Critical Review:
Acquisition of morphemes in typically developing Spanish-speaking children

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This critical review examines existing literature regarding the acquisition of morphology in typically developing Spanish-speaking children. Study designs included quasi-experimental and non-experimental research papers. Overall, the published evidence varies in elicitation methodology, age and cultural backgrounds of the subjects included in the sample, morphemes chosen to analyze, and reporting the results in either age or stage of MLU. The results for the acquisition of morpheme in Spanish-speaking children are inconclusive.

Introduction

The Spanish language is spoken by some 360 million people in the world. In order of the greatest number of speakers, it is spoken in countries such as Mexico, Colombia, Argentina, the United States, and Spain (Sala & Posner, 2018). Despite this, there is little research on language development in Spanish speaking children. Most of the research on language development is done on the English language. According to Kvaal, Shipstead-Cox, Nevitt, Hodson & Launer (1988), data on Spanish language development has been limited, particularly for Spanish morphology. Knowledge of language acquisition is fundamental for Speech-Language Pathologists to be able to assess and treat language disorders, to understand typical development norms, and to design standardized test batteries.

The study of language includes several topics such as the meaning of words, speech sounds, how to create grammatically correct sentences, and how we use language in different social contexts. As children learn the grammar of their language, they become able to produce increasingly long and complex sentences. To measure grammatical complexity of sentences in a language, Mean Length of Utterance or MLU is often used. Length in morphemes is a good indicator of the grammatical complexity of an utterance. So, the average length of children's utterances in morphemes is used extensively as a measure of grammar development (Hoff, 2014).

A morpheme is the basic linguistic unit that carries meaning in a sentence (Olarte, 1985). Spanish is an inflectional language, meaning that suffixes are added to the roots of verbs. These provide information on conjugation, which is the process of showing the characteristics of person, number, tense, aspect, and mood of verbs. Suffixes are also added to nouns to indicate plurality or gender (Gathercole et al., 1999).

The focus of this literature review is the acquisition of morphemes of the Spanish language. Although there has been extensive research of morphology development in English, the rules cannot apply to the Spanish language. The English language doesn't have an extensive morphological system (Hoff, 2014) as the Spanish language does. For example, the form of a noun in the English language depends only on whether that noun is plural or singular, in Spanish, there is gender and plurality added to a noun.

The verb tenses analyzed in this review are: preterite (-ió), preterite imperfect (-aba), future (-ará), present perfect (-ado), regular present (-r), irregular present, irregular preterite, and present progressive/gerund (-ando, -iendo). Additionally, plurals, articles, conjunctions, preposition /-en/, direct object clitic (la, lo, los, las), subjunctive, diminutive (-ito), augmentative (-ote), derived agentives (-ero, -dor), place of business (-ería), possessive /de/, copula /ser/ and /estar/, demonstratives (ese, este, eso), and noun gender inflections (-a, -o) are examined in this review. There is no guidance about which morphological markers are important for the acquisition of the Spanish language, so all morphemes that were reported as part of the studies were considered for this review.

According to Gathercole et al. (1989), the early acquisition of Spanish verb morphology is done in a piecemeal fashion, where whole words are learned, and then regular patterns emerge later on as they are discovered by the child.

Objectives

The primary objective of this paper was to critically review existing literature regarding the acquisition of morphemes in Spanish speaking children with typical language development.

Methods

Search Strategy

Articles related to the topic of interest were found using the following computerized databases: PubMed, Scopus, and ProQuest Dissertations & Theses Global. Key terms used for the database search were as follows: [Morpheme acquisition] AND [Spanish], [Grammatical form] AND [Spanish].

Additionally, a reference list published by Kayser, Contreras & Finney at the 2006 ASHA Conference in Miami was reviewed.

Selection Criteria

Studies selected for inclusion in this review paper needed to include typically developing Spanish speaking children. The aspect of language development that the studies needed to include was acquisition of grammatical morphemes. Results needed to indicate when the morpheme was emerging, acquired, or mastered.

