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A SENTENCE CONSTRUCTION INTERVENTION FOR ELEMENTARY-AGED
SPANISH-SPEAKING LANGUAGE-MINORITY STUDENTS WITH WRITING
DIFFICULTIES

by

Tim Andress

A THESIS

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Lincoln, Nebraska

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A SENTENCE CONSTRUCTION INTERVENTION FOR ELEMENTARY-AGED
SPANISH-SPEAKING LANGUAGE-MINORITY STUDENTS WITH WRITING
DIFFICULTIES

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University of Nebraska, 2018

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The present replication study used a multiple probe across participant single-case experimental design to measure the effect of a sentence construction intervention on Spanish-speaking language-minority students with writing difficulties. Participants were two males and one female, aged eight to ten. Dependent variables tracked were frequency of correct word sequences, incorrect word sequences, complete sentences, and incomplete sentences written in one-minute sentence construction probes. A pre-and post-test five-minute paragraph probe served as a secondary measure to determine whether sentence-level instruction improved paragraph-level writing. Results were an increase in frequency of correct word sequence and complete sentences for all participants, as well as a decrease in frequency of incorrect word sequences for two participants and a decrease in incomplete sentences for all participants. One of the three participants demonstrated improved paragraph writing following completion of the study. Findings indicated a functional relation between the intervention and positive writing outcomes. Further research should continue to study the effects of sentence-level instruction on language-minority students.

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CHAPTER 1: INTRODUCTION

Writing is fundamental to the advancement of knowledge in academic, technical, and business fields. It also embeds itself in all institutions of social life, including the work of the government. On a national level, students today are expected to achieve a higher proficiency in writing than ever before (Common Core State Standards [CCSS], 2010). The writing standards provided by the CCSS match employers' expectations that their employees possess a functional mastery of writing before hire, even for positions that require little writing (National Commission on Writing, 2004). Moreover, after hire, writing is a requirement in most occupations, even those that do not require a college education (Mikulecky, 1998). Therefore, to find and maintain a desirable job, one must first attain a high level of proficiency in writing.

In schools, writing is a useful tool for learning (Bangert-Drowns, Hurley, & Wilkinson, 2004; Graham & Perin, 2007) and integral to student success in all subjects (Alber-Morgan, Haussler, & Konrad, 2007; Graham & Harris, 2006). Falling behind early on leads to difficulties later in a student's academic career as weaker writers are less likely to use writing to support and extend learning in content classrooms in comparison to their peers. As a result, struggling writers' grades are likely to suffer, especially in classes where writing is the primary means for assessing progress (Graham, 2006b). Despite the evidence that writing is a clear measure of academic success (Graham, 2006b; Graham & Perin, 2007) it remains the most neglected of the three R's (Reading, Writing, and Arithmetic) in the American classroom (National Commission on Writing, 2003). Only 28% of fourth grade students, 31% of eighth grade students, and 24% of

twelfth grade students perform at or above a proficient writing level (National Center for Educational Statistics [NCES], 2012).

On a personal level, the ability to express one's self in writing is important because writing about one's emotions can positively affect overall health and is part of the therapeutic process of keeping journals (Gortner, Rude, & Pennebaker, 2006). Writing also plays an increasingly relevant role in students' social lives as they use text messages, writing in social media, and emails to communicate (Boyd, 2008). At present, the education system is not adequately preparing children for higher education, the workplace, or the digitized social world ahead of them. Improving the youth's writing will play a critical role in the nation's progress, but there is a large group of children that are at a disadvantage.

Language-minority (LM) students come from non-English speaking homes and backgrounds. The term 'LM students' overlaps with 'English Language Learners' (ELLs) or 'English Learners' (ELs), which are common labels used by schools. The literature review will present information on ELL students because it is the most commonly reported statistic on second language (L2) learners by schools. English language learners comprised approximately 9.4 percent of the population of public school students (NCES, 2017). Furthermore, in recent years, each incoming class of kindergartners had a higher percentage of ELLs than the previous year, with the most recent class making up 16.7% of the population of kindergarten students (NCES, 2017). According to the Nation's Report Card, only six percent of eighth grade and two percent of twelfth grade ELL students performed at or above a proficient level of writing (NCES, 2012). These measurements of achievement are low, but they may actually overestimate the true

writing achievement of older ELLs because some ELLs do not complete the upper grades of school.

Spanish-speaking students account for 77.1% of ELLs in the nation and continue to grow as a subgroup (NCES, 2017). A rising percentage of Latinos in schools is consistent with increased immigration to the U.S. from Latin America in recent years, as the population of Hispanics and Latinos grew from 12.5% in 2000 to 17.6% by 2015 (U.S. Census Bureau, 2010). Merely 12% of Hispanic high school seniors perform at or above a proficient level in writing, while nine to 42% of seniors of other ethnicities reach at least a proficient score on the same assessment (NCES, 2012). A large portion of LM students are Hispanic ELLs and, as a large subgroup in the U.S. school system, they perform disproportionately worse than their peers in writing.

Research on the grammatical errors of L2 writers can be useful when explaining why LM students struggle with writing. Research on L2 lexical errors uncovered that LM students have a limited vocabulary (Zhang, 2000) and that they struggled to select words that fit together appropriately in sentences, specifically personal pronouns (e.g. he, she, they, his, her) (Liu & Braine, 2005). They have a tendency for repetition in writing (Khalil, 1989). Another common error in LM students' writing is overuse of conjunctions (e.g. and, or, if), and specifically misuse of adversative conjunctions such as "but" (Johns, 1984).

Organizational errors in writing also offer explanations for why LM students struggle with writing. According to Cumming (1989), L2 writers with little writing experience receive poor ratings in organization of writing relative to native writers. LM students with organizational difficulties in their L1 also have organizational difficulties in

L2. If children do not write in their L1, they cannot transfer mistakes, but they also may come to school with less experience in writing. Clachar (1999) found that Spanish-speaking LM students in particular struggled to organize texts about emotional topics, which may be a cultural trait.

Language-minority students also struggle with goal-oriented writing. They write shorter narrative essays (Yau & Belanger, 1984) and argumentative essays (Ferris, 1994b) than native-English peers. Their expository essays are shorter and less detailed due to a lack of syntactic resources (Yau & Belanger, 1984). LM students also have more difficulties writing persuasive texts than descriptive texts (Carrell & Connor, 1991).

Lack of self-efficacy and confidence may deter Spanish-speaking LM students from writing. Second language anxiety, a condition in which a multilingual speaker loses confidence when using their non-native language, can negatively affect LM students' writing (Ortega, 2008). A student may know the word that he or she wants to write, but may not write it because he or she does not believe that it is correct. Lower confidence in writing skills is common among LM students as they often receive writing instruction that does not cater to their needs, leading to poor performance on assessments when compared to their monolingual peers.

Another issue for LM students is that retrieving English words from long-term memory is difficult because they may or may not yet be stored (Ben-Zeev, 1977). It takes several exposures to words to commit them to long-term memory (Gathercole, Hitch, Service, & Martin, 1999). Moreover, bilinguals have two competing languages for each word in their memory, which may interfere with planning and idea generation. In comparison to their monolingual peers who generally have one word in their vocabulary

to access per concept, LM students have two or more words to sort through, which dictates more cognitive resources. The cognitive resources that monolingual peers may divert to planning, translating, transcribing, and monitoring, will likely apply to working memory and knowledge in LM students, which may decrease the overall quality of their writing.

Several researchers have created suggestions for implementing effective writing instruction for LM students in the classroom. Freeman and Freeman (2007) published four keys for success:

- Engage students in a challenging, theme-based curriculum to develop academic concepts;
- draw on students' backgrounds (i.e. experiences, cultures, and languages);
- organize collaborative activities and scaffold instruction to build students' academic English proficiency; and
- create confident students who value school and themselves as learners.

Similarly, Haneda and Wells (2012) created four pedagogic principles

- Provide frequent opportunities to talk and write;
- connect curriculum to students' lives;
- select engaging topics; and
- work toward a tangible outcome.

