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Subject Relatives by Children with and without SLI across Different Dialects of English

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Abstract

This study examined whether children's use of subject relative clauses differs as a function of their English dialect (African American English, AAE vs. Southern White English, SWE vs. Mainstream American English, MAE) and clinical diagnosis (specific language impairment, SLI vs. typically developing, TD). The data were spontaneous language samples from 87 AAE- and 53 SWE-speaking children, aged 3 to 6 years. Data on MAE came from previously published studies. Results were that the TD child speakers of AAE and SWE presented similar rates and types of subject relative clauses within their samples, but the rates at which they supplied the relative marker within these clauses varied from those that have been reported for TD child speakers of MAE. Nevertheless, across both AAE and SWE, the rates at which the children with SLI produced relative markers within clauses were lower than the rates of their TD peers, and these findings could not be explained by differences in the children's overall rates of non-mainstream English pattern use. These findings are consistent with studies of MAE-speaking children, and they also show across-dialect similarities in the grammatical deficits of children with SLI.

Keywords

SLI; subject relatives; dialects; English

Introduction

Children's acquisition of subject relative clauses in English has been studied for nearly 40 years (Brown, 1971; Craig & Washington, 1994; de Villiers, Tager-Flusberg, Hakuta & Cohen 1979; Diessel & Tomasello, 2000; Hamburger & Crain, 1982; Hesketh, 2006; Jackson & Roberts, 2001; Limber, 1973; Potts, Carlson, Cocking & Copple, 1979; Romaine, 1984; Schuele & Nicolls, 2000; Schuele & Tolbert, 2001; Tager-Flusberg, 1982; Tyack & Gottsleben, 1986). This work has examined children's development and use of subject relative clauses in comprehension and production, and the production data have come from both spontaneous language samples and experimental probes. Missing from the literature, however, are studies that have examined the potential ways children's acquisition of this structure varies across different dialects of English and the impact that these differences have on the grammatical profile of children with specific language impairment (SLI). The current study was designed to address both of these topics.

The first goal of the study was to examine subject relative clause use in children who speak one of two non-mainstream dialects of English, that of African American English (AAE)

and Southern White English (SWE), and to compare these findings to previous studies that have been completed on children who speak mainstream American English (MAE). The second goal was to examine, within AAE and SWE, whether children with SLI show limitations in subject relative clauses when compared to their typically developing and same dialect-speaking peers. Guiding the research was literature on the structure and development of subject relative clauses in MAE.

The structure and development of subject relative clauses

As reviewed by Schuele and Tolbert (2002), relative clauses post-modify noun phrases, and they can be described in terms of the sentential position of the embedded clause within the main clause (subject vs. object) and the focus of the relativized noun within the embedded clause (subject vs. object). Regardless of their sentential position, clauses that have relativized nouns with a subject focus are typically referred to as subject relatives and those that have relativized nouns with an object focus are typically referred to as object relatives. As can be seen by the examples below, both types of relative clauses are often introduced by relative markers, and these can take the form of a wh-pronoun (i.e. *who*, *whom*, *whose*, *which*) or the relativizer *that*.

1. Subject relatives in subject position of main clause The student *who loved computers* made the stimuli.
2. Subject relatives in object position of main clause We paid the student *who made the stimuli*.
3. Object relatives in subject position of main clause The stimuli *that the student made* worked for our experiment.
4. Object relatives in object position of main clause Our colleagues borrowed the stimuli *that the student made*.

Whereas the deep structure of subject and object relatives are the same, subject relatives have been particularly interesting to child language researchers, because at least in MAE, the relative marker is obligatory. In fact, the only exception to the obligatory nature of the marker within subject relatives is the reduced relative case. As described by Jacobs and Rosenbaum (1968) and Potts et al. (1979), this construction is restricted to embedded clauses that contain non-finite verbs (e.g. The student *working in our lab* made the stimuli). With the exclusion of this case, the obligatory nature of subject relative markers has facilitated the tracking of MAE-speaking children's development of this structure.

As documented by Diessel and Tomasello (2000), early subject relatives are typically produced in presentational copular clauses that do not include two propositions or the inclusion of the relative marker (e.g. *This is my doggy cries*; Nina 2; 2). By around 3 years of age, however, children begin to produce subject relatives with increased clause complexity and the inclusion of the relative marker (e.g. *The one that not finished is the café, I guess*; Adam 5; 2). Children's consistent inclusion of the relative marker within subject relative clauses has been further documented in two additional studies. In Schuele and Nicholls (2000), data were collected from spontaneous language samples, and five of the children studied were classified as typically developing 5- to 11-year-olds. Results showed that all but one of these children produced at least one subject relative clause within their samples, and in every subject relative clause case, the relative marker was included.