Data Collection

Results of the literature search yielded five articles that met the selection criteria. Three papers (Kernan and Blount (1966), Olarte (1985), Perez-Pereira (1989)) used quasi-experimental designs, and two (Baron et al. (2018), Kvaal et al. (1988)) were non-experimental studies.

Results

Kernan & Blount (1966) conducted a quasi-experimental study to examine the internalization of Spanish grammatical rules of 62 children of lower socioeconomic status in Mexico (5-12 years). Participants were recruited from the local health clinic and a small proportion from the Catholic grade school. In order to test for internalization, nonsense words were presented in one type of linguistic framework, and then the child was asked to provide the form of nonsense word appropriate for that frame. Morphemes evaluated included the plural, diminutive, future, past preterite, past imperfect, present perfect, place of business, agentive-active, agentive-occupation, and possessive grammatical forms. Results indicated a developmental trend for all morphemes as summarized in Appendix 1. Results from this study are reported in percentage of correct answers. No criteria for internalization was provided in this study, so the morphemes were considered to be internalized when percentage of correct answers for that age was better than 50%. By 12 years of age, most of the grammatical rules of the Spanish language were acquired by all participants. There were no significant differences between boys and girls in any of the grammatical categories that were tested.

Strengths of this study include the test being validated by administering it to adults beforehand to ensure that researchers were measuring grammatical rules that children in that community had been exposed to. Additionally, the test was administered by a native Spanish language speaker. The statistics used to determine differences between groups were appropriate. Only children from lower socioeconomic status were included.

Overall, this study provided suggestive evidence on the age and order of acquisition of these 10 Spanish language morphemes in Mexican children.

Olarte (1985) conducted a quasi-experimental cross-sectional study examining the acquisition of 13 morphemes of the Spanish language including plurals /-s/ and/-es/, present progressive /-ando/ and /-iendo/, derived agents /-ero/ and /-dor/, gender inflections /-a/ and /-o/, comparative /más/, preterite, future, and present indicative. The sample included 90 monolingual Spanish speaking children between the ages of 30 to 50 months from Colombia recruited from 3 different daycare centers representing a wide socioeconomic range. Outcome measures included study-designed tasks to elicit receptive and expressive morphology. Results indicated significantly higher receptive than expressive scores for all grammatical morphemes (exception: periphrastic future). Age of acquisition was described for all morphemes, see Appendix 1 for a summary of results. Findings revealed variability in the process of rule internalization among the grammatical morphemes studied. No significant sex differences were observed. Socioeconomic status did influence production but not reception of some of the morphemes.

This study includes appropriate exclusion and inclusion criteria, as well as acceptable construct validity, and test-retest reliability. The children included represent a broad socioeconomic range and testing was completed by a native Spanish speaker. The statistical analysis was appropriate for what was being measured.

Overall, this study provided highly suggestive evidence for the development and acquisition of these 13 grammatical morphemes that were studied.

Pérez-Pereira (1989) conducted a quasi-experimental cross-sectional study analyzing the acquisition of morphemes in the Spanish language. Elicitation tasks using real words and artificial words were used in 109 monolingual Spanish-speaking children from Spain aged 3-6 years. Participants came from high and middle

socioeconomic status. The following morphemes were explored: plural, diminutive, augmentative, gerund, past tense imperfect, and preterite. Results showing the acquisition of morphemes by age are summarized in Appendix 1. Findings showed that some morphemes have not been mastered by 6 years of age. The degree of difficulty was lower for verbal morphemes in the verbs of the first person, compared to the second and third person. There was a notable increase in the development of grammatical morphemes between 3 and 4 years of age.

This study includes a large sample of subjects with monolingual background. Even though children from high and middle socioeconomic status were included, the study did not involve children from lower socioeconomic status. No detailed statistical analysis is reported in its methodology.