To improve writing instruction and increase writing performance, there have been numerous studies on handwriting, sentence construction, and grammar/usage. These smaller, sentence-level component skills are critical to the development of writing abilities (Graham, 2006a). Handwriting refers to legible transcription of letters. Sentence

construction occurs when writers arrange words or phrases into sentence types, such as simple or compound sentences. Grammar/usage describes conventions of appropriate grammar, punctuation, and capitalization (Datchuk & Kubina, 2013). Whereas handwriting (Graham & Weintraub, 1996) and grammar are certainly critical aspects of sentence-level writing, results of several meta-analytic reviews indicate that students also benefit from instruction on sentence construction (Graham & Perin, 2007; Hillocks, 1986; Mason & Graham, 2008; Rogers & Graham, 2008).

Sentence construction is the sequencing of understandable and syntactically correct words into simple, compound, and complex sentence types. Adept writers show a mastery of sentence construction. Proficient sentence construction allows students to precisely express information in the appropriate circumstances, such as including all three sentence types (i.e., simple, compound, complex) to increase the fluidity of writing (Berninger, Nagy, & Beers, 2011).

Reserachers recently suggested that interventions that focus on improving accuracy and fluency of simple-sentence constructions successfully improve writing outcomes in students with writing difficulties. Several writing intervention studies (Anderson & Keel, 2002; Datchuk, 2011; Datchuk, Kubina, & Mason, 2015; Datchuk, 2016; Datchuk, 2017; Viel-Ruma, Houchins, Jolivette, Fredrick, & Gama, 2010; Walker, Shippen, Alberto, Houchins, & Cihak, 2005) implemented systematic and explicit instructional procedures of model-lead-test (Archer & Hughes, 2011) to increase the accuracy of simple sentence construction and increase correct word sequences (CWS) that struggling writers write. Another goal of these interventions was to decrease the number of incomplete sentences and incorrect word sequences (IWS). Model-lead-test

instructional procedures use a most-to-least prompting hierarchy in which an instructor provides significant scaffolding in the beginning of the intervention, but then reduces to minimal support as accuracy increases.

In previous studies (Anderson and Keel, 2002; Datchuk, 2011; Datchuk, Kubina, & Mason, 2015; Datchuk, 2016; Datchuk, 2017; Viel-Ruma, Houchins, Jolivette, Fredrick, & Gama, 2010; Walker, Shippen, Alberto, Houchins, & Cihak, 2005), researchers defined a complete simple sentence as having two main parts: a part that names and a part that tells more. Complete sentences also began with a capital letter and ended with an appropriate punctuation mark. Incomplete sentences were those that lacked one or more of these parts. Instructors modeled and led students through guided and independent practice identifying complete and incomplete sentences, correcting errors in capitalization and punctuation, and constructing complete simple-sentences for picture-word prompts (Datchuk, 2016). Picture-word prompts a page of five pictures with two to three relevant words accompanying each picture and lines to the right of the picture for writing. Picture-word prompts measured the effects of a writing intervention that combined sentence instruction and frequency building to a performance criterion (FBPC) with the goal of increasing sentence construction fluency (Datchuk, 2016). Sentence instruction consisted of explicit, scripted instruction that focused on teaching students that each sentence includes a part that names and a part that tells more. Sentence instruction also involved modeling, scaffolding, and providing feedback following individual work on skills such as appropriate capitalization, ending punctuation, and grammar. Frequency building to a performance criterion was a set of practice probes in which students repeatedly completed timed writing probes and then received feedback in

order to increase writing fluency and accuracy. Presently, four published studies implemented this intervention.

Datchuk (2011) tested the effects of this sentence construction intervention and FBPC on four adolescents (grades eight to ten) with writing difficulties. The study used a multiple baseline across participants single-case experimental design. One-minute probes assessed sentence-writing abilities during the study and a descriptive paragraph probe following each experimental condition measured generalization to more complex tasks. Results of the study were that all participant increased the frequency of sentences written per minute, three participants increased the frequency of CWS on one-minute probes, and all participants increased the frequency of CWS and complete sentences in paragraph probes.

Datchuk, Kubina, and Mason (2015) also tested this method of sentence instruction and FBPC with elementary-aged children (aged nine to 11) with behavioral concerns, using a multiple baseline across participants single-case experimental design. Their study included four participants with behavioral concerns, three of which had behavior intervention plans (BIPs) as part of their Individualized Education Plan (IEP). Results of the study were an increase in the number of CWS and complete sentences written while the number of IWS and incomplete sentences decreased in all participants' writing.

Datchuk (2016) investigated the effects of this writing construction intervention on the writing behavior of four adolescents (aged 11 to 13) with writing difficulties. The study utilized a multiple probe across participants single-case experimental design. He measured the number of complete and incomplete sentences as well as the number of

CWS and IWS during a baseline phase, a sentence instruction phase, and a paragraph instruction phase. Results of the study were an increase in the mean number of complete sentences and CWS and a decrease in the mean number of incomplete sentences and IWS relative to baseline. All participants also demonstrated slight increases in performance on the descriptive paragraph probes. Findings suggested a functional relationship between sentence instruction and improvement in the frequency and accuracy of complete sentences and CWS on sentence construction probes. There was also provisional support of a functional relationship between the intervention and improved writing on descriptive paragraph probes.

Datchuk (2017) also investigated the effect this simple-sentence construction intervention on small groups of middle school students with disabilities and writing difficulties. This study used a multiple baseline across groups single-case experimental design. Three teachers delivered instruction to three small group of students. The dependent variable used was correct minus incorrect word sequences (CIWS). Baseline phases ranged from three to 10 sessions. Upon introduction of the sentence instruction and FBPC phase, the average CIWS increased across all three groups relative to baseline. This study did not collect data on maintenance of experimental effects.

Despite the success of the simple-sentence construction intervention with participants across a variety of ages, researchers have yet to explicitly test its effects on LM students. The fact that LM students make up a large portion of struggling writers (NCES, 2012) warrants further research into the effects of this intervention on LM students with writing difficulties. The purpose of the present study is to replicate and extend the findings of Datchuk's (2016) method of increasing sentence construction

fluency in LM writers with writing difficulties. This study will take Datchuk's approach of sentence instruction and investigate its effects on Spanish-speaking LM students with writing difficulties. This study investigates two sets of dependent variables. The first set of dependent variables is the number CWS and IWS written per one-minute probe. The second set of dependent variables is the number of complete and incomplete sentences written per one-minute probe. A pre- and post-test five-minute paragraph probe will measure generalizability of sentence-level instruction to paragraph-level writing.

CHAPTER 2: METHOD

The present study used a multiple probe across participants single-case experimental design to measure (a) increases in the number of CWS written and decreases in the number of IWS written and (b) increases in the number of complete sentences written and decreases in the number of incomplete sentences written. A multiple probe design was selected because latter participants serve as the control for former participants, while data do not need to be collected in uniform sessions. Given that writing instruction involves learning skills are non-reversible, a design that demonstrates experimental control without the need for reversing behavior was necessary. A multiple probe design was preferable to a multiple baseline design because multiple probe designs protect against potential confounds due to practice effects given the nature of repeatedly administering identical probes. Baseline data were collected on three children in order to have three replications of the functional relation.

Participants

Three participants were selected following screening assessments. Participants were one child in third grade and two children in fifth grade, ranging in age from eight to

ten years. They were bilingual English and Spanish speakers as reported by parent information forms. Vocabulary and reading assessments from the WMLS III also confirmed that participants were bilingual English and Spanish speakers. Participants' parents also described their children as Hispanic or Latino. Screening assessments, as well as information acquired from the university tutoring center, indicated that the three participants underperformed in writing in comparison to their peers.

Ronaldo was a ten-year-old fifth grader. His school identified him as an English Language Learner and a struggling writer. Spanish was the primary spoken language in his household and English was the only language in which he received instruction at school. Fountas and Pinnell CBMs indicated that he achieved at least a sight word and comprehension level comparable to a typical third grade student. He demonstrated the ability to write 47 letters per minute. Results of the Written Language Expression subtest of the WMLS III indicated that his sentence writing skills were on par with typical first graders.

Nini was an eight-year-old third grader. The university reading center and her parents identified her as a struggling writer. Information provided by her parents indicated that Spanish and English were both spoken in her household, while English was the only language in which she received instruction at school. Fountas and Pinnell CBMs indicated that she achieved at least a sight word and comprehension level comparable to a typical third grade student. She demonstrated the ability to write 44 letters per minute. Results of the Written Language Expression subtest of the WMLS III indicated that her sentence writing skills were on par with typical second graders.