Schuele and Tolbert (2001) followed this work with a second study that involved an elicitation task. The task required children to produce utterances such as *Point to the girl that fell down*. Fifteen of the children were classified as typically developing, and they were equally divided into three age groups (3, 4, and 5 years). Results confirmed Schuele and

Nicholls' earlier findings and showed the inclusion of relative markers in subject relative clauses to be 100% for the 4- and 5-year-olds. Moreover, for the two 3-year-olds who were able to complete the task, the relative marker was also included in 100% of their subject relative clauses.

Both of these studies by Schuele and colleagues also included children with SLI. In Schuele and Nicholls (2000), the participants with SLI were three 6-year-olds. Results showed that regardless of the type of task used to collect the data (spontaneous samples vs. elicited probes) all three of these children omitted subject relative markers within clauses. In addition, for one of these children, language samples and probes were collected over a 4-year period starting at the age of 3 years. For this child, results revealed an extended period of relative marker omission that had not been resolved by the completion of the study.

In Schuele and Tolbert (2001), the participants with SLI were 20 children who ranged in age from 5–7 years. For these children, results showed rates of markers within subject relative clauses to be 9% for the 5-year-olds, 38% for the 6-year-olds, and 49% for the 7-year-olds. Thus, one can see increased use of relative markers by the children with SLI as a function of their age, but also rates of use that are very low when compared to what has been found for typically developing children. Across both studies, Schuele and her colleagues also noted that the children with SLI (but not the typically developing controls) produced some relative markers that were atypical for an MAE dialect. Examples of these atypical markers were: *You draw that things what's you are born in* and *And the car who drove fast is red*.

Finally, subject relative clause use by children with SLI was studied by Hesketh (2006). Her study included 66 British English-speaking children, aged 6–11 years, and her data were also collected from an elicitation probe. Results from this study differed from those of Schuele and Tolbert's because the British English-speaking children with SLI did not omit subject relative clause markers at high rates. In fact, rate of omission was only 6%. Interestingly, an additional 14% of the responses involved a reduced relative construction. Recall that with reduced relatives, the verb within the clause is non-finite, and the relative marker is not obligatory. Hesketh speculated that this result was tied to the rate at which reduced relatives are produced in British English as compared to MAE. Given this, she also argued that the grammatical profile of SLI within English can differ as a function of the dialect under study. As will be shown next, variation in relative clause use has been described for a number of different non-mainstream dialects of English.

Relative clause use across different non-mainstream dialects of English

Within the US, UK, and perhaps elsewhere, relative clause variation has been noted for individuals who speak different variants of non-mainstream AAE, different variants of non-mainstream SWE, and different non-mainstream English dialects that are tied to learning English as a second language (Cukor-Avila, 2001; Fasold, 1981; Green, 2002; Newbrook, 1998; Romaine, 1984; Wolfram & Schilling-Estes, 1998). Across all three of these non-mainstream English dialect types, the variation that is discussed involves the relative marker, with the variation taking two forms, omission of the marker in clauses that require its presence in MAE and substitution of the MAE marker with an alternative *wh*-pronoun (e.g. the pronoun *what*). Examples of utterances that show these types of variations include: *There's a dog bit me* and *The dog what I was telling you about bit me*.

Unfortunately, the rates at which different non-mainstream English speakers produce these various subject relative clause options have not been formally documented. For children, however, some information about subject relative clause variability in AAE can be found in a recent study by Morrissey, de Villiers, and de Villiers (2004). The data for this study were collected as part of the development and standardization phase of the *Diagnostic Evaluation*

of *Language Variation-Norm-Referenced* (DELV-NR; Seymour, Roeper, & de Villiers, 2005), and the participants included 443 children, aged 4, 5, 6, and 8 years. Two hundred and thirty were classified as AAE speakers and the others were classified as MAE speakers. Also, 293 were classified as developing language typically and 150 were classified as language impaired. In this study, the children were prompted to describe pictures that depicted an action and characters. Identification of the characters required the children to do so contrastively through the use of a relative clause (e.g. *The man is feeding the cat that is sitting in the flowers*).

