



HOME LANGUAGE EXPERIENCES AND THEIR IMPACT ON THE PRODUCTION OF COMPLEX SYNTAX BY LATINX PRESCHOOLERS

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— ABSTRACT —

The purpose of this study was to explore the different types of home language experience and its impact on the development of complex syntax in Latinx preschoolers. Seventy-three parents and their preschoolers were the participants in this study. The parents were interviewed to determine whether they used monolingual (Spanish or English) or bilingual (Spanish and English) input with their preschoolers. The children produced narratives in their preferred language and were coded according to their usage of complex syntax.

The participants were classified into three groups: monolingual input/monolingual output (Spanish or English), bilingual input/bilingual output, and bilingual input/monolingual output. A weighted score for the narrative complex syntax was computed by first calculating the percentage of complex utterances compared to total utterances, then using the percentage of grammatically correct utterances as the weighting factor. The results indicated that for this group of Latinx children, home language experience, whether they were exposed to monolingual or bilingual input and/or output, had no observable influence on the development of complex syntax.

Keywords: bilingual narratives, Latinx preschoolers, home language, Spanish-speaking, language input

Introduction

Standardized norm-referenced language tests do not capture the entire repertoire of a preschoolers' language skills. While the linguistic skills of preschool age children have been studied with the use of spontaneous language samples and play-based language samples, these may not capture a preschooler's ability to use more complex syntax. Researchers suggest that narratives can provide more specific information about the complex syntax of preschoolers and school-age children in comparison to conversational samples (e.g., Wagner, Nettelbladt, Sahlén, & Nilholm, 2000). The use of narrative analyses with preschoolers provides us with much more data to evaluate the use of complex syntax. With the emergence of three-word utterances (Arndt & Schuele, 2013; Diessel & Tomasello, 2001; Huttenlocher et al., 2002; Vasilyeva et al., 2008), a child is already starting to use more complex linguistic structures.

Previous research has revealed that preschoolers are capable of comprehending narratives (e.g., folktales, fables, etc.) and engaging in oral storytelling prior to entering the first grade. As children transition from preschool to school-age, they begin to develop implicit knowledge of narrative structures that highlight their ability to construct inferred meaning beyond what is stated in the text (Pinto et al., 2009). This means that when preschoolers are exposed to narrative-based literature and other forms of higher-level language, they learn some components of complex syntax (i.e., relative clauses, coordinating and subordinating conjunctions clauses, etc.).

Complex Syntax

Early complex syntax appears around age three (de Ruiter, Theakston, Brandt, & Lieven, 2018). As children learn and practice their use of early complex syntax, grammatical errors are to be expected. Arndt & Schuele (2013) proposed a way to analyze the complex syntax of preschool and early school age children in English, which captures early occurrences of complex syntax, even in three-word utterances. There is not a Spanish version of the Arndt & Schuele (2013) system for analyzing early complex syntax of preschool age children.

Complex Syntax in Monolingual Speakers

Chen and Shirai (2015) found that in some monolingual speaking Mandarin Chinese children, the acquisition of relative clauses materializes when language-specific creations of relative clauses are formed. Children formulate complex relative clauses from simpler constructions and are sensitive to distributional patterns in their input from early ages. So, what about the type of language input that par-

ents use and its impact on the development of complex syntax?

It is well known that in order for children to acquire a language or languages they must be exposed to those languages. It is the input of those languages that allows for the acquisition of language (Huttenlocher et al., 2002). But, how do we account for the individual differences found in children's acquisition of complex syntax? In one of their studies, Huttenlocher et al. (2002) found significant individual differences in the data of 4-year-olds usage of complex syntax. When studying the predictors of the children's use of different causal sentences, they found that it was correlated to the proportion of those sentences used in parental input. In a study by Vasilyeva, et al. (2008), it was suggested that the parents of children in a higher socioeconomic status played a significant role in their child's production of complex sentences including the diversity of their child's utterances. This may be due to the educational level of the parents and their use of more complex language with their children.