Snow was a ten-year-old fifth grader. The university reading center and his parents identified him as a struggling writer. Information provided by her parents indicated that Spanish and English were both spoken in his household, while English was the only language in which he received instruction at school. Fountas and Pinnell CBMs indicated that he achieved at least a sight word and comprehension level comparable to a typical third grade student. He demonstrated the ability to write 47 letters per minute. Results of the Written Language Expression subtest of the WMLS III indicated that his sentence writing skills were on par with typical fourth graders.

Setting

The study took place over the summer of 2018 at a major university in an urban area of a Midwest state. Participants did not attend summer school or any instructional programs outside of the research study. All sessions took place in a university educational facility. Participants received one-to-one instruction from the primary investigator in a quiet university laboratory with multiple tables and chairs. No other children were in the laboratory during sessions. Writing probes were administered in the same location and under the same conditions as instruction.

Nini and Snow were siblings and participated in the study during the same time of day. However, their instruction was completely separate and their probe administration did not overlap. To ensure that the intervention did not affect the participant that was still in baseline, the participant in baseline sat at a table across the room, read books, and listened to music through headphones while the sibling participant received instruction.

Measures

The present study used two measures. First, sentence-level writing probes and reading CBMs were administered as screeners to ensure eligibility for participation in this study. Second, one-minute writing probes and pre- and post-test five-minute writing probes were used as outcome measures to evaluate the effect of the intervention.

Dependent Variables. There were two sets of dependent variables used to evaluate performance on writing probes. The primary set of dependent variables was number of correct word sequences (CWS) and incorrect word sequences (IWS) written in one-minute writing probes. The secondary set of dependent variables was number of complete and incomplete sentences written in one-minute writing probes. One-minute sentence construction probes measured all dependent variables.. Figure 1 provides an example of such a probe.

CWS and IWS. The grammar and mechanics scoring rules from the Test of Written Language-4 (TOWL-4) served as the basis for scoring all CWS and IWS. As defined by these scoring criteria, A CWS was scored during each instance in which two adjacent correctly spelled words that were grammatically acceptable with the context of the phrase were written. Capitalization and punctuation must have also been used correctly within the sequence to score a CWS. An IWS was scored during each instance in which a CWS was not achieved. Results were scored as the number of CWS and IWS in each probe.

Sentences. A complete sentence was defined as a phrase or number of phrases beginning with a capital letter, ending with an appropriate punctuation mark (i.e. .,!, ?), having at least one subject and verb, and making syntactic sense (e.g. The cat jumped off

the chair.) (Bui, Schumaker, & Deschler, 2006). An incomplete sentence had one or more phrases in which at least one of these criteria were not met (e.g. A leaves falled from tree). Results were scored as frequency of complete sentences and incomplete sentences in each probe.

General Procedures

Recruitment and Screening. Potential participants were selected from a major university's after school reading and writing program. The director of the university center provided permission to contact and screen potential participants following university Institutional Review Board (IRB) approval. Children selected for screening were third to fifth grade current or past participants in the university program who spoke Spanish and English. A university employee called parents/guardians of potential participants to gauge interest in inclusion in the study, using a phone script. The primary investigator contacted parents/guardians who agreed to release their contact information and supplied them with a consent form for the study in their preferred language. After parents signed the consent form, the primary investigator acquired assent to participate from the child. Parents of potential participants completed a child information sheet to determine the children's age, grade, gender, race, use of Spanish and English in the home and at school, and the parents' perception of the children's writing ability (see Appendix A).

The investigator administered screening assessments to potential participants prior to inclusion in the study. To qualify for participation, children had to demonstrate difficulty with sentence-level writing, while satisfying an acceptable standard of performance in handwriting, spelling, and reading. Participants demonstrated reading

capabilities at a third-grade level or higher to meet the inclusion requirements of the study because they likely would not benefit from the intervention without the ability to fluently read the intervention materials (Graham, McKeown, & Kiuahara, Harris, 2012). Data from Fountas and Pinnell Curriculum-Based Measurements (CBMs) were used to determine that participants met this standard. Further inclusion criteria was that participants demonstrate the ability to write at least 40 letters per minute by writing the letters of the alphabet repeatedly, as quickly as possible, for a minute. This measure demonstrated that participants struggled with deeper processes of writing than the production of letters. The Written Language Expression Subtest of the Woodcock-Muñoz Language Survey III (WMLS III) gauged the participant's sentence-level writing ability prior to the study. Internal consistency reliability for this subtest ranges between .94 and .99 for eight- to 10-year-old children. Participants needed to score at a level consistent with typical children one grade level below them or lower to meet inclusion criteria.

A five-minute writing prompt was also administered to potential participants as a secondary measure. The investigator provided five potential story-starter prompts (e.g. I was walking through a park when I saw...) for the children to choose from to increase interest in the subject matter of the writing. This prompt served as a pre-test measure and was compared with another five-minute writing prompt sample following completion of the study. Information obtained from the paragraph prompts determined if the intervention generalized to paragraph-level writing skills.

Sessions. Administration of one-minute writing probes followed each baseline, intervention, and maintenance session. In baseline sessions, participants read age-appropriate books and practiced verbal Spanish skills with the tutor. During intervention,

participants completed one of three scripted lessons targeting specific sentence-writing goals. To proceed to the next lesson in the next intervention session, participants needed to achieve at least 90% accuracy on a checkout quiz following the lesson (Datchuk, 2016). If participants completed all three lessons before demonstrating a change in level or upward trend in CWS probe data relative to baseline after at least five intervention sessions, they completed practice probes designed to improve sentence-writing fluency in each session until meeting the criteria to change phases. Five maintenance probes were collected for each participant following the intervention phase. Sessions were 20 to 25 minutes each, including the administration of a writing probe. Participants met for 15 to 19 sessions total.

Data storage. The principal investigator stored physical data, including student information and writing samples, in a locked drawer in a university office, for which only he and his faculty mentor had a key. Data entered this drawer immediately following assessment and data entry. A password-protected secure server maintained data entry. Both physical and digital data collected throughout the study maintained use of pseudonyms on all documents to preserve the anonymity of participants.

Independent Variable

Participants received one lesson during any given session, immediately followed by a one-minute sentence construction probe. Due to time constraints, Snow, the final child to enter the intervention phase, participated in two intervention sessions per day for two days, completing five lessons in three non-consecutive days. Each session kept the same format of a lesson followed by a one-minute sentence writing probe.

The intervention began for each participant began after scoring within a range of

five CWS (e.g. two to seven CWS) during five consecutive baseline sessions with an even or downward trend in number of CWS. Further criteria were that only one participant could be in the intervention phase at a time. Researchers obtain experimental control by demonstrating change in a participant's writing during intervention relative to baseline, while the other participants' writing remains unchanged (Kazdin, 2011). The primary investigator delivered instruction to participants in one-on-one tutoring sessions that took place in a university laboratory during weekdays at the preferred times of parents/guardians of participants.

In following with previous studies (e.g., Datchuk, 2011; Datchuk, Kubina, & Mason, 2015; Datchuk, 2016; Datchuk, 2017), Lessons 1-3 provided sentence construction practice with a focus on accuracy of responding. During these lessons, the tutor used model-lead-test instructional procedures (Archer & Hughes, 2011). In model-lead-test instructional procedures, the instructor began as the only one to write, and vocalized his or her answer and process to each fill-in-the-blank item. Next, the instructor and participant both wrote while the instructor vocalized parts of the answer and process, and asked the participant to also give input. Third, the participant was the only one to write, while the instructor asked the participant about the process and/or answer for each item. Last, the student wrote independently and the instructor provided feedback as necessary.

The three lessons contained student materials and step-by-step scripts for the tutor. Student materials and scripts are available for download at www.shawndatchuk.com. The scripts and materials used for each lesson were the same across participants. However, Ronaldo repeated Lesson 1 because he did not reach the

performance criteria of 90% accuracy on the checkout the following the first day of instruction. Nini and Snow did not repeat any lessons.

During Lesson 1, the tutor defined simple sentences as having two main parts: a part that names and a part that tells more. The tutor modeled correct responses and led participants through guided practice of constructing complete sentences by responding to fill-in-the-blank items missing at least one part of a complete, simple sentence. For example, one task was to look at a picture of two women and two animals labeled with names and match the correct names to fill-in-the-blank sentences written below. Another task was to match the actions of what people are doing in a picture to fill-in-the-blank sentences written below with only the names of people. Last, participants learned to underline the part of each sentence that names something in complete sentences (e.g. “Robert” or “The doctor”). Lesson 1 ended with a checkout testing the skills taught.