Two findings from this study are relevant to the current work. The first was that the children's relative clause productions did not vary as function of their dialect (AAE vs. MAE), and the second was that across both dialect groups, children with language impairments were less able than their typically developing peers to use relative clauses to contrastively identify characters in the pictures. As part of this study, Morrissey et al., (2004) also examined the types of relative markers that were produced by the children who were classified as typically developing. Relative marker types included: wh-pronouns, relativizer *that*, non-mainstream markers, and marker omissions. Results from these data showed that none of the typically developing children (across both dialects) omitted relative markers within their subject relative clauses, and they also produced the relativizer *that* most frequently. Both of these findings are consistent with Schuele and Tolbert's (2001) study of MAE-speaking children.

Given the above literature review, the current study was designed to further explore the variation that exists in children's subject relative clauses by focusing on two non-mainstream dialects, AAE and SWE. In addition, within these two non-mainstream dialects, we wanted to know if children with SLI present more difficulty producing subject relative clauses than their typically developing and same dialect-speaking peers. Finally, if differences in subject relative clause use were found, we wanted to know if the differences could be explained by the children's overall rates of non-mainstream English pattern use. In the aforementioned study by Morrissey et al. (2004) rate of non-mainstream English pattern use was not considered as a contributing factor within the results. The research questions were:

1. Are there differences in subject relative clause use in AAE- and SWE-speaking children?
2. Within AAE and SWE, do children with SLI present more difficulty with subject relative clauses than their typically developing and same dialect-speaking peers?
3. If differences in subject relative clauses are found for either the variable of dialect or clinical diagnosis, can these findings be explained by differences in the overall rate at which the children produced non-mainstream English patterns?

Method

Data

The data included language samples collected from 140 children (87 African American and speakers of AAE and 53 white and speakers of SWE) who lived in southeastern Louisiana. Ninety-three came from children who were previously studied by Oetting and McDonald (2001, 2002), and an additional 47 were collected as part of two recent dissertations (Garrity, 2007; Pruitt; 2006). Across the Oetting, McDonald and Garrity studies, samples were collected from children with SLI and typically developing controls. In the Pruitt study, children with SLI were not included. Instead AAE-speaking children reared in poverty (as defined by a maternal education level of less than 12 years, enrolment in a low performing

school, and depressed language test scores) were compared to typically developing AAE-speaking controls who did not present this risk factor. For the analyses presented here, all children from these studies were included except for the AAE-speaking children reared in poverty. This decision was made because we didn't have a comparable group of children who spoke SWE, and we are only at the beginning stages of exploring the grammatical profiles of this particular profile of language learner. The end result was a set of language samples that reflected four speaker groups based on the children's dialect classification (AAE vs. SWE) and clinical diagnosis (SLI vs. typically developing, TD).

Within the original studies, the children's dialects were confirmed through either blind listener judgements or token-based counts of non-mainstream English patterns within their language samples following the procedures of Oetting and McDonald (2002). In addition, the rate at which each child produced non-mainstream patterns was quantified using a listener judgment task. This method of quantifying a speaker's rate of non-mainstream dialect has been shown to be moderately correlated to more labor-intensive token-based approaches (Oetting & McDonald, 2002). The listener judgement task required three raters to independently listen to short excerpts of each child's language sample using a 7-point Likert scale. A score of 1 on the scale indicated that the rater perceived no use of non-mainstream patterns, a score of 3 indicated little use (use in <25% of utterances), a score of 5 indicated moderate use (in 25–40% of utterances) and a score of 7 indicated heavy use (in >40% of utterances).

Clinical diagnosis (SLI vs. TD) was based on +/- receipt of services by a speech language clinician, +/- history of speech language services, and performance on a battery of standardized tests. The SLI group included 41 6-year-olds enrolled in kindergarten. In this group, 26 spoke AAE and 15 spoke SWE. The TD group included 99 children who ranged in age from 3–6 years and who were classified as typically developing. Within the original studies, 48 were enrolled in kindergarten and served as age controls (hereafter referred to as the TD-6 group) and 51 were enrolled in preschools, day cares, and Head Starts and served as younger, language controls (hereafter referred to as the TD-4 group). In the TD-6 group, 29 spoke AAE and 19 spoke SWE. In the TD-4 group, 32 spoke AAE and 19 spoke SWE. Given that the TD groups included both age- and language-matched subgroups, we describe and initially considered both of these subgroups of TD children separately; however and as will be seen, preliminary analyses led to the age- and language-matched TD subgroups being combined.