However, Silvey et al. (2021) found that in order for a child's complex syntax to continue evolving parents needed to increase the complexity of their input over time. According to their results, these timing effects predicted syntactic development. They suggested that these findings might not be replicated with children learning other languages due to morphosyntactic differences in various languages. Findings from another study (Justice et al., 2012) suggested that while children may copy the complexity of teacher talk, children also evoke linguistic structures from their teachers. This suggests that children's output also influences teacher and parental input. Reportedly, sentence complexity is bidirectional in nature.

Complex Syntax in Bilingual Speakers

Implicit learning of complex language structures has been found to be a greater indicator of the acquisition of linguistic complexity for bilingual children. Previous research has shown that the relative complexity of language and the amount of exposure they receive in their earlier years of development often determines the rate at which they acquire more complex morphosyntactic skills (Gathercole 2002a, 2002b, 2002c). The findings of one study by Gutierrez-Clellen & Krieter (2003) suggested that the quantity of Spanish input by parents to their children correlated with their child's grammatical output. However, the same could not be said for the amount of English spoken to their children. For the heritage language of bilingual Syrian Arabic-English speakers, the input of the heritage language was more important for the development of complex syntax. Additional-

ly, maintaining the input in the heritage language is important for continued language development in the heritage language (Soto-Corominas et al., 2022). Therefore, asking parents to change the language they use to communicate with their children is a mistake.

Five- to seven-year-old bilingual children with developmental language disorders have more difficulty with complex syntax than typically developing five- to seven-year-old bilingual children (Paradis et al., 2022). As the use of complex syntax appears to be useful for diagnostic purposes, it is important to understand how complex syntax develops in bilingual children from an early age. The purpose of this study was to explore the different types of language input (monolingual versus bilingual) and their influences on the development of complex syntax in Latinx preschoolers. The research question is the following: Does the type of home language experience influence the complex syntax spoken by Latinx preschoolers?

Method

Participants

The participants consisted of 73 preschool children attending a central Texas school. These children were part of a larger study (Resendiz et al., 2016). Inclusionary criteria included: passing a hearing screening administered by the school nurse and typical language development. Children were identified as having typical language development based on parent report and teacher report. The children were classified into one of three groups, depending on their combination of language input based on parent report of language input and output while at home and teacher report of language input and output while at school. The three groups were: (a) monolingual input/monolingual output (English or Spanish), (b) bilingual input/bilingual output, and (c) bilingual input/monolingual output (English OR Spanish). Refer to Table 1 for participant demographic information.

Procedures

Language input and output were determined by information provided by the parents when interviewed via phone using the Family Interview Questionnaire of the Bilingual English-Spanish Assessment (BESA; Peña et al., 2018). The Family Interview Questionnaire was selected because Pratt, Adams, Peña, and Bedore (2022) suggested that teacher and parent reports can provide extensive information about a child's language use and abilities. However, they suggested that the questionnaires administered to parents and teachers should include the following:

“(a) questions that ask about a single construct (e.g., vocabulary OR sentence length

OR intelligibility), (b) questions that provide clear examples of the language behaviors, and (c) questions that allow for nuanced responses, not a simple yes or no (pg. 88).”

Parents provided detailed hourly information about the language input provided to the participants in the home during a typical day. Parents were also asked to provide information as to their child's vocabulary, speech production, sentence production, grammatical production and comprehension in both English and Spanish. For example, parents were asked to use the following scale when asked questions regarding participant vocabulary proficiency in English and Spanish: 1) does not speak in the indicated language, 2) speaks a few words, 3) a limited range of words, 3) Some words, 4) speaks many words, and 5) extensive vocabulary. Refer to Table 2 for the means and scoring schemes of these categories for each of the three groups.

The participants in the three groups were then asked to produce narratives (in their language of choice) using the “One Frog Too Many” wordless picture book (Mayer, 1975). Forty-four of the children in the bilingual group chose to produce Spanish narratives while 29 produced English narratives. The narratives were transcribed into C-units as well as complex syntactic structures using an adapted version of Arndt and Schuele (2013). The narrative transcriptions were then analyzed using the Systematic Analyses of Language Transcripts guidelines (SALT; Miller & Iglesias, 2012). Refer to Table 3 for Mean Length of Utterance Word (MLUw), Mean Length of Utterance Morphemes (MLUm), Number of Different Words (NDW), Number of Total Words (NTW), and Type Token Ratio (TTR) for the three groups.