Overall, this study produced suggestive evidence regarding the acquisition of morphemes in Spanish speaking children.

Baron et al. (2018) conducted a non-experimental study involving mining of existing data sets from previous studies to examine how grammatical morpheme production in Spanish for typically developing Spanish-English bilingual children relates to MLUw (mean length of utterance in words). Participants included 4-7.5 year old Latino students across 2 studies (n=126 and n=102, respectively) recruited from schools that enroll high numbers of bilingual students. Parent and teacher interviews were conducted on the phone or in person using a published survey on bilingual language development. Language samples were collected through story tell and retell tasks with wordless picture books, and a bilingual assessment was completed to assess grammatical morpheme use. Outcome measures included use of plurals, singular article, preterite, imperfect, conjunction, preposition, /en/, direct object clitic, subjunctive, and MLUw. Results revealed positive correlations between MLUw and nine of the grammatical morphemes. Accuracy and age of acquisition for each morpheme were reported, see Appendix 1 for a summary of results.

This study reports adequate inter-rater reliability and includes appropriate inclusion criteria. The statistical methods employed are appropriate. Certified bilingual SLPs administered, scored, and coded all tests and samples. The subject sample includes bilingual children rather than monolingual Spanish speaking children.

Overall, this study provides suggestive evidence for the development of the nine grammatical morphemes mentioned above in Spanish speaking children.

Kvaal et al. (1988) conducted a non-experimental study analyzing language samples of 15 Mexican-American preschool children divided into 3 MLU groups. Children were from lower and middle socioeconomic level. Parents completed questionnaires addressing language and overall development and health history. As well, children completed a spontaneous language sample and a grammar elicitation task. Researchers sampled 10 Spanish morphemes: regular present indicative, irregular present indicative, regular preterite indicative, irregular preterite indicative, copula /ser/ and /estar/, preposition /-en/, plurals, possessive /-de/, articles, and demonstratives. Results of descriptive statistics indicated that there were differences in the production of these morphemes depending on MLU level. Details on the acquisition of morphemes by MLU stage are presented in Appendix 1. Results showed that the sequence of acquisition was as follows: demonstratives, articles, copulas, and the regular present indicative; followed by irregular present indicative, regular preterite indicative, plurals, possessive /de/, and lastly, preposition /en/ and irregular preterite indicative.

This study included appropriate inclusion and exclusion criteria. Each language sample was transcribed twice, once by an investigator and once by a native Spanish-speaker. MLU was calculated using suggestions outlined by other investigators for the Spanish language. However, it was not specified whether MLU was measured in words or morphemes. No stastical analysis was reported.

Overall, this study provided suggestive evidence regarding the order of acquisition of 10 grammatical morphemes of the Spanish language, according to mean length of utterance (MLU).

Discussion

Based on the literature reviewed, it is difficult to draw conclusions on the acquisition of morphology in Spanish speaking children. The studies listed in this review differ in the methodology to obtain language samples from children and the morphemes that were included to examine. As a sum between all of these research papers, there was a total of 25 morpheme categories studied. Another important difference was that children came from different cultural backgrounds. Baron et al. (2018) included Spanish-English bilingual children from the US, Kernan and Blount (1966) included monolingual Mexican children, Kvaal et al. (1988) included Mexican-American children, Olarte (1985) monolingual Colombian children, and Perez-Pereira (1989) monolingual children from Spain. Spanish differs in every country in which it is spoken,

contributing to the difficulty in determining developmental norms for Spanish morphology.

Differences are also evident in the sample sizes and the ages of the subjects chosen to study. Another factor that contributes to the difficulty is whether researchers used MLU or age to determine when the morpheme was acquired. Preterite imperfect and regular present could not be compared since one article reports in MLUw and the other one in years of age.