As reported in the original studies, a measure of nonverbal cognition was collected on all of the children except two in the SWE TD-4 group (at the time of the study these children were too young for the tool selected). The tool used to collect this measure was either the *Columbia Mental Maturity Scale* (Burgmeister, Blum, & Lorge, 1972) or the *Figure Ground* and *Form Completion* subtests of the *Leiter International Performance Scale-Revised* (Roid & Miller, 1997). All children who were administered these tools scored within one standard deviation of the tools' normative means.

An additional measure that was used to document the children's language abilities included the *Peabody Picture Vocabulary Test (PPVT-R or PPVT-III; Dunn & Dunn, 1981, 1997)*, and for all but 12 of the youngest children in the SWE-4 group, the *Test of Language Development: Primary (TOLD: P2 or TOLD: P3; Newcomer & Hammill, 1988, 1997)* was also administered for descriptive purposes. For those with SLI, all but three scored below -1 standard deviation of the normative mean on the *PPVT* (n=1) and *TOLD* (n=2). In contrast, all of the controls scored at or above -1 SD on the *PPVT* and all but four scored at or above this cutoff on the *TOLD*. These seven children (SLI=3; TD=4) were included within the original studies and they are included here, because their individual profiles on all other

measures were consistent with their group assignment. As a check, though, we completed the current set of analyses without these children, and the results did not change.

Table I lists the children's ages, non-mainstream dialect ratings, and standardized language test scores as a function of their dialect and clinical diagnosis (with the TD-6 and TD-4 groups also presented separately). To examine differences between the groups on these measures, 2×3 ANOVAs with dialect (AAE vs. SWE) and group (SLI vs. TD-6 vs. TD-4) as the between-subjects variables were completed, and Tukey follow-up procedures were employed when significant differences were identified. For rate of non-mainstream dialect, the AAE-speakers demonstrated higher scores than the SWE-speakers, $F_{(1,134)}=523.80$, $p < .001$, partial $\eta^2=.15$. For the *PPVT* and *TOLD*, a main effect for group but not dialect was identified; *PPVT* $F_{(2,134)}=108.29$, $p < .001$, partial $\eta^2=.62$, *TOLD* $F_{(2,122)}=102.95$, $p < .001$, partial $\eta^2=.63$. In both cases, the scores of the children with SLI were lower than the scores of the TD-6 and TD-4 groups. These results are consistent with those obtained in the original studies.

In the bottom two rows of Table I, the children's *PPVT* raw scores and MLU values in morphemes are also listed for the SLI and TD-4 groups. This information is useful for examining equivalency across these groups given that samples came from different studies, and these studies varied in their approach to language matching (Oetting, McDonald, and Garrity, matched TD-4 controls to those with SLI; Pruitt matched TD-4 controls to those reared in poverty). As can be seen, language scores between the SLI and TD-4 groups were closer to each other for the SWE groups than for the AAE groups. Scores of the AAE-speakers also appeared higher than those of the SWE group.

To examine these data statistically, 2×2 ANOVAs with dialect (AAE vs. SWE) and group (SLI vs. TD-4) were completed. For the *PPVT* raw score, results revealed a main effect for dialect, $F_{(1,88)}=14.64$, $p < .001$, partial $\eta^2=.14$, which was qualified by a dialect by group interaction, $F_{(1,88)}=4.23$, $p=.04$, partial $\eta^2=.05$. Follow-up of this interaction indicated that the difference was related to higher scores by the TD-4 AAE group than by the TD-4 SWE group; $F_{(1,49)}=19.74$, $p < .001$, partial $\eta^2=.29$. As will be seen, this difference in the TD-4 groups' *PPVT* raw scores did not impact the findings.

The children's use of subject relative clauses came from a 30-minute examiner-child language sample that was collected at each child's school. For all samples, the following toys were used as prompts: a gas station, cars, people, picnic/park sets, Lego, baby doll, baby care items, and Apricot pictures (Arwood, 1985). As part of the original studies, the samples were transcribed using *Systematic Analysis of Language Transcripts (SALT)* software and following the guidelines of Miller and Iglesias (2006). For 10% of the samples, transcription reliability was examined at the utterance boundary and morpheme level. Within the original studies, inter-rater transcription agreement was above 87%. The total number of complete and intelligible utterances within the samples was 27,828, and the average number per child was 198.77 (SD=65.43; range=63–374, with 91% of the samples ranging from 100 to 300 utterances).

