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Abstract

This study explores the intertwined phenomena of language deprivation, emergent writing, and translanguaging in deaf students without additional disabilities in grades 3–6. A case study was conducted using deductive and inductive approaches to analyze 42 writing samples. There were four areas of focus: (1) stages of emergent writing development, (2) writing change over time, (3) emerging writing and translanguaging features, and (4) writing features unique to the context of language deprivation. First, pre-writing samples add to evidence that older deaf students undergo similar developmental processes with their emergent writing patterns. Second, an analysis of pre- and post-writing samples indicated that movement between stages occurred for most students. Third, students incorporated emergent writing and translanguaging features that reflected the application of their linguistic resources in writing. Finally, existing theories were extended by uncovering writing characteristics unique to the context of language deprivation. Incomplete ideation and restricted translanguaging practices were identified as attributions of language deprivation impacting cognitive and linguistic resources. This study provides evidence that deaf students as old as thirteen years old are developing emergent writing skills not because of their deafness but likely because they were in environments that produced chronic inadequate language access

Characteristics of Deaf Emergent Writers Who Experienced Language Deprivation

Emergent writing involves expressing ideas in print through drawing, scribbling, and then writing letters, words, and phrases. Students who know two or more languages engage in translanguaging practices while developing emergent writing skills, drawing upon their whole linguistic and semiotic repertoires to express meaning. There is limited research that explores the writing characteristics of deaf students in 3rd to 6th grade to investigate the intertwined phenomena of emergent writing and translanguaging. In addition to documenting deaf students' engagement with their linguistic resources, we aim to bring attention to the impact of language deprivation on their writing. In subsequent sections, we highlight existing literature to provide an overview of the context of emergent writing development, translanguaging, and language deprivation along with a summary of the current study.

Emergent Writing Development

Emergent writers pass through stages of development, beginning with first attempts of putting pen to paper (Byington & Kim, 2017; Gentry, 2000; Puranik & Lonigan 2014; Rubin & Carlan, 2005). The pre-alphabetic stage involves drawing, directional scribbling, and writing mock letters, indicating that these markers represent thoughts and ideations. Next, during the emergent stage, students produce strings of standard letters in varying patterns. Then, students entering the transitional stage shift from writing strings of random letters to writing individual words, often relying on phonetic spelling or writing labels under pictures. Last, the conventional stage entails writing phrases that are bound by the student's acquired vocabulary and knowledge of linguistic features. Students begin to depart from their identity as emergent writers when they can write a complete sentence.

Berninger et al. (2002) describe ideation and transcription as two integral aspects of writing. Ideation involves coming up with ideas, and transcription happens when these ideas are documented using text (e.g., handwriting and spelling). Research shows that having sufficient knowledge of vocabulary and linguistic features is foundational to students' ability to formulate ideas in any language, signed or spoken, which is then applied to writing through transcription (Santangelo & Graham, 2016). A meta-analysis of the writing development of multilingual students revealed similarities to monolinguals in the areas of oral language, vocabulary, and transcription (Graham & Eslami, 2020). Ultimately, oral language was identified as one of the most important strategies that multilingual students use to support their writing within and across languages. For example, oral language is used for ideation, planning writing, self-regulating and problem-solving, and comparing and contrasting languages (Gort, 2012).

Translanguaging View

The translanguaging view provides a framework that recognizes multilingual students' use of language brings forth valuable strategies that are poorly understood from a monolingual view (Vogel & Garcia, 2017). It is argued that multilinguals have a single, integrated linguistic repertoire in which all languages are naturally activated in the brain throughout the writing processes, stimulating translanguaging practices. During writing, interliteracy involves applying unified linguistic knowledge of features in all languages, such as phonemes, graphemes, vocabulary, and/or syntax, to craft expressions of meaning (Gort, 2006; 2019). For instance, phonological application is when one applies how a word sounds in one language to assist with writing in the other language, and syntactic application is drawing upon one's knowledge of the word order structure of one language to write in another language. The translanguaging view

explores the linguistic features and strategies that students employ in their writing holistically (Soltero-González et al., 2012).

While translanguaging may seem similar to Cummins' bilingual models (Cummins, 1979) such as Common Underlying Proficiency and Linguistic Interdependence, the divergence occurs in the foundation of the theories. Unlike these two bilingual models that state skills and resources are "transferred" across languages, the translanguaging view says they are being "accessed" from a single, integrated linguistic system (Garcia et al., 2021). Constructs commonly found in Cummins' work such as codeswitching, additive bilingualism, and academic language are considered as monoglossic conceptions of bilingualism. Monoglossic perspectives reinforce assimilation into dominant group's linguistic norms by indicating that a bilingual should function like two monolinguals in one, ideas which are rejected by translanguaging scholars (Flores & Rosa, 2015). Also extending the critiques of previous language models, but with a new lens focused on disability justice, Henner and Robinson (2021) provide a crip linguistics framework to contest the normalcy of language practices. It is argued that the ways disabled and deaf people use language(s) are not defective nor should their language practices be compared to monolingual, abled norms. Rather, a broad view of language is taken that honors all linguistic repertoires, variations, and expressions as viable. Deaf students' writing has not been historically evaluated through a translanguaging view with a crip linguistics lens that also takes into account the effects of language deprivation (Strassman & Schirmer, 2013), which is described next.