According to Kvaal et al. (1988), MLU is a better indicator of language development than age is. Even though Baron et al. (2018) and Kvaal et al. (1988) reported their results in MLU, it is impossible to compare them since the former did it in MLU words and the latter did not specify the type of MLU employed in their analysis. This is true for singular articles and preposition /en/. Additionally, authors define mastered, emerging, and acquired with different criteria.

Despite all of these contributing factors, some inferences can be drawn from comparing the results from the reviewed literature. All authors concluded that plurals are acquired at an early age, most agree that this happens in children younger than 3 years of age. Contradictory results were reported for preterite, however, two of the articles concluded that it starts to emerge in children younger than 4 years of age. Agentive (-dor) starts to emerge in children aged 4. Authors differed in when diminutives, future tense, agentive (-ero), possessive /de/, and present progressive or gerund emerge according to age.

This review is indicative of the age at which gender inflections /-a/ and /-o/ are acquired as Olarte (1985) reports it with highly suggestive evidence. Inflections /-a/ and /-o/ are acquired at 3;2 and 2;8 years of age respectively.

This review did not determine the stage at which conjunction, direct object clitic, subjunctive, plural article, augmentative, present perfect, place of business, irregular present, irregular preterite, copula /ser/ and /estar/, demonstratives, and comparative /más/ are acquired as these morphemes are reported in one article with suggestive evidence.

Conclusion

The results of this literature review indicate insufficient information exists to determine the development of a majority of morphemes in typically developing Spanish-speaking children due to differences in elicitation procedures, age of the subjects studied, cultural background, morphemes chosen to analyze, and reporting the stage of acquisition in either age or stage of MLU. However, it can be inferred that plurals are acquired in children younger than 3 years of age, and preterite and agentive (-dor) in children younger than 4 years of age. The results for the acquisition of the rest of the morphemes included in this review are inconclusive.

Clinical Implications

The results of this study, as summarized in Appendix 1, may be taken into consideration when analyzing language samples of typically developing Spanish speaking children. However, clinicians should use this information with caution given the limitations and inconclusiveness of the results.

References

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Appendix 1.

	Baron et al. 2018 (by MLUw)	*Kernan & Blount 1966 (by age group)*	*Kvaal et al. 1988 (by age or MLU)*	*Olarte 1985 (by age)*	*Perez-Pereira 1989 (by age)*
Plural	5.00-5.99	<5;0-7;0	2;4-2;6, 3.2	-s 2;11, -es 3;2	<5;0
Singular article (él, la)	6.00-6.99		2;4, 2.6		
Preterite (-ió)	7.00-7.99	>11;0-12;0	2.8 - 4.2	3;6 (emerging)	4;0
Preterite imperfect (-aba)	7.00-7.99	>8;0-10;0			<3;0
Conjunction	7.00-7.99				
Preposition (en)	>9.00- 11.99 (70%)		4.2 – 4.5		
Direct object clitic (la, lo, los)	>9.00- 11.99 (70%)				
Subjunctive	>9.00- 11.99 (70%)				
Plural article	7.00-7.99				
Diminutive		>8;0-10;0 (emerging)			5;0
Augmentative					5;0
Future (-ará)		>11;0-12;0		3;1 (emerging)	
Present perfect (-ado)		>8;0-10;0			
Place of business (-ería)		>8;0-10;0			
Agentive active (-dor)		<5;0-7;0		4;0 (emerging)	
Agentive occupation (-ero)		>8;0-10;0		4;0 (emerging)	
Possessive (de)		5;0-7;0	2;3, 3.2	2;11	
Regular present (vowel + -r)			2.7	>50 months	
Irregular present			2.8		
Irregular preterite			4.6		
Copula (ser, estar)			<2;0 (age), 2.6		
Demonstratives (ese, este, eso)			<2;0 (age), 2.6		
Present progressive/gerund (-iendo, -ando)				3;6	<3;0
Gender inflection (-a, -o)				-a 3;2, -o 2;8	
Comparative (más)				>50 months	