During Lesson 2, the tutor reiterated that complete sentences have a part that names and a part that tells more. The tutor first taught participants to underline the part that names in each complete sentence. Next, the tutor demonstrated how to discriminate between complete and incomplete sentences by circling only complete sentences. Last, tutors modeled how to identify mistakes in capitalization and punctuation and make appropriate corrections. Lesson 2 ended with a checkout testing the skills taught.

Lesson 3 also began with a reminder that complete sentences have a part that names and a part that tells more. Next, the tutor reviewed how to discriminate between complete and incomplete sentences. Then the tutor practiced writing sentences for sentence construction probes without a timer. The tutor provided corrective feedback and praise as necessary following each sentence. The practice picture-word prompts did not

overlap with any of the picture-word prompts used in probes. The checkout for Lesson 3 consisted of the participant writing one sentence each about ten picture-word prompts.

A checkout assessed the participants' accuracy followed each lesson. Each checkout consisted of a 10-item worksheet that was specific to that day's lesson and unequivocal to sentence construction probes. At the start of the assessment, the tutor said, "I want to see how well I taught you. You will complete this independently. Do you have any questions?" (Datchuk, 2016). The tutor then answered any questions and the participant began the assessment. The requirement for moving on to the next lesson was to achieve 90% accuracy on the checkout (Datchuk, 2011; Datchuk, Kubina, & Mason, 2015; Datchuk, 2016; Datchuk, 2017). If participants achieved this goal, they would move on to the next lesson in the next session. If they did not achieve 90% accuracy on a checkout, they would repeat the lesson using the same materials during the next session.

Fluency-building practice probes in intervention sessions following the lessons consisted of three sets of a 10-item sentence construction probe. The tutor gave the same instructions as before typical probes and gave the participant one minute to write as many sentences as he or she could. After the minute, the tutor provided corrective feedback and praise as necessary. The participant then completed another identical copy of the sentence construction probe for one minute, with the goal of improving accuracy and fluency. The tutor gave corrective feedback and praise again. The process continued for a third time and then the participant received a probe at the end of the session. The investigator did not track accuracy on the fluency-building practice probes because the probes following intervention sessions determined when participants moved to the maintenance phase.

During the study, the only variable that changed between the baseline and

intervention phases for Ronaldo and Nini was the implementation of sentence instruction. As previously stated, Snow participated in a pair of sessions during the intervention and maintenance phases in the interest of time. The primary investigator, a licensed elementary and special education teacher, administered all sessions in the same setting and at the same time of day. He used a script during the administration of probes and lessons during each phase of the study consistent with Datchuk (2016). Observers took fidelity on the delivery of lessons and probes throughout the study. All observers were CITI trained.

Inter-rater Reliability

The investigator scored the number of word sequences (CWS and IWS) and number of complete and incomplete sentences written in the one-minute probe following each session. A graduate student independent of the study, trained in TOWL-4 CWS scoring, served as a secondary scorer. The investigator trained her in scoring complete and incomplete sentences in the format provided by Bui, Schumaker, and Deschler (2006). Inter-rater reliability was calculated by using the exact agreement formula, which involves computing the percent of intervals of inter-rater agreement data in which both raters were in exact agreement (Kazdin, 2011). Training continued until the author and secondary scorer reached at least 95% agreement on scoring the two sets of dependent variables in similar picture-word prompts. The two scorers checked inter-rater reliability of all sentence construction probes across all phases. Exact agreement scores on number of CWS and IWS and complete and incomplete sentences were 99.35% and 99.45%, respectively.

Fidelity

The investigator conducted the instruction in all lessons and followed scripted, step-by-step lessons. The investigator created fidelity sheets for observers to use for assessment of lesson and probe administration (see Appendix B). Observers took fidelity by using the script for probe administration during baseline and maintenance and by using a lesson checklist and script for probe administration during the intervention phase. Graduate students or the investigator's faculty advisor took fidelity on an average of 36.66% of baseline sessions, 33.33% of intervention sessions, and 40% of maintenance sessions. All fidelity sheets indicated 100% validity of instruction.

Data Analysis

The investigators used visual analysis, Tau values, and improvement rate difference (IRD) to assess the effects of sentence instruction on the frequency of CWS and IWS and complete and incomplete sentences in one-minute sentence construction prompts. Visual analysis is useful in single case designs because it highlights trends, levels, and overlapping data points or lack thereof in data. Tau-*U* is a method for measuring non-overlap between baseline and intervention data (Parker, Vannest, & Davis, 2011). Tau-*U* is useful because it corrects for increasing baseline trends in data expected to increase across phases (e.g., CWS and complete sentences). Tau effectively analyzes data expected to decrease across phases (e.g., IWS and incomplete sentences). Improvement rate difference provides an effect size similar to the *risk difference* used in medical treatment research which has a proven track record in hundreds of studies (Parker, Vannest, & Brown, 2009). The primary investigator calculated IRD and Tau values using the calculators available at www.singlecaseresearch.org/calculators.

CHAPTER 3: RESULTS

Word Sequences

During baseline, Ronaldo wrote between two and seven CWS and five to 19 IWS per minute (see Table 1). Although there was some variability in his CWS baseline data, Ronaldo scored within a range of five CWS during five consecutive baseline sessions with an even trend. This criterion and the consistent score of zero complete sentences led to a phase change after five sessions. When instruction began, the number of CWS Ronaldo wrote during each probe increased to between seven and 19 and the number of IWS decreased to between three and nine. Despite one overlapping data point, visual analysis shows a clear increase in trend and level during intervention relative to baseline (see Figure 2). The increase in the number of CWS occurred with very low variability in the total number of words written.

During baseline, Nini wrote between four and 11 CWS and one to five IWS per minute. Her baseline began with an upward trend that peaked at 11 CWS, which then decreased over the course of five sessions. Nini's decreasing trend in CWS that fell within a range of 5 CWS in five consecutive sessions combined with Ronaldo's stable intervention level after five sessions led to a phase change. When instruction began, there was an immediate reversal in the downward trend from baseline and a rise in level relative to baseline, despite two overlapping data points. Her range of CWS increased to between nine and 17 and her range of IWS remained the same. Nini also demonstrated an increase in the average number of words written following the introduction of sentence instruction.

During baseline, Snow wrote between 12 and 20 CWS and three to nine IWS per minute. He maintained a higher number of CWS than the other participants, but demonstrated a generally downward trend from sessions six to 18, culminating in a phase change given Nini's upward trend after five intervention sessions and his CWS falling inside of a range of five over five consecutive sessions. Following the implementation of instruction, there was an immediate increase in his CWS per minute. His range of CWS increased to between 13 and 22, while his IWS decreased to between zero and four. Snow's total number of words written during the intervention and maintenance phases fell within the level of his baseline number of words.

Tau-*U* analysis calculated that the intervention increased the slope of CWS across the three participants by 84% (see Table 2). Parker, Vannest, & Davis (2011) described Tau-*U* scores ranging from 0.66 to 0.92 as medium effects. The increase in CWS was statistically significant. The intervention also decreased the slope of IWS across the three participants by 65%. Tau scores ranging from 0 to 0.65 are weak effects (Parker, Vannest, & Davis, 2011). The decrease in IWS was also statistically significant. Calculated improvement rate difference effects for CWS and IWS were .63 and .40 respectively. Parker, Vannest, and Brown (2009) labeled effects below around .50 as small and effects ranging from around .50 to .70 as moderate.

Complete and Incomplete Sentences

During baseline, Ronaldo wrote zero complete sentences and two to five incomplete sentences on average per minute. When instruction began, the average number of complete sentences he wrote per minute increased from zero to between 1.8 and his average incomplete sentences decreased from 3.4 to 1.4. His intervention data

maintained an overall upward trend with one overlapping data point in comparison to baseline. The average percent of complete sentences that Ronaldo wrote increased from 0% during baseline to an average of 55% during the intervention phase.