Deaf and Hard of Hearing Students

Deaf students' language experiences in the United States (U.S.) are diverse; monolingual or multilingual status does not fully describe their access to and interactions with American Sign Language (ASL), English, and other home languages (Hall & Anda, 2021). Some students are

only exposed to spoken language, and they access the spoken language input with or without listening devices such as hearing aids or cochlear implants. Due to their varying experiences with auditory access, those students could become fluent monolingual speakers or have restricted language systems with little knowledge of spoken language (Koulidobrova & Pichler, 2021). In other cases, signed language is present in the environment, but the people around the deaf student such as caregivers, teachers, interpreters, and/or peers are not proficient and/or do not regularly use it, restricting language growth (Caselli et al., 2020). Less common is the experience of accessing multilingual adults fluent in spoken/written/signed languages and being raised multilingually with competence in expressing ideas using all languages (Davidson et al., 2013).

Language Deprivation and Adverse Childhood Communication Experiences

Language deprivation is an anomaly in the hearing population because children hear the language around them being spoken in their environment. While there are cases of language deprivation in hearing children due to linguistic isolation, neglect, and/or abuse, these are extremely rare. In large, hearing children receive adequate quantities for typical cognitive and language development (Koulidobrova & Pichler, 2021). Conversely, language deprivation is widespread in the deaf population due to the physical barrier of not being able to fully hear spoken language, and simultaneously not having sufficient contact with people who use signed language to facilitate natural language experiences (Gulati, 2019). Chronic inadequate access to language during the developmental period can permanently impact a person's cognition, executive functions, reasoning, language, literacy, and writing skills (Hall, 2017). When deaf children do not adequately access language during developmental years, they deal with the ongoing effects of language deprivation throughout their schooling years as a result.

Deaf Emergent Writers

A meta-analysis identified 17 studies between 1990 and 2012 that examined the emergent writing development of deaf children between three and eight years old with the largest sample group consisting of only 72 students (William & Mayer, 2015). The authors concluded that young deaf children progress through the same emergent writing stages as hearing children with scribbling, writing letter strings, and labeling. However, there are some distinct characteristics present in written expressions associated with knowledge of signed language and/or varied levels of access to spoken language. For example, deaf children often leverage their knowledge of visual patterns in fingerspelling and orthography when writing instead of relying on sound-based approaches (cf. Padden, 1993; Wolsey et al., 2018).

In addition to attending to fingerspelling and orthography, deaf children also use signed language to engage in metacognitive processes associated with writing. Williams (1999) observed high levels of social interactions surrounding print where deaf preschoolers critiqued each other's ideas and writing forms (transcription, spelling, and fingerspelling) through signed language. A more recent longitudinal study found that stronger ASL skills in deaf preschoolers yielded a significant impact on overall letter and word identification skills and accelerated the rate of writing development (Allen & Morere, 2020). These findings do not deviate from broader multilingual research in that having a strong foundation of language and metalinguistics facilitates the learning of more languages at a young age (Genesee & Lindholm-Leary, 2021).

Cummins' models are popular in deaf education research where attention is placed on whether there is linguistic transfer or interference between L1 (e.g., ASL) and L2 (e.g., English). In earlier work, Wolbers et al. (2014) analyzed how middle school deaf students' L1 (ASL) knowledge could be identified in their L2 (English print), and referred to this phenomenon as transfer. A translanguaging view, which is taken up in the current paper, rejects the concept of

linguistic transfer as it connotes that there are two separate linguistic systems rather than a single, integrated system. When applying a translanguaging view to the prior study, the results would be described as students tapping into their whole linguistic repertoire (signed, spoken, and written) to convey meaning to the fullest extent through text. Currently, there is no study that applies a translanguaging view with older deaf emergent writers who experienced language deprivation, which is the premise of this study.

The Current Study

While previous studies have investigated emergent writing, translanguaging, and language deprivation separately, research exploring all three in elementary deaf emergent writers is limited. To address this gap, the current study analyzes the writing characteristics of deaf emergent writers in grades 3-6 by identifying the stages of emergent writing development they exhibit, the changes in writing they demonstrate over one academic year, the emergent writing and translanguaging features they incorporate in their writing, and the writing characteristics that are unique to language deprivation.

Method

We are a team of White Deaf, Hard of Hearing, and Hearing researchers who are fluent in ASL and English along with varied levels of proficiencies in other signed, written, and spoken languages. All of us were former teachers of the deaf, and we are invested in multilingual/multimodal approaches to language and writing instruction. We have previously conducted a randomized controlled trial (RCT) on Strategic and Interactive Writing Instruction (SIWI) with deaf students in grades 3-6 (Wolbers et al., 2022), which prompted our attention towards the existence of deaf emergent writers in upper elementary.

In this study, we analyzed writing samples of deaf emergent writers who were involved in the SIWI RCT. We employed an intrinsic case study which allowed us to investigate a unique context present in the U.S. educational system that warranted attention (Guetterman & Fetters, 2018). We enacted complementary quantitative (deductive) and qualitative (inductive) components (Creswell & Clark, 2011) to explore if and in what ways the theoretical frameworks of emergent writing and translanguaging are applicable to deaf emergent writers in 3rd to 6th grade.

Control Group vs Experimental Group

Participating students in the control group received "business-as-usual" instruction from teachers of the deaf, which looked different across classrooms. The majority of instruction included traditional approaches to writing instruction with independent writing assignments followed by teacher-student conferences (Wolbers et al., 2022). Participating students in the experimental group received SIWI that placed a specialized focus on scaffolding language and writing skills through strategic, interactive, and metalinguistic pedagogical approaches. At the heart of this intervention is collaborative writing experiences whereby the whole class is engaged in metacognitive dialogues about how their ideas could be translated into writing. The teacher utilizes an apprenticeship model in providing strategic tools and scaffolds to navigate the writing process starting with brainstorming and organizing and ending with revision and publication. In the meantime, the teacher employs technical approaches in the *Language Zone* to support the development of expressive language skills for those who do not have a strong foundation in language (Dostal et al., 2019).