Identification and coding of relative clauses

A multi-step process was used to locate and code the subject relative clauses within the samples. First, using the *Word and Code List* option in *SALT*, all complete and intelligible utterances containing *that*, *who*, *which*, *whose*, *what* and tagged omissions of these words were flagged. Utterances in which the above words served as a relative marker in either a subject or object clause were then identified and extracted from the samples. Then as an additional check, the entire corpus of complete and intelligible utterances was combed utterance by utterance to identify other subject and object relative clauses that may have

been missed by this method. Four additional subject relative clauses were identified through this second step.

Once the children's relative clauses were identified, the children's subject relatives were extracted from the list. Following the guidelines of Schuele (2006), subject relatives included all clauses in which the relativized noun served as the subject of the embedded clause. Once identified, subject relative clauses were examined for inclusion or omission of the relative marker, and for type of relative marker when it was included.

Results

Across the six speaker groups, there were a total of 230 relative clauses produced. Of these, 127 (55%) were classified as subject relatives. These subject relative clauses were produced by 67 (48%) of the children who contributed data to the study. As shown in Table II, the speaker groups with the fewest number of relative clauses were those classified as SLI and those with the most were those classified as TD-6. Importantly, though, all of the groups produced relatively few subject relative clauses. Low numbers of subject relative clauses within and across groups are consistent with other studies that have shown this structure to be infrequent in children's spontaneous language samples (Craig & Washington, 1994; Diessel & Tomasello, 2000; Jackson & Roberts, 2001; Schuele & Nicholls, 2000; for additional supporting data from upper-elementary children, adolescents, and adults, see Nippold, Mansfield & Billow, 2007). These low numbers of tokens within and across groups also make it difficult to examine the data with parametric statistics. Given this, a number of nonparametric statistics were employed.

The primary measure of interest was the rate at which relative markers were produced within subject relative clauses. For this measure, we examined the data in two ways. First, we examined the average rate at which each speaker group included these markers within their subject relative clauses. Then we examined the percentage of children in each group who included the marker at different criterion levels (0%, 25%, etc.).

Recall that in previous studies with MAE speakers, typically developing children as young as 4 years of age have produced adult rates (i.e. 100%) of relative markers within their subject relative clauses. Given this, our first set of analyses examined the four TD groups without the SLI groups to see if any of these groups could be combined. As shown in Table III, all four groups of TD children included the relative marker within their subject relative clauses at high rates (80% or higher). The lack of an observable difference between the children's rates of marking as a function of their age (TD-4 vs. TD-6) and dialect (AAE vs. SWE) was confirmed by a four-way Kruskal-Wallis test, the nonparametric analogue to ANOVA, $\chi^2(3, n=50)=.92, p>.05$.

As can also be seen in Table III, the rates at which all four TD groups produced relative markers within their subject relative clauses were bimodal in distribution. In each case, however, a greater number of children included the relative marker 100% of the time than did not (across TD groups: $n=43$ vs. 7). To examine these distributions statistically, children in each group were divided into two categories, those who included the marker at 100% and those who included it less than 100%. A χ^2 analysis indicated that the percentage of children who included relative markers within their clauses at 100% did not differ between the four TD groups, $\chi^2(3)=51.0, p>.05$.

Finally, the types of relative markers produced by the four TD groups were examined. As shown in Table III, the most frequently produced marker was the relativizer *that*. Two examples of utterances with this marker included “*Don't catch no fishes that's gonna bite you*” and “*I have a cousin that have a rabbit*”. As illustrated by these examples, relative

markers, even when they were standard in form, occurred in utterances that included other types of non-mainstream English patterns. This finding shows that the children were not only speakers of a non-mainstream dialect of English, but also that they produced a wide range of non-mainstream English patterns during the play sessions.

Interestingly, despite what has been written about alternative options in relative clause markers within AAE and SWE, non-mainstream markers were infrequent across the TD groups. In fact, there was only one non-mainstream marker case identified, and it was produced by an AAE-speaking child in the TD-6 group. The utterance with this marker was “*Hot chips where people mouth would be on fire*”. The child who produced this utterance was talking about spicy potato chips, and our interpretation of this utterance was [Hot chips that make people’s mouths be on fire].

