances. Of the 45 children producing negative concord, 25 of them produced exclusively negative concord across 59 utterances. 21 children produced both NC and NPIs. The children who produced only NPIs produced them at an average age of 3.26. The children who produced only negative concord produced it at an average age of 3.17.

Results for All Children by Child's Production			
	Children Only Producing NPIs	**Children Only Producing Negative Concord**	**Children Producing Both NPIs and Negative Concord**
Number of Utterances	191	59	381
Number of Children Producing	73	25	21
Average Age Produced	3.26	3.17	3.34

Results for Children Producing Both NC and NPIs				
Corpus / Child	**Number of NPIs**	**Number of NC**	**Total Utterances**	**Ratio of NPIs to NC**
Thommas / Chi	219	4	223	219:4
Kuczaj / Chi	33	1	34	33:1
MacWhinney / Chi	21	1	22	21:1
Lara / Chi	6	1	7	6:1
MEM / Fraser	18	3	21	6:1
Braunwald / Chi	4	1	5	4:1
Ellis W / Chi	3	1	4	3:1
Ellis W / Chi	3	1	4	3:1

Cruttenden / Jane	2	1	3	2:1
Nelson / Chi	2	1	3	2:1
Weist / Roman	2	1	3	2:1
Hall / Boo	6	4	10	3:2
Brown / Sarah	3	3	6	1:1
Fletcher / Chi	1	1	2	1:1
Hall / Chj	1	1	2	1:1
Hall / Jaf	1	1	2	1:1
Hall / Kag	1	1	2	1:1
Hall / Rob	1	1	2	1:1
Hall / Sat	1	1	2	1:1
Sawyer / JW	1	1	2	1:1
Wells / Jonathan	1	1	2	1:1
Brown / Adam	6	16	22	3:8

5.2.1. Negative Concord

In total, the children who produced both negative concord and negative polarity items produced 47 utterances of negative concord. The first instance was at 1;11, and it was the only instance of negative concord by the speaker. Seventeen of the 21 children only produced one instance of negative concord. The remainder produced either three or four utterances with negative concord, with the exception of Adam from the Brown corpus who produced 16 total utterances using negative concord.

5.2.2. Negative Polarity Items

In total, the children who produced both negative concord and negative polarity items produced 332 utterances using negative polarity items. The first instance was at 1:10, and the speaker continued to produce other instances using NPIs at a later age as well. Only six of the 21 children produced one instance of NPIs. Of these six children, all six also only produced one instance of negative concord. This indicates a lack of data surrounding these children, rather than simply a lack of production of one construction or the other. The remaining children produced a wide number of instances ranging between two and thirty-three, with one child who produced 219 utterances using NPIs.

Overall, most children did not produce negative concord constructions although some children did. Among those who produced utterances with NC half produced solely NC, while half produced both NC and NPIs. Those who produced both types of constructions produced them in similar contexts and at similar times, but mostly used NPIs more often than NC.

5.3. Analysis

The first inference that can be pulled from this data is that some standard English-speaking children are producing NC between the ages of 2 and 6. However, most standard English-speaking children are not. When standard-English speaking children produce NC, it is used in the same contexts as NPI. It is used at similar times as NPIs, and both constructions are being used correctly within a context of sentential negation.

The use of *any* NPIs and n-words in similar contexts can be seen in across corpora as children use n-words and *any* NPIs in interchangeable contexts, as in (32) and (33).

(32) “I’m not playing no more” - Mig, Hall Corpus, 4;6-5, (Hall et al, 1984)

(33) “I’m not joking anymore” - Rob, Hall Corpus. 4;6-5, (Hall et al, 1984)

Four contexts were identified in which NPIs and n-words both occurred: subject position, object position, as an adjective modifying an object, and as an adverb. As shown in the examples above, each of these contexts for either NPIS or n-words have parallel structures as well as contexts.

N-words and NPIs also emerge at the same time. NPIs first emerge with two instances before the age of two, at 1;10 and 1;11 respectively. They are then used heavily beginning at age two. The use of NPIs continues through the end of the data. NCs first emerges with one instance at 1;11 by one of the two speakers who used NPIs prior to age two. It is then used steadily beginning at age two. NC use continues through the end of the data.

Among children using negative concord, NPI use began at 1;10 and 1;11 respectively. Both children producing NPIs before the age of two also produced negative concord. Similar to all children using NPIs, children producing negative concord began producing NPIs steadily at two years and continue to produce them through the end of the data.