Writing Samples

At the beginning and end of two academic years (2018-2019 and 2019-2020), 385 students in the SIWI RCT responded to a prompt that invited them to recount an event in writing. Teachers were asked to explain the prompt in the way their students understood best, such as reading the prompt, speaking the prompt, and/or signing the prompt. The goal was to ensure student understanding of the prompt regardless of languages and modalities. The prompt included ideas to help stimulate thinking about the events students might want to write about: "Think of a time when you went on a trip to a new place, did something fun with your family or friends, or got an injury." By asking students to self-select an event to recount, they had more control over background knowledge, experience, and language needed to recount a particular event than if an event was selected for them. They were encouraged to document their ideas in any way they could. Students wrote in response to the same prompt for their pre- and post-writing samples, which meant they were free to choose any event to share at both times.

Inclusion Criteria

Students were considered for inclusion in the current study if they met the following three criteria at the beginning of the academic year: (1) scored a 7 or below on Subtest 6, Writing Samples, of the Woodcock-Johnson IV (WJIV); (2) wrote 17 or fewer words on their recount pre-writing sample; and (3) included three or less T-units in their recount pre-writing sample. Students receiving a score of 7 or below on WJIV Subtest 6 performed similarly to the norms of monolingual speakers of English who are 7 years old and/or at 1st grade level or below. Students who produced 17 or fewer words in three or less T-units were expressing a few ideas and not yet writing connected text at the paragraph level. We eliminated students who had additional disabilities from the sample based on teacher reports from formal school records and

Individualized Education Plans. The rationale for this final step was to focus more closely on the impact of language deprivation, rather than disability, on students' writing.

Out of 382 students in the SIWI RCT, we identified 42 emergent writers without disabilities in grades 3 through 6. However, due to the COVID-19 pandemic during the spring of 2020, post-writing samples were not collected from 12 students that year. In total, we collected and analyzed 42 pre-writing samples and 30 post-writing samples. Within the 30 pre- and post-writing samples that were collected, 18 students were in the control group and 12 students were in the treatment group in the SIWI RCT.

Participant Demographics

Forty-two students were from 30 classrooms in nine different states of the U.S.. Table 1 provides participating students' demographic information as reported by their teachers based on school records. Additionally, their teachers personally rated each student's expressive language skills in ASL and spoken English on a five-point scale: could express most anything, could express many things, had difficulty expressing many things, had difficulty expressing most things, or did not use. We did not collect data on the racial identities of Latino students; it may be that some of them are White or Black. We also did not collect information on the socio-economic statuses of participating students' families.

Table 1

Student Demographic Data

Student Demographics		N = 42
Gender	Female / Male / Undisclosed	15/26/1
Grade	3rd / 4th / 5th / 6th	11/7/14/10
Race	White	14

	Black/African American	10
	Latino/a/e	11
	Asian	4
	Native American	1
	Multiracial	2
Hearing Technology	Hearing Aids	18
	Cochlear Implants	11
	None	13
Unaided Hearing Level	Slight to Mild (0-40dB)	4
	Moderate to Severe (56-90dB)	14
	Profound (91dB+)	24
Expressive ASL Skills	Could express most anything	5
	Could express many things	11
	Had difficulty expressing many things	15
	Had difficulty expressing most things	4
	Did not use ASL	6
	Missing data	1
Expressive Spoken English Skills	Could express most anything	2
	Could express many things	5
	Had difficulty expressing many things	11
	Had difficulty expressing most things	3
	Did not use spoken English	20

	Missing data	1
School Placement	Public school	15
	Transferred from a public school to a deaf school	11
	Deaf school	16
Language(s) Used at Current School	ASL and English	18
	Spoken English with sign support	8
	Spoken English with ASL interpreters	5
	Spoken English	11
Language(s) Used at Home	Spoken English	15
	Other Spoken Languages	6
	American Sign Language	7
	Spoken Language and Signed Language	11
	Limited or No Communication	2
	Missing	1
Deaf Parents	Parent(s)	5
	None	37

The demographic information above provides a broad picture of our sample involving emergent writers who are likely to have experienced language deprivation to varying degrees. Language deprivation occurs when students are not adequately accessing visual language and also not developing receptive/expressive spoken English skills during the critical period of language development between 0-8 years old. According to the reported demographics, the majority of the participants were born to hearing parents who primarily use spoken language, and during the critical developmental period, most of the students attended schools that also

primarily use spoken language. According to teacher reports, most students had difficulty

expressing many or most things in ASL and/or English.

Procedure

There were four phases of data analysis involving deductive and inductive approaches

that are outlined in Figure 1. In the next section, we detail each phase of analysis that was

conducted on students' writing samples.

Figure 1

Data Analysis Cycles

Data Analysis Cycles	Analysis	Focus
Phase 1	Deductive	Stages of emergent writing development
Phase 2	Deductive	Growth between pre- and post-writing samples
Phase 3	Deductive	Emergent writing and translanguaging features
Phase 4	Inductive	Impact of language deprivation

Phase 1 (Deductive): Stages of Emergent Writing Development

The first codebook was compiled based on descriptions in the literature on stages of

emergent writing development (Byington & Kim, 2017; Gentry, 2000; Puranik & Lonigan 2014;

Rubin & Carlan, 2005). In the codebook, there were five stages listed with descriptions of the

skills and examples for each: pre-alphabetic, emergent, transitional, conventional, and fluent. We

reviewed each pre-writing sample (N = 42) and post-writing sample (N = 30) and determined

which stage matched the written features present. For example, if the sample consisted of labels

or words with phonetic spelling that were not a complete idea, it was categorized as transitional.

If the sample had indications of some words and linguistic features that formed a phrase that was

not enough to be considered as a complete sentence, it was categorized as conventional. If the

sample had all the necessary words and linguistic features to form a complete sentence, it was categorized as fluent. The full codebook is presented in the results section along with examples of the writing samples from this study.