Additional SALT analyses obtained consisted of the average percentage of complex utterances, total number of utterances, average subordination index, and average percent of grammatically correct utterances produced by each of the three groups (see Table 4).

Coding of Complex Syntax Narrative Samples. Grammatical and ungrammatical utterances that consisted of more than one main verb were coded for complex syntax. Utterances that contained a complex syntax token were identified with the [cs] code. Each utterance exhibiting complex syntax was coded as to the type of complex syntax. Arndt and Schuele's (2013) complex syntax classification coding scheme was adapted and used. However, the complex syntax scheme was modified to code for Spanish utterances based on the SALT Spanish Coding System (Miller & Iglesias, 2012) due to the differentiation between the languages. For instance, reduced infinitive complex

Table 1

Participant Demographics of the Three Groups

Groups vs Characteristics	Monolingual Input Monolingual Output Group 1 n = 14	Bilingual Input Bilingual Output Group 2 n = 44	Bilingual Input Monolingual Output Group 3 n = 15
<i>Gender</i>	M = 8 F = 6	M = 22 F = 22	M = 6 F = 9
<i>Age Ranges</i>	55 to 65 months	54 to 73 months	54 to 65 months
<i>Mean Age</i>	59.79 months	60.23 months	60.27 months
<i>Maternal Education</i>			
1 = < 7 th	1 = 0	1 = 12	1 = 3
2 = 9 th	2 = 2	2 = 8	2 = 1
3 = 10 th or H.S.	3 = 2	3 = 2	3 = 3
4 = H. S. Grad	4 = 6	4 = 15	4 = 5
5 = Partial College	5 = 4	5 = 4	5 = 2
6 = College Grad	6 = 0	6 = 3	6 = 1
7 = Graduate School	7 = 0	7 = 0	7 = 0
<i>Paternal Education</i>			
	Not Known = 0	Not Known = 3	Not Known = 1
1 = < 7 th	1 = 0	1 = 8	1 = 4
2 = 9 th	2 = 2	2 = 11	2 = 3
3 = 10 th or H.S.	3 = 1	3 = 3	3 = 1
4 = H. S. Grad	4 = 7	4 = 13	4 = 2
5 = Partial College	5 = 2	5 = 4	5 = 3
6 = College Grad	6 = 2	6 = 2	6 = 0
7 = Graduate School	7 = 0	7 = 0	7 = 1

types such as gonna, wanna, and gotta were omitted from the Spanish complex syntax coding scheme due to the reduced use of infinitives in Spanish. Dialectal differences regarding bidirectional influence of one language on another were coded as a grammatical utterance in an effort to reduce linguistic bias.

The Spanish utterances were not limited to just one complex syntax coding adapted from the English coding suggested by Arndt and Schuele (2013), but could be assigned several categories. Utterances that contained more than one type of complex syntax usually consisted of a coordinate or subordinate clause. For instance, “detiene a la rana y la van a sacar” contains a coordinate clause “y” and marked infinitive clause “a sacar”. The infinitive clause types were coded when a non-finite verb followed the obligatory non-finite complement “a” which is equivalent to the usage of “to”.

Coding Challenges. Challenges in coding occurred when utterances contained a Spanish verb without a translation equivalent in English. The Spanish verb “estar” translates to “to be” and is not considered to be an English verb. For example, the utterance

“ellos estan bien asustados” includes “estar” which is a present tense indicative mood verb that is not present in English. Therefore, it was coded as other. Full propositional clause types were coded for when “que” was utilized as a headed complementizer. For instance, “Piensa que hay un rana ahí” is an example of an utterance coded as a full propositional clause. It was challenging to determine whether this utterance should be coded as a full propositional clause since the “que” in this utterance could not be deleted from the sentence. However, when the utterance is translated into English, the “que” would be equivalent to “that” which is a complementizer.

Reliability. All of the narratives were transcribed by two graduate students knowledgeable about the Systematic Analysis of Language Transcripts (SALT: Miller & Iglesias, 2012). Twenty percent of the narratives were then randomly selected to determine inter-rater reliability. One researcher transcribed and coded all of the narrative utterances. Inter-rater reliability between the researcher and the two graduate students was 86%.