During Nini's baseline, she wrote between zero and two complete sentences and one to two incomplete sentences on average per minute. Despite one outlier data point in session 11, she established a consistently low level of complete sentences within nine sessions. When instruction began, there was an increase in the number of complete sentences written per minute to between one and three, despite no change in incomplete sentences. Although a large portion of data on complete sentences during the intervention overlapped with baseline data, there was a clear upward trend in the number of complete sentences she wrote with little variability (see Figure 3). Following the introduction of sentence instruction, Nini's percent of complete sentences increased from an average of 26% during baseline to 58%.

During baseline, Snow wrote between zero and three complete sentences and one to five incomplete sentences per minute. Although his baseline data was highly variable, a mostly consistent downward trend began in session six, continuing throughout the rest of baseline. When instruction began, there was an immediate increase in the number of complete sentences he wrote per minute; however, all data points during intervention overlapped with baseline data. Snow's average percent of complete sentences increased from 41% during baseline to 72% during the intervention phase.

Calculated Tau-*U* effect sizes indicated moderate to strong effects for the intervention and the slope increased for complete sentences across the three participants by 81%. Parker, Vannest, & Davis (2011) described Tau-*U* scores ranging from 0.66 to

0.92 as medium effects. The increase in complete sentences was statistically significant. The intervention also decreased the slope of incomplete across the three participants by 57%. Tau scores ranging from 0 to 0.65 are weak effects (Parker, Vannest, & Davis, 2011). The decrease in incomplete sentences was somewhat statistically significant. Calculated improvement rate difference effects for complete sentences and incomplete sentences were .73 and .46 respectively. Parker, Vannest, and Brown (2009) labeled effects below around .50 as small and effects ranging from around .70 to .75 and higher as large and very large.

Paragraph Probes

Each participant completed two five-minute paragraph CBMs. The first paragraph CBM was administered with the screening assessments, following consent and assent to participate in the study. A second paragraph CBM was administered to each participant on the day of their final session, following the typical one-minute probe(s). The purpose of these secondary probes was to evaluate whether the sentence instruction intervention effectively generalized to paragraph writing skills. Results of the pre- and post-test five minutes probes appear in Table 3. Two participants demonstrated unfavorable outcomes on the post-test relative to the pre-test in terms of total words written, CWS, IWS, and percent of CWS. One participant improved on these four measures on the post-test relative to the pre-test.

CHAPTER 4: DISCUSSION

This replication study investigated the effects of Datchuk's (2016) simple-sentence writing intervention on the simple sentence construction of three elementary-aged Spanish-speaking language-minority children with writing difficulties. The

intervention was designed to improve the accuracy and fluency of children's sentence-level writing. Specifically, it targeted correct use of capitalization, punctuation, and syntax in the context of writing about picture prompts. The primary research question was whether the intervention would increase the number of CWS and decrease the IWS in each one-minute probe. The results of the study indicated that the intervention had a significant effect of increasing CWS and decreasing IWS in each probe. The secondary research question was whether the intervention would increase the number of complete sentences and decrease the number of incomplete sentences in each one-minute probe. The intervention successfully increased complete sentences for all participants and decreased incomplete sentences for two of the three participants. A pre- and post-test five-minute paragraph writing CBM was given to measure potential generalization effects. The results of the pre- and post-test do not indicate that skills gained from the intervention generalized to the five-minute paragraph probe.

Visual analysis of the baseline and intervention data suggested that there was a functional relation between sentence instruction and children's CWS and complete sentences, such that CWS and complete sentences increased when the instruction began. Conversely, there was also a functional relation between sentence instruction and a decrease in IWS for two participants, as well as a decrease in incomplete sentences for two participants.

Given the increase in level in CWS and complete sentences, it seemed that the intervention was effective for Ronaldo. Two factors seem to have contributed to a large portion of Ronaldo's improvements in sentence construction. One of the clearest improvements that he made during and following instruction was to drastically increase

his use of punctuation. Proper punctuation is one of the main focuses of the intervention as it is necessary to improve both CWS and complete sentences. He also began many more sentences with capital letters in the intervention and maintenance probes relative to baseline probes. Like punctuation, capitalization is another main focus of the intervention. Proper capitalization is also necessary to count towards a complete sentence and it also helps to raise the number of CWS. Zhang (2000) suggests that Spanish-speaking language-minority children may struggle with capitalization and punctuation in English, even though both English and Spanish use the same system of capitalization and ending punctuation. It is possible that for struggling second-language writers, educators may overlook simple tasks such as capitalization and punctuation may due to an increased focus on grammar or unfamiliar vocabulary. A direct instruction format that explicitly teaches and reminds children to consistently use punctuation and capitalization, such as this one, may be beneficial for language-minority children.

Despite the generally stable number of IWS written during each phase, the rise in the number of CWS written, as well as the increase in the number of complete sentences written suggested that the intervention was somewhat effective for Nini. The main effect that the intervention seemed to have on Nini is that it increased the length and accuracy of her sentences. The number of sentences she wrote increased, but the change in the complexity of her sentences stood out the most. She mostly wrote single clauses with one noun and one verb in baseline probes. Following instruction, there was a change in that many of the sentences she wrote were compound or complex sentences, made up of two or more clauses, instead of simple sentences. Furey, Marcotte, Wells, and Hintze (2017) studied the effects of a separate sentence construction intervention on the writing skills of

elementary-aged struggling writers. They found that an intervention targeting simple-sentence construction can increase the complexity of the sentences written, despite a lack of change in story quality. This intervention appeared to have a similar effect on Nini's sentence-level writing and it may be that a focus on constructing the most basic sentences will lead to more complex sentences.

The intervention was slightly less effective for Nini relative to Ronaldo, in terms of increase in CWS and decrease in IWS. This gap is likely due to Nini's habit of correctly using capitalization and punctuation throughout all three phases. The addition of these two elements drastically increased Ronaldo's CWS and complete sentences. Since Nini, used them correctly in baseline, she did not benefit from such a drastic increase during the intervention. Nini's level of baseline CWS was on par with second or third graders' CWS in CBM writing according to Malecki and Jewell (2003). However, Nini had the advantage of writing about picture-word prompts, where at least two words were already provided for her for every picture she wrote about. This advantage, combined with the potential advantage that writing about a picture instead of a story starter may provide could explain why she performed near grade-level average relative to data collected by Malecki and Jewell (2003).

Although many of Snow's intervention data points overlapped with baseline data, the reversal of trends across phases in CWS and complete sentences suggested that the intervention was moderately effective in improving his sentence writing. The major cause of Snow's increase in CWS was his decrease in IWS. He wrote a relatively stable amount of total words during the baseline and intervention phases, indicating that a decrease in IWS would lead to an increase in CWS. The number of CWS and IWS he wrote were

nearly reciprocal during the all phases. An effect that the intervention may have had on Snow's CWS was to decrease the number of inconsistencies in his sentence-level writing. Snow demonstrated during baseline that he was capable of writing 20 CWS without instruction. However, he also wrote merely 11 CWS during another baseline session. The inconsistencies in his sentence-level writing led to a high degree of variability in his word sequences and complete and incomplete sentences. In the same probe, he would often have two sentences with punctuation and two without. He would sometimes correctly use subject-verb agreements and sometimes not. The repetitive practice of simple sentence writing that the intervention provided seemed to decrease the number of inconsistent errors in his writing, which led to more CWS and more complete sentences relative to baseline.

Snow's baseline CWS data was the highest of the three participants. It is likely that he wrote more CWS than Nini because of the difference in their age. A possible reason for why he wrote more CWS than Ronaldo, who was the same age, is that Ronaldo may have a more significant difficulty with writing, caused by a disability. Although Snow's CWS may seem high relative to the other participants, when compared to typical children, his baseline performance places him somewhere between late third to fifth grade level of writing (Malecki & Jewell, 2003). However, this assessment may have put him at an advantage relative to the norm from prior research due to the use of picture-word prompts instead of picture-less prompts.

The results of the paragraph probes administered with the screening assessments and following the end of the maintenance phase did not indicate that skills gained from the intervention generalized to paragraph writing for two of the three participants.