Phase 2 (Deductive): Growth Between Pre- and Post-Writing Samples

The total number of students in each stage and whether they advanced to the next stage were tallied and reported. After reviewing students' writing samples (N = 30), we found that although some students did not move beyond the conventional or fluent stages from pre- to post-writing, they demonstrated improvements in three areas: vocabulary (words and spelling to express ideas), ideation (details of ideas), and cohesiveness (connections across ideas). Therefore, we implemented a second layer of analysis to capture growth in writing for those who remained in the conventional or fluent stages in an academic year. First, vocabulary was identified as *beginning* if the written words did not clearly convey ideas due to insufficient words (e.g., "I go new") or words not being written using conventional spelling patterns (e.g., "I like bne. it is for. I like it") and/or identifiable spelling patterns (e.g., "Marey cron. ocDle walk oat ca h__"). Vocabulary was scored as *developing* if ideas in text could be understood due to the adequate presence of words with conventional spelling and/or the words were identifiable (e.g., "I go Family Beach Family Pay Fun Brother Play enjoy Beach mom and Dad look Brother"). Second, ideation was labeled as *beginning* if three or fewer phrases were included, and labeled as *developing* if four or more phrases were written. Third, cohesiveness was considered as *beginning* if there was not more than one phrase or if phrases were not connected to each other or the topic, and scored as *developing* if all of the phrases were connected to each other by the topic.

We created sub-stages within the conventional and fluent stages by granting 1 point for *beginning* and 2 points for *developing*. If a student was assigned *beginning* for vocabulary, ideation, and cohesiveness, they were categorized as being in Stage A in the conventional or fluent stage with 3 points. If a student received *beginning* in two areas (e.g., ideation and cohesiveness) and *developing* in one area (e.g., vocabulary), they were categorized as being in Stage B with 4 points. If a student was *developing* in two areas (e.g., vocabulary and ideation) and labeled as *beginning* in one area (e.g., cohesiveness), they were categorized as being in Stage C with 5 points. If a student was *developing* in all three areas, they were categorized as being in Stage D with 6 points. This added analysis allowed us to track writing growth for those who remained in the conventional or fluent stages in their pre- and post- writing samples.

*Phase 3 (Deductive)***:** *Linguistic Applications*

We created a second codebook for the next phase of analysis based on our review of the literature on the linguistic features that emergent writers use during writing such as phonetic spelling (Gentry, 2000) and interliteracy (Gort, 2006; 2019). Interliteracy is a translanguaging practice utilized by multilinguals when linguistic features such as graphemes, orthographies, phonology, syntax, and semantics are applied from various languages to writing. When deaf students' (N = 42) written text was not standard English and demonstrated applications of linguistic features that were commonly found in other languages and modalities, we coded whether these applications were phonetic, vocabulary, or syntactic. For example, phonetic application is when a student writes "55" to represent the concept "bear" because "55" are the handshapes (signed phonemes) used for the signed word "bear" in ASL. Phonetic application can also be a student's knowledge of how English words are spelled through listening, lipreading, fingerspelling, or reading. Vocabulary application is when a student writes "si", which is a

Spanish word for "yes". Syntactic application is when a student writes "car red" instead of "red car" to follow the word order in Spanish or ASL. Each type of application was counted for reporting purposes.

Interrater Reliability: Phase 1, 2, 3, and 4

For the first and second phases (deductive), the first and second author independently read through 20% of students' writing samples. There was complete agreement in the identification of emergent writing stages across 94% of the 42 pre-writing and 30 post-writing samples. For the scores of four writing samples that differed between raters, we reviewed these discrepancies and came to full agreement. After establishing inter-rater reliability, we each coded half of the remaining writing samples. For the third phase of coding (deductive) using the second codebook on interliteracy, we independently read 20% of students' writing samples again and had full agreement in our codes on emerging writing and translanguaging features. We coded half of the subsequent writing samples. As we reviewed students' writing samples (N = 42) in the first three phases, we looked for new codes to add to the codebooks (inductive) to capture features that did not neatly fit with the initial codes regarding stages of emergent writing development and interliteracy. There was a complete agreement in not finding any new codes to add to the first codebook. We did identify a new code for the second codebook, which was included in our inter-rater reliability for the third phase of analysis. The new code was: unclear ideation. Fuller descriptions of the discoveries of these writing characteristics are provided in the results section.

Results

There were four areas of focus in answering the primary research question regarding the writing characteristics that upper elementary deaf emergent writers demonstrate in their writing:
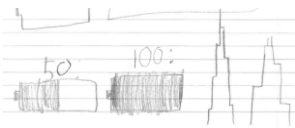
(A) stages of emergent writing development, (B) writing change over time, (C) emerging writing and translanguaging features, and (D) writing features unique to the context of language deprivation. The results for each area are presented with examples below.

RQ A: Which stages of emergent writing development do students exhibit?

We analyzed 42 pre-writing samples and identified their stages of emergent writing development. In Figure 2, we provide descriptions of the skills in each stage and report on the number of students in each stage along with images of selected pre-writing samples.

Figure 2

Stages of Emergent Writing Development Evidenced in Elementary Deaf Students' Writing

Non-Emergent	
None	One student did not draw or write anything.