Table 2

Means in English and Spanish of Vocabulary Proficiency, Speech Proficiency, Sentence Production Proficiency-Grammatical Proficiency and Comprehension Proficiency of the Three Groups

Groups vs. Categories	Coding Scheme (For both Spanish & English)	Monolingual Input Monolingual Output Group 1 n = 14	Bilingual Input Bilingual Output Group 2 n = 44	Bilingual Input Monolingual Output Group 3 n = 15
Vocabulary Proficiency (the use of home and academic vocabulary)	0 = does not speak in the indicated language 1 = speaks a few words 2 = a limited range of words 3 = some words 4 = many words 5 = extensive vocabulary	English/Spanish 3.71/1.82	English/Spanish 3.32/3.70	English/Spanish 3.80/3.07
Speech Proficiency (level of intelligibility in both languages)	0 = does not speak in the indicated language 1 = Never 2 = rarely 3 = sometimes 4 = very often 5 = always	3.85/2.64	4.04/4.30	4.63/3.86
Sentence Production Proficiency (usual utterance length in both languages)	0 = does not speak in the indicated language 1 = 1 to 2 words 2 = 2 to 3 words 3 = 3 to 4 words 4 = 4 to 5 words 5 = 5 or more words	3.85/1.73	3.71/3.40	3.30/2.67
Grammatical Proficiency (grammaticality of the utterance)	0 = does not speak in the indicated language 1 = never 2 = rarely 3 = sometimes 4 = very often 5 = always	3.77/2.27	3.59/3.60	3.50/2.79
Comprehension Proficiency (comprehension of each language by the child)	0 = does not understand in the indicated language 1 = never 2 = rarely 3 = sometimes 4 = very often 5 = always	4.15/2.27	3.96/3.98	3.75/3.60

Table 3*Average MLUw, MLUm, NDW, NTW, and TTR Produced by Each of the 3 Groups*

Groups	MLUw	MLUm	NDW	NTW	TTR
Monolingual Input Monolingual Output Group 1 n = 14	5.13	5.72	58	132	0.46
Bilingual Input Bilingual Output Group 2 n = 44	5.76	5.96	48	112	0.45
Bilingual Input Monolingual Output Group 3 n = 15	4.75	5.05	40	88	0.48

Table 4*Average Percentage of Complex Utterances, Total Number of Utterances, Average Subordination Index and Average Percent of Grammatically Correct Utterances Produced by Each of the 3 Groups.*

Groups	Average Percentage of Complex Utterances	Number of Total Utterances	Average Subordination Index	Percentage of Grammatically Correct Utterances
Monolingual Input Monolingual Output Group 1 n = 14	0.1445	23.29	.006	0.6777
Bilingual Input Bilingual Output Group 2 n = 44	0.1442	21.14	.007	0.7137
Bilingual Input Monolingual Output Group 3 n = 15	0.1201	19.20	.006	0.6329

Results

Children were classified into one of three groups, depending on their combination of language input and output. The three groups were: (a) monolingual input/monolingual output (without distinction between English or Spanish), (b) bilingual input/bi-

lingual output, and (c) bilingual input/monolingual output. Next, a weighted score for the narrative complex syntax was computed by first calculating the percentage of complex utterances compared to total utterances, then using the percentage of grammatically correct utterances as the weighting factor. Weighted scores were utilized because the use of linear regression is difficult to justify when analyzing

Table 5

Frequency Distributions and Descriptive Statistics of the Weighted Score for Complex Syntax

Group	N	Mean	Std. Dev.
Monolingual Input/ Monolingual Output	14	0.10	0.12
Bilingual Input/ Bilingual Output	44	0.11	0.11
Bilingual Input/ Monolingual Output	15	0.10	0.10

non-parametric data (such as counts). Therefore, using weighted scores satisfies the requirements for linear regression (Nikoloulopoulos, Joe, & Chagantary, N. R., 2011; Wang & Elston, 2007). Table 5 below shows the resulting distribution, as well as means and standard deviations for each group.

The relative size of the means and standard deviations (these data produced equal means and standard deviations in two of three groups, and a standard deviation that exceeded the mean in one group) indicates a very high degree of variability among the children in their development and use of complex syntax. We examined the dataset for outliers, and recomputed all analyses after deleting the outliers. However, the results did not change in any significant respect. As a result, we chose to retain the data for all 73 children in order to provide a richer description of our participants.