In sum, findings of minimal variation across the groups indicated that data from the four TD groups could be collapsed on the variables of dialect and age. To further test this assumption for the variable of dialect, differences between the AAE- and SWE-speaking children with SLI were also examined. As can be seen in Table IV, both groups of children with SLI presented similar rates of relative markers within subject relative clauses. A lack of a reliable difference between these two speaker groups was confirmed by a Mann-Whitney t-test, $U=530$, $p>.05$.

As can also be seen in Table IV, the rates at which both groups of children with SLI produced relative markers within subject relative clauses were also bimodal in distribution. This pattern of findings was identical to what was observed for the TD groups, except a smaller number of these children included the relative marker 100% of the time than did not (across dialects: $n=7$ vs. 10). Given this, the children were divided into two categories, those who included the marker at 100% and those who included it less than 100%. A simple χ^2 analysis indicated that the percentage of children who included relative markers within their clauses at 100% did not differ between the AAE- and SWE-speaking SLI groups, $\chi^2(1)=235$, $p>.05$.

Finally, as shown in Table IV, the most frequently produced relative marker by the children with SLI was the relativizer *that* and this was followed by relative contexts with omission of *that*. Non-mainstream relative markers included one case of *where* for *that*, which was produced by an AAE-speaking child. The utterance with this marker was “They eat one of them cans *where* it say baby”. The child who produced this utterance was talking about the food that babies eat, and we glossed this utterance as [They eat one of those cans *that* says baby]. Together, these findings indicated that the AAE- and SWE-speaking children with SLI were similar in their development and use of subject relative clauses. For this reason, these two groups of children were also combined for the final analysis.

The final analysis compared the subject relative clause data of all children with SLI to all children classified as TD. As shown in Table V, rate of relative markers within clauses was significantly lower for the SLI group than for the TD group. This finding was confirmed by a Mann Whitney t-test, $U=309$, $p<.05$. The percentage of children in each group who included markers within their subject relative clauses at 100% was also lower for the SLI group than it was for the TD group, $\chi^2(67)=5.67$, $p<.02$, $\phi=.29$. The children’s rates of marker inclusion within subject relative clauses was not related to their overall rates of non-mainstream English pattern use as confirmed by a Spearman’s correlation, $\rho=-.19$, $p>.05$. The children’s rate of marker inclusion was also not related to their PPVT raw scores, $\rho=.23$, $p>.05$, or MLU values, $\rho=.16$, $p>.05$. This finding helps reduce concerns about potential language differences between the AAE- and SWE-speaking TD-4 groups. Finally and as noted earlier, even though the children with and without SLI differed in the rate at which

they included markers within their subject relative clauses, they produced the same types of subject relative clauses because contexts requiring the relativizer that were the most frequent across the groups.

Discussion

This study examined the production of subject relative clauses by children as a function of their dialect and clinical diagnosis. The two dialects examined were AAE and SWE. Both of these dialects are spoken in Louisiana, and both are considered non-mainstream in nature. Regarding these two dialects, results revealed very few differences in the children's use of subject relative clauses. In fact, remarkable similarities were found between the dialects because all four groups of TD children included relative markers in their subject relative clauses at high rates (80% or higher). This finding occurred even though the children who spoke AAE, in comparison to those who spoke SWE, produced a greater rate of non-mainstream English patterns in their samples. All four groups of TD speakers also produced the same types of subject relative markers within their samples, with the relativizer *that* followed by the relativizer *who*, identified as the most frequently produced. In addition, non-mainstream relative markers were produced infrequently by all of the TD children.

Although not highlighted in the results, another way in which the two dialect groups were similar related to the rate at which they produced subject relative clauses within their samples. As shown in Table II, the rate of subject relative clauses per utterance was .01 for the AAE- and SWE-speaking TD-6 groups, and it ranged from .003 to .004 for the AAE- and SWE-speaking TD-4 groups. These findings show across-dialect similarities in the rate at which children chose to produce subject relative clauses when talking. These findings also show developmental changes in the rate at which subject relative clauses are produced as a function of a child's age. Indeed, collapsed across the two dialects, rates of subject relative clauses within the samples were statistically higher for the TD-6 group than they were for the TD-4 group, $U=850$, $p<.05$. The rate of these clauses within the samples was also positively correlated to the children's *PPVT* raw scores, $\rho=.25$, $p=.03$, and MLU values, $\rho=.35$, $p<.001$. Thus, as the children's ages and general language abilities advanced, the frequency of their relative clauses within their samples increased.