Pre-Alphabetic		
Drawing	One student drew a picture.	
Random Scribbling	None of the students made scribbles without any linear patterns.	
Directional Scribbling	None of the students made horizontal scribbles from left-to-right with linear patterns.	
Symbolic/ Mock Letters	None of the students made letters or shapes that were similar to actual alphabets	

|	**Emergent**	
String of Letters	One student wrote random letters in a string.	

|	**Transitional**	
Phonetic Writing	Three students used the alphabetic principles by using the letters in words that represent phonemes or graphemes. Those students demonstrated word awareness with 1:1 match and created spaces between words.	
Label Writing	Six students wrote individual words that were spelled correctly or close to being correct. They were not writing phrases with nouns (e.g., mom, friend, dog), verbs (e.g., go, run, sleep), and linguistic features (e.g., the, is, are, in, of, with, on) yet.	
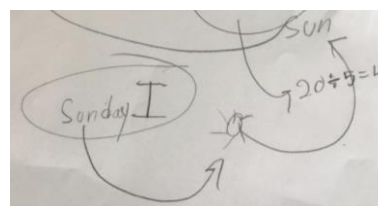
	Conventional	
Phrase Writing	Twenty-seven students wrote a phrase or phrases with nouns, verbs, and some linguistic features. Some of them continued to use phonetic spelling patterns.	
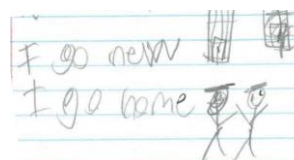
	Fluent	
Sentence Writing	Three students wrote complete sentences using varied nouns, verbs, and linguistic features.	
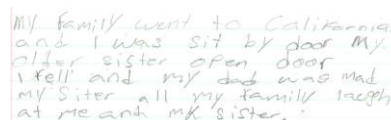
RQ B: What changes in writing do students demonstrate over one academic year?

Thirty pre- and 30-post writing samples were analyzed to track growth in students' written expressions over an academic year. We found that although not all students moved to the

next stage, most students demonstrated improvements in their writing skills. The results are

presented below in tables followed with descriptions of a few examples from students' writing.

Changes in the Stages of Emergent Writing Development

There was evidence that movement between stages occurred for 9 students. See Table 2.

Table 2

Students' Demographics and Stages of Emergent Writing Development

ID	Race	Gender	Age	Current School's Language of Instruction	Expressive Language	Pre-Writing Stage	Post-Writing Stage
1	White	Girl	9	Spoken and written English with varying levels of sign support	Difficulty expressing many things in ASL and did not use spoken English	No text	Drawing (Pre-Alphabetic)
2	White	Girl	9	Spoken and written English with varying levels of sign support	Difficulty expressing many things in ASL and did not use spoken English	Drawing (Pre-Alphabetic)	Phonetic/ Label Writing (Transitional)
3	White	Boy	13	Spoken and written English with varying levels of sign support	Can express many things in ASL and did not use spoken English	String of Letters (Emergent)	Phonetic/ Label Writing (Transitional)
4	Latino	Boy	11	ASL and visual forms of English (fingerspelling, mouthing, and writing) *Transferred 4 years prior to the start of this study from a spoken English environment	Can express many things in ASL and spoken English	Phonetic/ Label Writing (Transitional)	Phrase Writing (Conventional)
5	White	Boy	11	Spoken and written English with varying levels of sign support *Transferred 4 years prior to the start of this study from a	Can express many things in ASL and did not use spoken English	Phonetic/ Label Writing (Transitional)	Phrase Writing (Conventional)

				spoken English environment			
6	Asian Pacific	Boy	11	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express most things in ASL and did not use spoken English	Phonetic/ Label Writing (Transitional)	Phrase Writing (Conventional)
7	Latina	Girl	11	ASL and visual forms of English (fingerspelling, mouthing, and writing) *Transferred 1 years prior to the start of this study from a spoken English environment	Can express many things in ASL and had difficulty expressing many things in spoken English	Phonetic/ Label Writing (Transitional)	Phrase Writing (Conventional)
8	Latino	Boy	12	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express most things in ASL and many things in spoken English	Phrase Writing (Conventional)	Sentence Writing (Fluent)
9	White	Boy	11	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express most things in ASL and spoken English	Phrase Writing (Conventional)	Sentence Writing (Fluent)

Provided below are examples of selected students' pre- and post-writing samples that are representative of movements between stages.

None to Pre-Alphabetic

In the pre-writing sample, the student (ID #1) did not produce any text of any kind. In the post-writing sample, the student entered the pre-alphabetic stage by drawing a picture.

Pre-Writing Sample: [No text was produced.]

Post-Writing Sample: [The student drew two people with backpacks on and a rectangle that is separated into smaller vertical rectangular pieces with dots inside them.]

Pre-Alphabetic to Transitional

In the pre-writing sample, the student (ID #2) was in the pre-alphabetic stage where she documented her ideas in a drawing along with the writing of two numbers. In the post-writing sample, the student moved to the transitional stage and wrote four labels to supplement her drawing.

Pre-Writing Sample: [The student drew two buildings, a swirl, some squares and rectangles, and two batteries.] "50:" and "100:"

Post-Writing Sample: [The student drew a happy sun.] "sun" "yellow" "color" "Sunday I"

Transitional to Conventional

In the pre-writing sample, the student (ID #5) was in the transitional stage and wrote a label to describe his illustration. In the post-writing sample, the student moved to the conventional stage by writing multiple connected phrases about a topic.

Pre-Writing Sample: [The student drew a person fishing with a fish at the bottom.] "eel"

Post-Writing Sample: "I go Family Beach Family Pay Fun Brother Play enjoy Beach mom and Dad look Brother Paly enjoy ask Dad ok ok Family go Brother want go water Park play enjoy Brohter two wnt home dog Buthroom outside dog cry Brother hear Bro ther see snake Dad snake Bite dog Brother call come Dad and mom ok ok help dog hurt cry Bring hosp dog sick not dog die dog Dad hosp stay mom home Dad call come hosp nrse wait tomorrow mom and dad ok home wait norse ready drive hops dog aLive family happy!"