Investigators measured four variables in the five-minute paragraph probes: total number of words written, CWS, IWS, and percent of CWS. Nini was the only participant whose paragraph writing skills may have improved due to sentence instruction. Her total words, CWS, and percent of CWS all increased from the first to the second probe. Her number of IWS also increased, but that would be expected since she wrote more total words during the second probe. One explanation for the improvement in her paragraph writing could be that her inclination to write more complex sentences following the intervention may lend itself better to paragraph writing than the simple sentence structure that the other participants used. However, it could also be that she was more interested in the topic of the second CBM that she chose than the first, leading her to write more about it. Investigators did not administer an interest inventory to determine what the participants preferred to write about.

Ronaldo and Snow both performed at a lower level in all four categories tracked in paragraph writing. The time of year likely influenced the discrepancy in scores. Ronaldo responded to the first probe on his last day of school and Snow and Nini received their probes the following day. At that time, the two older participants received paragraph writing instruction daily, as it is a large typical part of the typical writing curriculum at their grade-level. The second paragraph probe was administered in the middle of the summer, when the participants had not received paragraph writing instruction on a daily basis for nearly two months. Since none of the participants attended summer school or an outside educational program, they likely suffered from a natural decrease in academic skills without practice, which led to the lower scores on the latter probe. An explanation for why Nini was less effected by the time between assessments is

that she likely received less frequent paragraph-writing instruction in school. Without as much instruction as the other two participants, she achieved lower scores, which allowed her to demonstrate more growth. Based on the decrease in the performance on two of the three participants in paragraph writing, it is unlikely that there is a functional relation between sentence instruction and paragraph writing.

Implications for Research

The intervention used in this study was previously used with adolescents with difficulty constructing simple sentences (Datchuk, 2011), elementary-aged students with behavioral concerns and writing disabilities (Datchuk, Kubina & Mason, 2015), adolescents with writing disabilities (Datchuk, 2016), and as a group intervention for middle schoolers with writing difficulties (Datchuk, 2017). The present investigator applied the simple sentence writing intervention to elementary-aged language-minority students with writing difficulties. Its success in increasing the number of CWS and complete sentences while generally decreasing IWS and incomplete sentences demonstrated that this type of intervention can be effective for younger bilingual learners.

By providing explicit instructions in how to create simple sentences (i.e. include a part that names and a part that tells more), the intervention may have decreased the cognitive load on the bilingual writers by giving them a very clear format of how to structure sentences. Language-minority students typically struggle to choose the correct syntax to use while writing in English as it is a language-independent structure (Francis, 2006). The sentence instruction focused heavily on building automaticity in structuring simple sentences by having the tutor model how to write them, having the participant practice them, and then assessing the participant's individual work and providing

performance feedback. The repetition of practice with feedback improved the participants' sentence writing automaticity and decreased the cognitive load that it took to choose the correct structure of sentences. With less thought process dedicated purely to syntax, participants focused more on creating CWS and complete sentences. Direct instruction on sentence-level writing is an effective approach to improving writing outcomes for typical monolingual children (Graham, 2006a). The results of this study indicate that it may also be an effective approach to improving the writing outcomes of struggling Spanish-speaking bilinguals. Further research on the effects of sentence writing instruction on Spanish-speaking bilinguals' writing is necessary.

As the effects of the intervention may generalize to multilingual speakers of other languages, further research should also focus on non-Spanish bilinguals. A study that applies the intervention to non-Spanish speakers could result in findings similar to the present study. Potential variables that may affect the success of the intervention in such research are the grammar and syntax of the primarily spoken language, the alphabet the children are most familiar with, and the children's exposure to the English language. Mandarin, Japanese, and Arabic use a system of capitalization, punctuation, and alphabetic principles that do not share commonalities with the English language as the Spanish language does. It is possible that bilinguals that mainly speak languages like these may struggle to improve with this sentence instruction. Moreover, children that have little exposure to English may struggle with this intervention because they are unable to comprehend the words in the picture-word prompts and they may not have the requisite English writing skills to successfully complete the intervention. Further research

is necessary to determine whether this intervention would be successful with speakers of other languages.

Implications for Practice

Teachers with a diverse population of language learners may struggle to find a writing curriculum that is both effective and realistic in terms of time and materials for their students. This method of sentence instruction is effective for increasing CWS and complete sentences for students taught in groups (Datchuk, 2017) and taught individually (Datchuk, 2011; Datchuk, Kubina, & Mason, 2015; Datchuk, 2016). The flexibility of an intervention that is effective when taught individually or in groups may be helpful for teachers in terms of ensuring that all students receive writing instruction that is appropriate for their abilities.

The present study also reinforces the effectiveness of sentence instruction for elementary-aged students. Datchuk, Kubina and Mason (2015) tested the effectiveness of this sentence instruction intervention with elementary students. They found that sentence instruction successfully increased the number of CWS and complete sentences each participant wrote while decreasing IWS and incomplete sentences. The present study demonstrated a similar increase in CWS and complete sentences written and decrease in IWS and incomplete sentences with participants around the same age. Therefore, explicit instruction on sentence-level writing seems to be an important tool for elementary school teachers.

The present study was the first to explicitly test Datchuk's sentence instruction method on bilingual children. As the results showed positive implications for bilingual writers, teachers may consider using it to improve the writing outcomes of bilingual

writers in their classrooms. An aspect of the intervention that might be the most useful for teachers of bilingual children are that it can be administered in short amounts of time, so it can be used as a supplement to general writing instruction for a few bilingual students. It also optimizes the amount of time that bilingual children are actually writing instead of only watching an adult write, which can increase fluency. Finally, it is an effective tool for teaching bilingual children with writing difficulties or disabilities, which is a population that teachers may struggle to teach.

Limitations

There are several limitations to this study. First, the probes used to track sentence-writing performance were one minute in length in each phase. It is possible that one-minute probes did not allow participants enough time to write, therefore limiting their ability to demonstrate that the intervention effected their writing. Three- or five-minute sentence construction probes better represent future participants' writing ability. Moreover, longer probes would have likely eliminated some of the overlapping data points between phases and increased the functional relation between the intervention and CWS and complete sentences.

Uneven administration of probes may have posed a confound to experimental results. The primary investigator did not administer probes on an even schedule across phases and did not follow a pattern. Data were collected during the summer and each participant was unable to participate for at least a week during the study due to a family vacation. Nini and Snow were siblings and were only able to attend sessions if they both came at the same time, meaning they could attend fewer sessions per week than Ronaldo. The outcome of this issue was that Snow's intervention and maintenance data were

collected in pairs of two sessions per day. As the other two participants only participated in one lesson and probe per session during all phases, there may be a threat to the experimental validity of Snow's data. Collecting multiple data points on the same day negatively affects experimental validity because it increases the likelihood that the data collected are not entirely independent of each other. If Snow had a particularly successful day with sentence writing during the intervention, it is likely that two probes would be skewed from his average instead of only one since he completed two probes each day. The opposite would be true if he had a particularly difficult day completing probes. Future research should ensure that there is enough time to complete the study with an equal number of sessions per day for all participants across all phases.

Due to the criteria of 90% accuracy set on the checkout following the three lessons, there was an uneven distribution of lesson completion across participants. Nini and Snow both met or exceeded the 90% on the checkout following all lessons. However, Ronaldo did not meet the accuracy criteria following the first lesson. Therefore, he repeated the same lesson in the next session and then met the criteria. The result of repeating the same lesson twice was that Ronaldo only participated in one fluency-building intervention session following the three lessons, whereas the other two participants had two fluency-building sessions each. There may be a confound to the experimental results in that the participants did not all receive the same amount of fluency-building sessions.

It is possible that Snow, and potentially Nini, may not have struggled with the skills taught by this intervention. Snow's baseline CWS data was considerably higher than the other two participants, which indicates that he may not have needed some

aspects of the intervention. Therefore, many his intervention data overlapped with baseline data. Nini's baseline CWS data was not as high as Snow's, but it is important to consider that she is two years younger than him. Overlapping CWS data in these two participants contributed to a smaller effect on experimental validity. Future research should include picture-word prompt probes in the screening of participants to increase the likelihood that their baseline data would not have as much overlap with intervention data, and that the intervention would be more effective for participants.

It is possible that Nini's and Snow's growth in CWS was due more to maturation effects than the intervention itself. Figure 2 shows that Nini increased the number of CWS written from baseline to intervention, but that CWS continued to increase during the maintenance phase, when she did not receive instruction. Snow's maintenance level is also slightly higher than his intervention data, although there is overlap between four of the five maintenance probes. Maturation is a threat to the internal validity of the study because it creates another variable besides the intervention that influences participant performance.