Thus, I propose that standard English-speaking children who are producing NC are learning the semantics of n-words and NPIs. They are correctly judging n-words to be NPIs. However, they are still distinguishing the context for which n-words and *any* NPIs can be used. Standard English-speaking children producing sentences with negative concord are judging n-words to have the same licensing requirements as *any* NPIs and as such believe they can be used in interchangeable contexts.

Within this theory, that fact that children produce more sentences with NPIs than with n-words can be explained through input. Standard English speaking children hear adults use NPIs in this context, therefore they favor using NPIs in this context even while making this mistake in their grammar.

At this stage, children are incorrectly judging NPIs like *any*, and n-words to be interchangeable, particularly within the context of sentential negation: both licensed by the negation to produce the same reading with one force of negation

6. Part Two

Based on the above research and predictions, I identified several different predictions for mistakes in children's speech, given the theory that children are making a mistake in interpreting the lexical nature of n-words in relation to *any* NPIs. These include other contexts in which *any* NPIs are used, such as if-clauses and questions, as in (33) and (34).

(33) "If you need any batteries" – Matt, Weist Corpus (Weist and Zevenbergen, 2008)

(34) Do you need any batteries?

Children who are incorrectly interpreting n-words as having the same meaning and use as *any* NPIs would be able to use the corresponding n-words in all of the above examples, as in (35) and (36).

(35) If you need no batteries

(36) *Do you need no batteries?

In standard English, (35) would be grammatical, but it would be a negative sentence interpreted as "if you don't need batteries." If my theory is correct, then children would use a sentence like

(35) to discuss the opposite condition: if one needs batteries. Likewise, if children were making the same mistake in (36), they would intend to discuss the affirmative: if one needs any batteries

Though these contexts are all grammatical for a speaker of standard English when an *any* NPI is used, they either mean something different or are ungrammatical when a corresponding n-word is used instead of the *any* NPI. However, if children are making a mistaking in judging *any* NPIs and n-words to be interchangeable, then they should also be producing n-words in all other cases in which they produce *any* NPIs. This would indicate that children are making a lexical mistake, rather than acquiring a negative concord grammar.

Likewise, if this theory is correct, children should be producing utterances with *any* NPIs in places where n-words are also grammatical since children are making a mistake in which they believe the two words to be interchangeable with the same licensing conditions. This would mean that not only do children believe that n-words have the same licensing conditions as *any* NPIs, but that *any* NPIs also have the licensing conditions of n-words. Therefore, children should also be producing *any* NPIs in fragment answers as they incorrectly believe that *any* NPIs can self-license. They would produce answers two questions like those in both (37) and (38).

(37) Q: Who here knows calculus?

A: No one.

(38) Q: Who here knows calculus?

A: *Anyone.

This research was intended to extrapolate from and provide further support for my above theory in examining the extent, beyond full sentence negative contexts, that the lexical definitions and use of n-words and NPIs would be mixed up and misused by children.

6.1. Methods

The same corpora and children from the above search were used. All inclusion requirements for corpora to be used remained the same. This study aimed to examine the production across a large, but still constant group of children.

These corpora were searched for additional morphological constructions that each coded for a different construction. To search for if-clauses, negative words, indefinite pronouns, and quantifiers were searched for in contexts with a conjunction. This found all places where *if*, a conjunction, occurred with either an *any* NPI or a n-word. Similar to the previous search, these search string pulled more utterances from that corpora than the specific strings being searched for. All sentences without the word *if* were excluded, as well as all utterances that were not a full sentence. In this search, all if-clauses where the NPI was c-commanded by negation were also excluded as it was assumed that the negation in the sentences was licensing the NPI, rather than the if-clause itself.

To search for both fragment answers and questions two separate searches were conducted. To find *any* NPIs, indefinite pronouns and quantifiers were searched for in contexts without a negative word. To find n-words, all sentences with either a negative word or quantifier we searched for. As in previous searches these search strings pulled more utterances from the corpora than the target constructions. Utterances that were included as a question were either phrased like a question, with subject-verb inversion or a question word such as *what* or *why*, or were marked with a raised tone at the end of the utterance. Utterances that were included as fragment answers included only a target word and one other noun. If an utterance was a fragment answer, but with a raised tone indicating a question, it was included as a question in the data. All

utterances that contained additional negation were excluded, as they would have been included in part one of the study.

6.2. Results

Across all 118 children in speaking North American and British English, they produced 109 sentences with if-clauses and *any* NPIs or n-words at an average age of 3;10. However, 100% of the sentences produced corresponded with an adult like interpretation of *any* NPIs and n-words in the given contexts. Thus, there is no evidence in these corpora that children are making the same mistake in if-clauses that children appear to be making within the context of sentential negation.