Conventional to Fluent

In the pre-writing sample, the student (ID #8) was in the conventional stage and wrote a few phrases about varied topics. In the post-writing sample, the student moved to the fluent stage by writing sentences about a topic with multiple and connected details while still using phonetic spelling.

Pre-Writing Sample: "When i was 6 or 7 i bengen viod game. I like to Play outside. I like play with finnd. Going to the bech."

Post-Writing Sample: "My best memory was going to disney world and we went on my 6th Birthday. Alos we stayed in a hotell for a night and the hotell pool it haved water fall and haved a hot tub and we wared the fist to opened disney world. My favriter ride is Bazz lithgit and the caslt was cinderlla. Why it was our fist famly tirp to disney to haved fun."

Conventional Stage: Growth in Vocabulary, Ideation, and Cohesiveness

Ten students remained in the conventional stage after a year of writing instruction but demonstrated growth in vocabulary, ideation, and cohesiveness. They were writing more words and spelling them with greater accuracy, coming up with more details, and connecting these ideas to the topic. See Table 3.

Table 3

Students' Demographics and Growth in the Conventional Stage

ID	Race	Gender	Age	Current School's Language of Instruction	Expressive Language	Pre-Writing Stage	Post-Writing Stage
10	Asian Pacific	Boy	9	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express many things in ASL and did not use spoken English	Phrase Writing (Conventional: Stage A)	Phrase Writing (Conventional: Stage B)
11	White	Girl	12	ASL and visual forms of English (fingerspelling, mouthing, and writing) *Transferred 2 years prior to the start of this study from a spoken English environment	Can express many things in ASL and did not use spoken English	Phrase Writing (Conventional: Stage A)	Phrase Writing (Conventional: Stage B)
12	Latina	Girl	11	ASL and visual forms of English (fingerspelling,	Can express many things in ASL and did not use spoken English	Phrase Writing (Conventional: Stage A)	Phrase Writing (Conventional: Stage B)

				mouthing, and writing)			
				*Transferred 4 years prior to the start of this study from a spoken English environment			
13	Latino	Boy	10	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express most things in ASL and have difficulty expressing most things in spoken English	Phrase Writing (Conventional: Stage A)	Phrase Writing (Conventional: Stage C)
14	White	Boy	8	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express most things in ASL and did not use spoken English	Phrase Writing (Conventional: Stage A)	Phrase Writing (Conventional: Stage C)
15	Latina	Girl	12	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express many things in ASL and did not use spoken English	Phrase Writing (Conventional: Stage A)	Phrase Writing (Conventional: Stage C)
16	Latino	Boy	8	Spoken and written English	Can express many things in spoken English and did not use ASL	Phrase Writing (Conventional: Stage B)	Phrase Writing (Conventional: Stage C)
17	White	Boy	12	Spoken and written English with varying levels of sign support	Can express most things in spoken English and many things in ASL	Phrase Writing (Conventional: Stage B)	Phrase Writing (Conventional: Stage C)
18	White	Boy	9	Spoken and written English with varying levels of sign support	Can express many things in ASL and have difficulty expressing many things in spoken English	Phrase Writing (Conventional: Stage B)	Phrase Writing (Conventional: Stage D)
19	White	Girl	10	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Difficulty expressing many things in ASL and most things spoken English	Phrase Writing (Conventional: Stage C)	Phrase Writing (Conventional: Stage D)

Below is an example of a student (ID #13)'s pre- and post-writing samples that are representative of growth in vocabulary, ideation, and cohesiveness in the conventional stage. In the pre-writing sample, the student in the conventional stage drew pictures and wrote two

phrases that were not clearly connected. In the post-writing sample, he was still in the

conventional stage and produced more phrases with greater details and connected ideas.

Pre-Writing Sample: "[The student drew windows.] I go new. [The student drew two people.] I

go home"

Post-Writing Sample: "dad and mom cash car mor mad then P_ l_ Then dad givep moner lilte

gos Then Too hard qeco f x car on street many people on car my dad saw i t_ care mom saw then

mom saw too ohhh carroi cash car my cat chad! cat bother car fix man work hard work car fix

finish!"

Fluent Stage: Growth in Vocabulary, Ideation, and Cohesiveness

Similarly, there were two students who remained in the fluent stage, and they showed

greater vocabulary, ideation, and cohesiveness over the year. See Table 4.

Table 4

Students' Demographics and Their Growth in the Fluent Stage

ID	Race	Gender	Age	Current School's Language of Instruction	Expressive Language	Pre-Writing Stage	Post-Writing Stage
20	Black	Girl	8	Spoken and written English	Can express many things in spoken English and did not use ASL	Sentence Writing (Fluent: Stage B)	Sentence Writing (Fluent: Stage D)
21	Latina	Girl	10	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Can express many things in ASL and had difficulty expressing many things in spoken English	Sentence Writing (Fluent: Stage B)	Sentence Writing (Fluent: Stage C)

Fluent: Growth in Vocabulary, Ideation, and Cohesiveness

Below is an example of a student (ID #21)'s pre- and post-writing samples that are

representative of growth in vocabulary, ideation, and cohesiveness in the fluent stage. In the pre-

writing sample, the student was in the fluent stage and wrote one sentence without details about the topic. In the post-writing sample, she created a few sentences with details and connected ideas.

Pre-Writing Sample: "The bus driver alomst got crash two time by big truck."

Post-Writing Sample: "My Family went to California and I was sit by door My older sister open door I fell and my dad was mad my siter all my family laugh at me and my sister."

No or Minimal Improvement

Nine students' writing skills did not indicate growth in an academic year. All students except for one had difficulty expressing themselves in any language, spoken or signed. Six out of nine students attended programs where spoken English was primarily used. Six students were in the control group, and three students were in the experimental group. See Table 5.