Conclusion

The present study replicated Datchuk's (2016) sentence instruction intervention with Spanish-speaking LMS's, aged eight to ten, with writing difficulties. The results suggested that this sentence instruction intervention was a useful method of improving the sentence-level writing outcomes of elementary-aged bilingual children. The intervention improved the accuracy of the participants' simple-sentence construction and increased CWS while generally decreasing IWS written in one-minute probes. Moreover, it also increased the frequency of complete sentences while decreasing the frequency of

incomplete sentences written in one-minute probes. The improvements in sentence-level writing did not generalize to paragraph-level writing for two of the three participants.

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Table 1

Results of all one-minute writing probes.

	Ronaldo		Nini		Snow	
	<i>M</i>	Range	<i>M</i>	Range	<i>M</i>	Range
Number of Correct Word Sequences						
Baseline	3.60	2-7	7.44	4-11	13.88	11-20
Intervention	12.80	7-16	12.40	9-17	17.40	13-22
Maintenance	12.40	8-15	16.00	14-20	21.60	20-23
Number of Incorrect Word Sequences						
Baseline	12.00	5-19	4.44	1-8	5.66	3-9
Intervention	5.60	3-9	3.20	1-5	2.60	0-4
Maintenance	4.00	2-6	2.20	0-5	2.00	1-3
Number of Complete Sentences						
Baseline	0.00	0	0.66	0-2	1.44	0-3
Intervention	1.80	0-3	2.00	1-3	3.20	2-4
Maintenance	2.20	2-3	2.40	1-3	3.60	2-4
Number of Incomplete Sentences						
Baseline	3.40	2-5	1.66	1-2	2.33	1-5
Intervention	1.40	1-3	1.40	1-2	1.20	1-2
Maintenance	0.80	0-1	0.80	0-1	1.40	0-3
Percent of Correct Word Sequences						
Baseline	24.0	9-37	62.9	40-92	71.1	57-83
Intervention	67.8	39-84	73.6	64-80	86.3	76-100
Maintenance	76.5	57-88	88.7	75-100	91.5	88-96

Table 2

*Tau and Tau-U scores for word sequences
and sentences.*

	Tau-U	Z	p-value
CWS	0.84	4.12	>0.001
CS	0.81	3.99	>0.001
	Tau	Z	p-value
IWS	-0.65	-3.20	0.001
IS	-0.57	-2.83	0.005

Note. CWS=Correct Word Sequences,

IWS=Incorrect Word Sequences,

CS=Complete Sentences, IS=Incomplete

Sentences

Table 3

Results of pre- and post-test five-minute probes.

	Ronaldo		Nini		Snow	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Total Words	68	53	28	47	51	40
CWS	51	26	18	36	53	34
IWS	20	21	11	17	4	14
% CWS	71.83	63.15	62.06	67.92	92.98	70.83

Note. CWS=Correct Word Sequences, IWS=Incorrect Word Sequences

Name: _____

Date: _____



6	 <p>a seal nose</p>	<hr/> <hr/> <hr/>
7	 <p>the kid basketball</p>	<hr/> <hr/> <hr/>
8	 <p>kathy book</p>	<hr/> <hr/> <hr/>
9	 <p>sally milk</p>	<hr/> <hr/> <hr/>
10	 <p>she desk</p>	<hr/> <hr/> <hr/>

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Figure 1. Example of a sentence construction probe used in the present study.

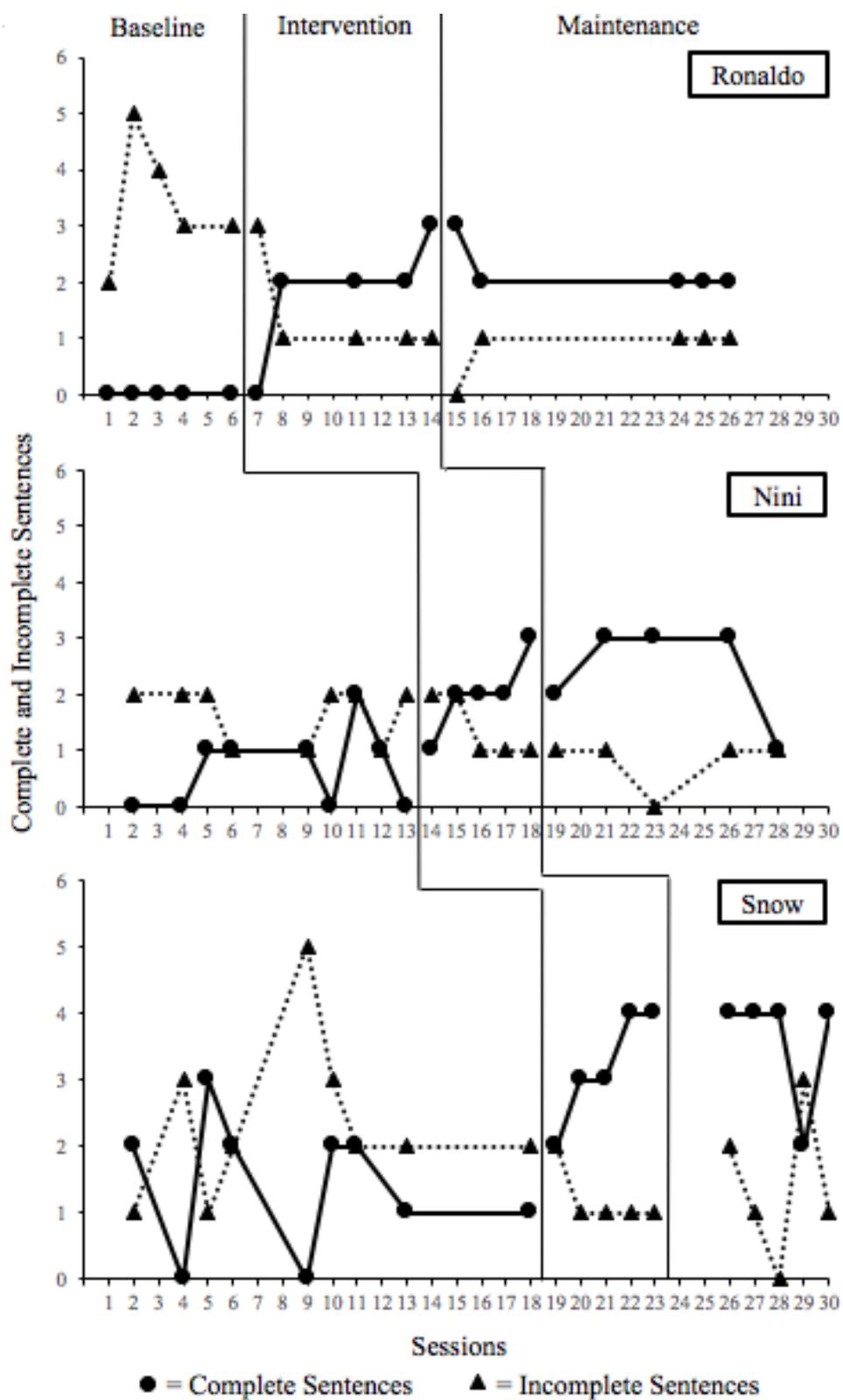


Figure 2. Frequency of CWS and IWS in picture-word prompts.