Regarding the children's clinical diagnosis, results showed that the children with SLI were less able than their same dialect-speaking peers to produce relative markers within their subject relative clauses. This was found even though the children with SLI were 6 years of age whereas some of the youngest children in the TD groups were 3 years of age. A higher rate of non-mainstream English pattern use by the children with SLI also did not contribute to these differences because the correlation between these two variables was negligible. Like their TD peers, however, the types of subject relative markers that the children with SLI chose to produce primarily involved the relativizer *that*.

One of the goals of our study was to compare the findings to those of published reports from MAE-speaking children. For the TD children studied here, inclusion of relative markers within subject relative clauses ranged from 80% to 89%. These percentages, while high, are lower than the 100% reported for four of the typically developing children studied by Schuele and Nicholls (2000) and all of the typically developing MAE-speaking children studied by Schuele and Tolbert (2001) and Morrissey et al. (2004). Given this, we interpret our findings as showing variation across AAE, SWE, and MAE in the rates at which children include relative markers within subject relative clauses; however, we also must qualify this conclusion by stating that this type of variation is minimal in quantity. Indeed, most (43 or 86%) of the AAE- and SWE-speaking TD children studied here never omitted a subject relative marker.

Another interesting finding from the data relates to the AAE-speaking and SWE-speaking children's use (or non-use) of non-mainstream relative markers. Recall that a number of non-mainstream dialects of English has been described as allowing alternative forms (e.g. *what*) in contexts where other relativizers (e.g. *that*) would be felicitous in MAE. In contrast to this literature, the AAE and SWE-speaking children studied here produced very few alternative markers. Interestingly, it was not the case that these children's language samples were void of alternative relativizers. To the contrary, while combing the samples for subject relative clauses, we found a number of alternative markers, and these alternatives fuelled our interest in this study. What we found, however, was that almost all of these alternative markers were produced in object as opposed to subject relative clauses. Examples of these alternative markers in object relatives included *for* for *that* as in "...*spaghettis for you can eat*"; *what* for *that* as in "...*and give some stuff what he gave to him back*"; and *what* for *who* as in "*I ain't got a sister what I can fight much*".

In the current study, results from the AAE- and SWE-speaking children with SLI were also consistent with findings from previous studies. Recall that in both studies by Schuele and her colleagues, MAE-speaking children with SLI presented lower rates of markers within subject relative clauses than their typically developing peers. Morrissey et al. (2004) also found this finding for a large group of AAE and MAE speakers. We essentially replicated the results of these studies using children who not only spoke two different non-mainstream dialects of English, but who also varied in the rate at which they produced non-mainstream English patterns. That the children with SLI studied here also presented lower rates of markers than their younger language-matched peers further highlights this area of language as particularly difficult for these children.

Another contribution of the current study relates to the frequency at which the children with SLI produced subject relative clauses within their samples. Recall that compared to the TD groups, the children with SLI produced the fewest number of these clauses. As shown in Table II, these children also presented the lowest rate (.002) of subject relative clauses per utterances spoken. Additional analyses showed this .002 rate by the SLI group to be statistically lower than the .01 rate of the TD-6 group, $U=654$, $p<.004$, but not lower than the ~.004 rate of the TD-4 group, $p=.80$. Together the data on these children's rates of subject relative clauses within their samples and their rates of relative markers within their clauses leads to a grammatical profile that shows different levels of difficulty for these two areas of language. Restated, for subject relative clause production, the language delays of children with SLI appear to be commensurate to their general language levels, but for rate of markers within clauses, their delays appear more severe than one might expect given their general language level. This pattern of findings suggests that, across different dialects of English, subject relative clause production and the inclusion of relative markers within clauses may be part of (or comparable in nature to) Rice's (2003; 2004) delay-within-a-delay model of grammatical impairment for children with SLI.

Additional research is needed to explore this possibility and to determine whether the current set of findings are tied to the particular age and/or task used to elicit the data. This is important to do given that our data were from language samples and much of the comparative SLI data that was used to guide the study came from experimental tasks. Child speakers of other English dialects also need to be studied to further test the generalization of our findings. Not finding substantial amounts of linguistic variation across different American English dialects does not in any way rule out the possibility that other types and/or amounts of subject relative clause variation may exist in English dialects that are spoken elsewhere. Hesketh's (2006) findings for British English attest to this possibility.