Table 5

Students' Demographics and Lack of Growth in Writing

ID	Race	Gender	Age	Current School's Language of Instruction	Expressive Language	Pre-Writing Stage	Post-Writing Stage
22	Black	Boy	9	Spoken and written English with varying levels of sign support	Difficulty expressing many things in ASL and spoken English	String of Letters (Emergent)	String of Letters (Emergent)
23	Unknown	Boy	11	Spoken and written English with varying levels of sign support	Difficulty expressing most things in ASL and did not use spoken English	Phonetic/Label (Transitional)	String of Letters (Emergent)
24	White	Boy	11	Spoken and written English	Difficulty expressing most things in spoken English and did not use ASL	Phonetic/Label (Transnational)	Phonetic/Label (Transnational)
25	Black	Boy	13	ASL and visual forms of English (fingerspelling,	Difficulty expressing most	Phonetic/Label (Transitional)	Phonetic/Label (Transitional)

				mouthing, and writing) *Transferred 2 years prior to the start of this study from a spoken English environment	things in ASL and did not use spoken English		
26	Latino	Boy	10	ASL and visual forms of English (fingerspelling, mouthing, and writing) *Transferred 3 years prior to the start of this study from a spoken English environment	Difficulty expressing most anything in ASL and did not use spoken English	Phonetic/Label (Transnational)	Phonetic/Label (Transnational)
27	White	Girl	10	Spoken and written English with varying levels of sign support	Difficulty expressing many things in ASL and spoken English	Phrase Writing (Conventional: Stage A)	Phrase Writing (Conventional: Stage A)
28	Multi-racial	Girl	8	ASL and visual forms of English (fingerspelling, mouthing, and writing)	Difficulty expressing many things in ASL and spoken English	Phrase Writing (Conventional: Stage C)	Phrase Writing (Conventional: Stage C)
29	Black	Boy	11	Spoken and written English	Can express many things in ASL and did not use spoken English	Phrase Writing (Conventional: Stage C)	Phrase Writing (Conventional: Stage C)
30	Black	Boy	11	Spoken and written English	Does not use ASL or spoken English (limited communication)	Phrase Writing (Conventional: Stage C)	Phrase Writing (Conventional: Stage C)

Two examples of students' pre- and post-writing samples that indicate no growth in writing are provided below.

In the pre-writing sample, the student (ID #23) in the transitional stage drew pictures and wrote four labels. In the post-writing sample, the student regressed to the emergent stage and

wrote strings of letters that included alphabetic letters, invented spelling, punctuations, numbers, and a name.

Pre-Writing Sample: [The student drew a picture of a soldier with a gun, another figure smiling, a baby, a toddler, a man, a flower, a sun, and an igloo-like object.] "halo" "fly" eiR "Soto army"

Post-Writing Sample: "LOL John. SXOX??? 2+2=waHPttHus. John Doe."

In the pre-writing sample, the student (ID #29) was in the conventional stage and wrote phrases about a recounted event with a few details that were not clearly connected. In the post-writing sample, he wrote phrases that did not indicate an increase in phrases or connected details.

Pre-Writing Sample: "fun at the sea isie the Family is welcome Play this water balloon Plane Flight and other."

Post-Writing Sample: "Shoet kid play with friends Happy, sad, Funny, afriad."

RQ C: What emerging writing and translanguaging features do students incorporate in their writing?

Deaf students incorporated emergent writing and translanguaging features that reflected the use of their linguistic resources in writing. Out of 42 writing samples analyzed, some students applied interliteracy skills and used strategies to spell English words, such as writing the first letters of English words. Descriptions and examples for these features are provided next.

English Phonetic Applications

Eleven students used English phonetic spelling in their writing. Some words were written close to how they were orthographically spelled, how they looked when fingerspelled, how they looked on the lips when pronounced, or how they sounded phonetically. Below are two examples of students using this strategy in their writing. In the first example, the student wrote "wit" to represent "went," which may indicate they are using lipreading to support their spelling as the

"n" sound is not as visible on the mouth compared to the beginning and ending consonants. In the second example, the student wrote multiple words that represented how they looked orthographically, such as "hean," "sorcre," and "pliy."

Student: "I wos (was) so happy I wit (went) to Barey Bengo that Day. they pikeD my tiket."

Student: "Soccer Boy Jean 12 Hean (house) Run Jean Jimy sorcre (soccer) Pliy (play)"

Another feature found in deaf emergent writing was the inclusion of the first letter(s) of English words when constructing connected text. Four students wrote the first letter(s) of English words and narrated in ASL or spoken English what words these letters represented (e.g., "s" for shoe). Below is an example of how this strategy was employed by a student.

Student: "Yester day s (shoe) new go s (store)! First mom wall (will) s (shoes) new Jonathan ok!"

ASL Phonetic Applications

ASL phonetic applications were found in three students' writing samples. Examples below show a student drawing upon ASL phonology of signed words to spell in English. The handshape "s" and the number "5" correspond to the handshapes used in the signed word "scared". Similarly, the printed number "2" corresponds to the handshape used in the signed word "snake". See Figure 3 for pictures of the signed words in which "S" and "5" handshapes represent "scared" and the "2" handshape represents "snake."

Student: "I went xoo I s5 (scared) 2 (snake) my frind I My coles go Lunch"

Figure 3

Example of ASL Phonetic Application
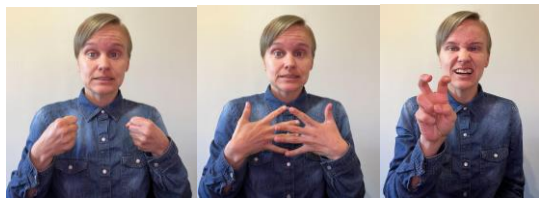
Vocabulary Applications

One Latina student whose home language was Spanish applied a Spanish word into her writing. See below for an example of how she used "si" (yes) in her sentence.