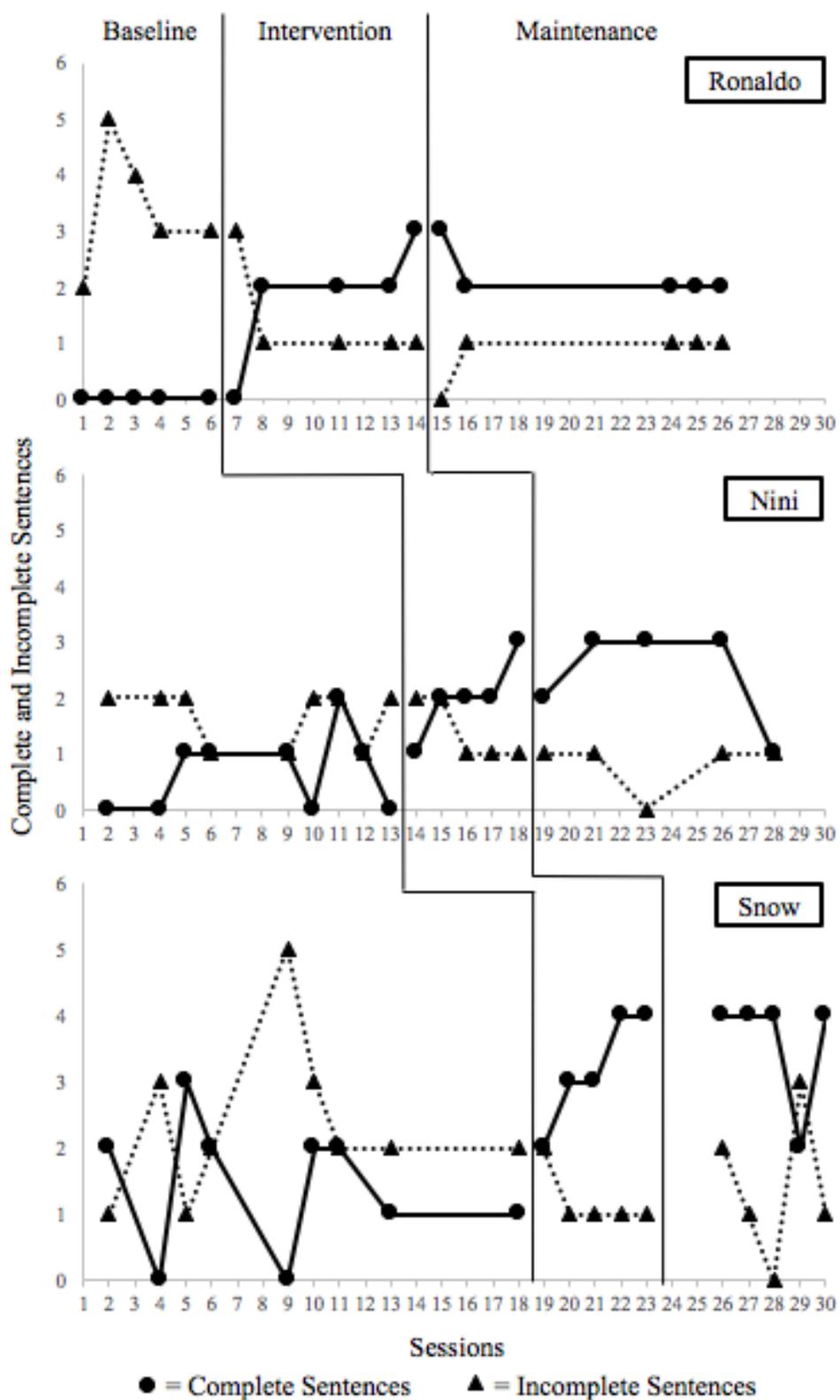


Figure 3. Frequency of complete and incomplete sentences in picture-word prompts.

APPENDIX A
CHILD INFORMATION SHEET

Child Information Sheet

Please provide the following information about your child.

Child's Name: _____ Today's Date: _____

Child's Birth Date: _____ Grade: _____

Child's Birthplace: State (if applicable): _____ Country: _____

Gender: M F

Ethnicity: Hispanic or Latino Not Hispanic or Latino

1. What language(s) does your child speak?

English only Some of both

Spanish only Other (specify) _____

2. What is the language your child prefers to speak?

English Spanish Other _____

3. What is the language MOST commonly spoken in the home?

English Spanish

About 50/50 Spanish/English Other _____

4. What is the language your child MOST commonly uses to write?

English Spanish

About 50/50 Spanish/English Other _____

5. How would you rate the quality of your child's writing in English?

Excellent Good Average

Poor Very Poor Does not write in English

6. How would you rate the quality of your child's writing in Spanish?

Excellent Good Average

Poor Very Poor Does not write in Spanish

7. Do you believe your child struggles with writing?

Yes No

8. Has a professional from your child's school mentioned that your child may struggle with writing?

Yes No

9. Does your child have a disability related to writing?

Yes No I'd rather not comment.

10. If the previous answer was "Yes", what is your child's disability?

_____ or I'd rather not comment.

APPENDIX B
FIDELITY CHECKLISTS

Procedural Integrity Checklist Administration of Sentence Construction Probes

1. Tutor states directions, “Write your name and date at the time. When I say start, you will have 1 minute to write as many complete sentences as possible describing the picture(s) with the words given. Work quickly and accurately. Do you have any questions?”
2. Tutor provides the appropriate amount of time (i.e., 1 min for sentence construction and 3 min for descriptive paragraph).
3. Tutor provides no prompts during probe administration (e.g., continue writing, ideas, organization tips, etc.).

Name of Observer: _____

Participant Code Name: _____

Date: _____

Fidelity Checklist for Lesson 1

Sentence Instruction – Lesson 1 Fidelity Checklist

1. For the following objectives in Lesson 1 of Sentence Instruction, the tutor prompts responses and corrects errors, and the participant provides vocal and handwritten responses:

A. Fill in the missing part of 15 sentences (the part that names someone/something).

1-4. ___ ___ ___ ___
 5-8. ___ ___ ___ ___
 9-12. ___ ___ ___ ___
 13-15. ___ ___ ___ ___

B. Fill in the missing part of 12 sentences (the part that tells more)

1-3. ___ ___ ___
 4-6. ___ ___ ___
 7-9. ___ ___ ___
 10-12. ___ ___ ___

C. Read 20 sentences and identify part that names and part that tells more.

1-5. ___ ___ ___ ___ ___
 6-10. ___ ___ ___ ___ ___
 11-15. ___ ___ ___ ___ ___
 16-20. ___ ___ ___ ___ ___

Checkout for Lesson 1

1. Instructor says, "I want to see how I taught you today's lesson. You will complete this worksheet by yourself."
2. Instructor says, "Directions for 1 to 3 say write the name of the correct person in the blank."
3. Instructor says, "Directions for 4 to 6 say write the phrase that best completes each sentence."

Name of Observer: _____

Participant Code Name:

Date: _____

Fidelity Checklist for Lesson 2

Sentence Instruction – Lesson 2 Fidelity Checklist

2. For the following objectives in Lesson 3 of Sentence Instruction, the tutor prompts responses and corrects errors, and the participant provides vocal and handwritten responses:

A. Underline the part of each sentence that names something.

1-5. ___ ___ ___ ___ ___
 6-10. ___ ___ ___ ___ ___
 11-15. ___ ___ ___ ___ ___
 15-20. ___ ___ ___ ___ ___

B. Circle each simple sentence.

1-5. ___ ___ ___ ___ ___
 6-10. ___ ___ ___ ___ ___
 11-15. ___ ___ ___ ___ ___
 16-20. ___ ___ ___ ___ ___

C. Put in the capitals and end marks.

1-5. ___ ___ ___ ___ ___
 6-10. ___ ___ ___ ___ ___
 11-15. ___ ___ ___ ___ ___
 16-20. ___ ___ ___ ___ ___

Checkout for Lesson 2

1. Instructor says, "I want to see how well I taught you today's lesson. You will complete this worksheet by yourself."
2. Instructor says, "For numbers 1 to 5, the instructions say underline the part of each sentence that names."
3. Instructor says, "For numbers 6 to 10, the instructions say circle each simple sentence."

Name of Observer: _____

Participant Code Name:

Date: _____

Fidelity Checklist for Lesson 3

Sentence Instruction – Lesson 3 Fidelity Checklist

3. For the following objectives in Lesson 3 of Sentence Instruction, the tutor prompts responses and corrects errors, and the participant provides vocal and handwritten responses:

A. Read 20 phrases and identify each as a complete or incomplete sentence.

1-5.	___	___	___	___	___
6-10.	___	___	___	___	___
11-15.	___	___	___	___	___
16-20.	___	___	___	___	___

B. Write 20 sentence to small picture-word prompts.

1-5.	___	___	___	___	___
6-10.	___	___	___	___	___
11-15.	___	___	___	___	___
16-20.	___	___	___	___	___

Checkout for Lesson 3

1. Instructor says, “I want to see how I taught you today’s lesson. You will complete this worksheet by yourself.”

2. Instructor says, “The instructions for numbers 1 to 10 say write a complete sentence for each picture using all the words given.”

Name of Observer: _____

Participant Code Name:

Date: _____