A linear regression of weighted complex syntax using group membership as the predictor produced non-significant results $F(1, 71) = 0.016$, $p = 0.89$, and $R^2 = 0.00$. These results indicate for this group of children, language environment, whether they were exposed to monolingual or bilingual input and/or output, had no observable influence on the development of complex syntax.

Discussion

The purpose of this study was to explore the different types of parental language input (monolingual versus bilingual) and their influences on the development of complex syntax in narrative task output by Latinx preschoolers. While there were no significant findings, it is important to note that it is not whether preschoolers are exposed to monolingual (English or Spanish) versus bilingual input, it is just language

input that is important for the use of complex syntax by preschoolers.

The findings of one study by Gutierrez-Clellen & Krieter, (2003) suggested that the quantity of Spanish input by parents to their children correlated with their child's grammatical output. However, the same could not be said for the amount of English spoken to their children. However, they did find that the amount of Spanish input correlated with grammatical performance. It is important to note that we did not examine the amount of Spanish, English, or Bilingual input because we were interested in whether the type of input correlated with output.

Implications

As suggested by Silvey et al. (2021) in order for a child's complex syntax to continue evolving, parents need to increase the complexity of their input over time. These timing effects may play a role; however, the purpose of this study was not to determine if timing effects made a difference. Justice et al. (2012) found that the input and the output are bidirectional and influence one another. This information in addition to our findings is extremely important in case bilingual or monolingual Spanish-speaking parents are ever told to speak just English in the home. Since input and output are bidirectional, then it is important that parents continue speaking to their children in the language or languages that they are proficient in so that they can provide more complex input to their child which in turn will influence more complex output by their children.

It was noted that the participants in this study demonstrated a wide range of variability in their usage of complex syntax. This wide variability is similar to the findings by Huttenlocher et al. (2002) where they found significant individual differences in the use of complex syntax by 4-year-old English-speakers. So, it is not surprising that our results in terms of variability of monolingual- (English or Spanish) and bilingual-speaking children's use of complex narratives concurs with their findings.

It is important to note that the results and implications should not be generalized to all preschool children until further studies confirm the results of this study.

Limitations of the Study

There were some limitations to this study. First, parental self-reports regarding exposure to certain language input for every single hour for every day, may be difficult to ascertain via self-report especially if the information is collected via a phone interview. Secondly, there may have been significant variability in the amount of bilingual proficiency because our

criteria for bilingualism included children who spoke “one or more hours” of both languages at home. For example, a child who has been exposed to another language for only one hour, compared to a child who has over 50 hours of exposure to a second language, may likely be more proficient in the second language learned.

Also, differences in socioeconomic status and the home literacy environment, which was not accounted for, may have also played a factor in the variation among the use of complex syntax exhibited by the preschoolers when producing narratives. We must also recognize that there are differences within the English and Spanish languages. Not all Spanish words or utterances can be translated to English, which can be problematic, particularly when coding the transcription of the narratives produced by the preschool children. Lastly, the authors did not ask the parents if they had ever been told by a health care provider to speak just English in the home. In the future, this is something that should be asked of parents.

Future Research

Participants in the current study were all typically developing; however, complex syntax is an area of difficulty for bilingual children with language disorders (Paradis et al., 2022). Parents of children who are bilingual and have language disorders are at greater risk of being told to speak English only to their children. While complex syntax is an area of difficulty, research is needed to demonstrate that the difficulties are not due to the language input provided in the home language(s). The language that parents of bilingual children with language disorders also needs to be further investigated because Silvey and colleagues (2021) found that for a child’s complex syntax to continue evolving, parents needed to increase the complexity of their input over time. This can be challenging if parents do not speak their language of choice within the home.

Conclusion

In summary, while the authors did not find a direct correlation between monolingual versus bilingual input and the development of the participants’ usage of complex syntax, it is expected that overall input influences the use of complex syntax. It does not matter whether it is monolingual English OR Spanish or bilingual input. Our results may have been different due to the way in which the data were collected. Further studies are warranted to determine if socioeconomic status plays a significant role in the prediction of the development of complex syntax in Latinx preschoolers.

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