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Table 1

Characteristics of participants by dialect and clinical diagnosis.^a

	AAE				SWE			
	SLI	TD-6	TD-4	TD-4	SLI	TD-6	TD-6	TD-4
N	26	29	32	19	15	19	19	19
Age	77.23 (5)	73.5 (4)	57.28 (4.55)	76.3 (8)	76.3 (8)	76.1 (6)	76.1 (6)	48.3 (5)
Non-mainstream dialect density rating ^b	5.44 (1.21)	4.85 (1.34)	4.87 (1.32)	3.93 (1.10)	3.93 (1.10)	3.86 (.92)	3.86 (.92)	4.32 (.95)
PPVT standard score ^c	73.23 (9.42)	102 (10.01)	97.22 (10.42)	73.93 (10.77)	73.93 (10.77)	104.89 (11.51)	104.89 (11.51)	102.21 (7.05)
TOLD ^d	70.08 (7.49)	100.38 (8.96)	98.69 (10.61)	75.47 (9)	75.47 (9)	104.84 (13.24)	104.84 (13.24)	96.43 (7.37)
PPVT raw score ^e	53.77 (10.14)		57.44 (10.01)	49.93 (9.90)	49.93 (9.90)			44.68 (9.74)
MLU in morphemes ^f	4.88 (.89)		5.39 (.93)	4.83 (.71)	4.83 (.71)			4.85 (.55)

^aFor each variable, means (M) are reported with standard deviations (SD) presented in parentheses.

^bMean listener judgement rating of non-mainstream pattern use; Maximum score=7.

^cStandard score on *Peabody Picture Vocabulary Test-R* (Dunn & Dunn, 1981) or *Peabody Picture Vocabulary Test-III* (Dunn & Dunn, 1997); M=100; SD=15.

^dSyntactic quotient on the *Test of Language Development-Primary: Revised* (Newcomer & Hammill, 1988) or *Test of Language Development-Primary: Third Edition* (Hammill & Newcomer, 1997); M=100; SD=15.

^eRaw scores on *Peabody Picture Vocabulary Test-R* (Dunn & Dunn, 1981) or *Peabody Picture Vocabulary Test-III* (Dunn & Dunn, 1997);

^fMLU reported in morphemes.

Table II

Subject relative clause production by dialect and clinical diagnosis.

	AAE				SWE		
	SLI	TD-6	TD-4	SLI	TD-6	TD-4	
Total number of subject relative clauses	12	32	21	8	39	15	
Number and percent of children who produced at least one subject relative clause	11 (42%)	15 (52%)	14 (47%)	6 (40%)	16 (84%)	5 (27%)	
Mean rate of clauses per utterance ^a	.002 (.003)	.01 (.01)	.004 (.01)	.002 (.003)	.01 (.01)	.003 (.009)	

^aM reported with SD in parentheses.

Table III

TD rate and type of relative markers within clauses by dialect and age.

	AAE		SWE	
	TD-6	TD-4	TD-6	TD-4
Mean rate of relative markers within clauses	.85 (.35)	.89 (.29)	.86 (.01)	.80 (.45)
Percent of participants who included markers at each criterion level				
0%	13	7	13	20
50%	-	-	-	-
75%	-	-	6	-
100%	87	93	81	80
Percentage of each type of relative marker				
<i>that</i>	62%	83%	84%	93%
<i>who</i>	29%	11%	10%	-
<i>which</i>	-	-	2%	-
omitted <i>that</i>	3%	6%	2%	7%
omitted <i>who</i>	3%	-	2%	-
Non-mainstream marker	3%	-	-	-

Table IV

SLI rate of relative markers within clauses by dialect.

	AAE SLI	SWE SLI
Mean rate of relative markers within clauses	.59 (.49)	.67 (.52)
Percent of participants who included markers at each criterion level		
0%	36	33
50%	9	-
75%	-	-
100%	55	67
Percentage of each type of relative marker		
<i>that</i>	33%	62%
<i>who</i>	17%	13%
<i>which</i>	-	-
omitted <i>that</i>	42%	25%
omitted <i>who</i>	-	-
Non-mainstream marker	8%	-

Table V

Rate and type of relative markers within clauses by clinical diagnosis.

	TD	SLI
Mean rate of overt pronoun marking within clauses	.86 (.33)	.59 (.51)
Percent of participants who included marker at 100% criterion	82	59
Percentage of each type of relative marker		
<i>that</i>	78%	45%
<i>who</i>	15%	15%
<i>which</i>	<1%	0%
omitted <i>that</i>	4%	35%
omitted <i>who</i>	2%	0%
Non-mainstream marker	<1%	5%