Across all 118 children, they produced 627 utterances with *any* NPIs at an average age of 3;01 in questions and 16 questions using n-words at an average age of 2;08. All of the questions using n-words, except one, were also fragments containing only the n-word and another noun or just the n-word. The single question produced using n-words in a full question was produced by a child acquiring a dialect of English with negative concord. Only 37 of the 627, 6% of the *any* NPI questions were also fragment answers. Given that n-words are grammatical in standard English, there is no evidence in the corpora that children are making the same mistake in questions that children appear to be making within the context of sentential negation.

Excluding fragments that are also questions, the children produced 163 utterances with *any* NPIs at an average age of 2;08 and 454 utterances with n-words at an average age of 2;06. This is approximately a 1 to 2.8 ratio of *any* NPI sentence fragments to n-word sentence fragments. Given that *any* NPIs are not able to self-license and exist as fragments in standard English, this supports the theory that children are making a mistake in confusing the licensing

requirements of *any* NPIs and n-words. This mistake, of using *any* NPIs would not be present if children were simply acquiring a negative concord grammar, as a negative concord grammar does not allow *any* NPIs to self-license.

7. Conclusion

This study has found that English-speaking children do produce sentences using negative concord, but that they also use *any* NPIs in contexts where standard English only permits n-words. There has been no evidence that children use n-words in questions or conditional statements. Though they use the grammatical forms most often, children do use *any* NPIs in fragments and n-words to create a single negation meaning in sentential negation. The finding that children produce *any* NPIs in fragments, where they are not grammatical for standard-English speaking adults, partially supports my prediction that children would make similar mistakes to those they make in sentential negation apart from a context of sentential negation.

The findings in this study support the findings in Thornton and Tessan with the caveat that not all children produce negative concord sentences. This refutes the theory and the conclusion in Thornton et al. that children at first acquire a negative concord grammar and then correct to a DN grammar as most children in this study did not produce any sentences with negative concord. If children were acquiring a negative concord grammar, then the majority of children in this study would have been expected to produce sentences with a negative concord grammar. In addition, children acquiring a negative concord grammar would not have been expected to produce fragments using *any* NPIs. This study also lends credence to the theory mentioned in Coles-White that children favor an NC interpretation because it is an easier interpretation to process, rather than that it is an essential part of their grammar. This would

explain why children in experimental studies favor a negative concord interpretation of sentences with two negatives, but the large majority do not produce them.

It is worth noting that children only make this mistake in instances where either the n-word or the *any* NPI is stressed. In contexts such as questions or if-clauses the NPI or n-word is unstressed; however, in fragments and within sentential negation they are stressed (Carstens & Mletshe, 2016). There is cross-linguistic evidence of stress impacting NPI use, specifically in the context of conditionals and questions, as opposed to other contexts (Carstens & Mletshe, 2016). In these languages, there are some NPIs that are only acceptable in stresses situations, like the situations in which children appear to be using n-words. Thus, it is possible that children are believing NPIs and n-words to be interchangeable only in stressed situations. Though this theory was not examined in this paper, the results of this paper would support a connection to stress in children's mistakes of the licensing requirements of *any* NPIs and n-words. This would need to be examined using recordings of children's speech to determine if they do actually put stress on the given NPI or n-word in fragments and sentential negation and do not put stress on the NPI or n-word in questions and if-clauses.

It is also possible that children make this mistake in fragments, but not if-clauses and questions because children are on average younger when they make the mistake in fragments and they may have corrected their grammar by the time they begin producing questions and if-clauses. This would not, however, explain why children are continuing to make this mistake within sentential negation at an older age on average than all three other contexts.

Across both North American and British English, some standard English-speaking children do produce sentences using negative concord. However, not all children produce these sentences. Most children produce only sentences using NPIs. When children make this error,

there is no evidence that they make it outside of sentential negation; all utterances found restrict n-words to a negative context where *any* NPIs could also be used. However, in fragments children also make a similar mistake by using *any* NPIs in a context where standard English only allows n-words. This provides support for the theory that children could be making a mistake at a lexical level in believing that *any* NPIs and n-words are interchangeable as they have similar licensing requirements. Since most children are not producing negative concord sentences this would refute the theory that children are initially hypothesizing a negative concord grammar, as there is not evidence that the majority of children actually make this mistake and there is additional evidence that children make this mistake in contexts not accounted for in a negative concord grammar.

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