Student: "Class help need your si (yes) and no are you neede hot outside Happy."

Syntactic Applications

Fifteen students demonstrated syntactic applications by applying their knowledge of ASL sentence structures in their writing. An example below illustrates students writing English words in a word order commonly found in ASL where the inclusion of articles are unnecessary. However, key ASL grammatical information such as prepositions and directional verbs typically conveyed through facial expressions and spatial features were not transcribed into writing.

Student: "I go Family Beach Family Pay Fun Brother Play enjoy Beach mom and Dad look"

RQ D: What writing characteristics are unique to language deprivation?

A prominent characteristic that arose in some students' samples was writing in ways that we could not comprehend. The general literature on emergent writing identifies that emergent and developing writers will experiment with drawing, letter combinations, and syntax structure, and they often connect their text, including drawing, with ideas through expressive language. We found that some students' ideations on the paper were incomplete or disconnected. When assessors asked them to read aloud their writings and drawings in ASL or spoken English, their ideas continued to remain unclear or incomplete in their expressed communication. See below for three examples of characteristics that appear to be unique to cases of language deprivation.

Student: "I see cnr in see lio I see I see I see"

Student: "LOL John. SXOX??? 2+2=waHPttHus. John Doe."

Student: "Podle todi todie. Podie todi ei eodi. Eodi odie dieod aieodie"

Discussion

We conducted an intrinsic case study using deductive and inductive approaches to analyze the writing of deaf students in grades 3-6 to better understand the impact of language deprivation on translanguaging practices in emergent writing. First, we reviewed students' pre- and post-writing samples to determine the stages of emergent writing development that were present. Second, we reviewed changes in their writing over an academic year. Third, we documented emerging writing and translanguaging features that students used in their writing. Fourth, we extended existing theories by using an inductive approach of analysis to uncover writing characteristics specific to the context of upper elementary deaf emergent writers who have experienced language deprivation to varying degrees.

RQ A: Stages of Emergent Writing Development

Out of the 42 pre-writing samples in this study, 30 students were in conventional or fluent stages while the rest were in earlier stages where they were not writing phrases yet. As previous studies indicated that young deaf children's written expressions align with theories of emergent writing development (William & Mayer, 2015), this study also adds to evidence that older deaf students undergo similar developmental processes with their emergent writing patterns. There are questions as to why some deaf students between 8 and 13 years old, such as the ones in this study, are still developing foundational writing skills when there are no other disabilities present. It is likely that inaccessible spoken language environments in home and school, along with a lack

of or limited exposure to ASL and bilingual instruction, are the primary causes of language deprivation impacting writing (Hall, 2017).

RQ B: Growth in Writing

We analyzed 30 pre- and post-writing samples for growth in emergent writing skills. This research found that most students in control and SIWI groups exhibited growth in an academic year, possibly benefitting from the instruction they received (See Wolbers et al., 2022). However, nine students did not show improvement in their writing, and six of them were in learning environments where spoken English was primarily used. As for the three students in ASL/English bilingual programs, two of them previously attended spoken-based educational settings and got transferred to ASL/English bilingual programs within two to three years prior to the start of this study. It is possible that when these students were younger, they experienced the impact of language deprivation on their cognition and executive functions, leading them to have longitudinal struggles in language, literacy, and overall learning (Hall, 2017). For some, their early experiences with language deprivation may be perpetuated in classrooms where spoken language is used, which is not fully accessible to them. Most teachers of the deaf are not trained on multilingual/multimodal instruction that purports to develop signed language and written language simultaneously (Benedict et al., 2011; Cannon & Luckner, 2016). These factors may have further contributed to their status as emergent writers at older ages (e.g., 12 and 13 years old) and stalled their language and writing growth.

Impact of Language Zone in SIWI. Out of nine students, six of them were not in the SIWI experimental group receiving evidence-based instruction specialized for deaf learners with diverse language and writing needs. The framework of SIWI (Wolbers, 2008) purposefully considers the way in which teachers engage with deaf students through the use of the *Language*

Zone (Dostal et al., 2019). Reinforcing the importance of expressive language for writing (Gort, 2012), the *Language Zone* focuses on supporting expressive skills in signed and/or spoken languages during interactive writing activities. This approach falls under the "linguistic care work" promulgated by crip linguistics (Henner & Robinson, 2021) where all parties are invested in understanding each other using any linguistic and semiotic resources they have at their disposal. The *Language Zone* was applied across classrooms, languages, and modalities, which may have supported the growth in student participants who are emergent writers. Questions are raised, however, about the amount of intensive and accessible language input needed to combat years of language deprivation and begin to positively impact writing growth in these three students in the SIWI experimental group.

RQ C: Emerging Writing and Translanguaging Features

Deaf students applied emerging writing and translanguaging features in their written expressions such as phonetic spelling (Gentry, 2000) and interliteracy skills (Gort, 2006; 2019). Some practices may have served the purpose of holding ideas on paper that can be revised and expanded on later (Ewoldt, 1981). Our observations and interpretations of how students used these features in their writing are outlined next.

English Phonetic Spelling

Similar to findings in Lederberg et al.'s (2019) study, this research demonstrates that students lean on spoken phonological awareness, fingerspelling phonological awareness, and/or orthographic awareness to write words. However, there were some instances where words were spelled in unique ways dissimilar from spoken language or fingerspelled phonological knowledge, and contained unconventional letter patterns. It is beyond the scope of this study to obtain information about the experiences and knowledge that students are drawing upon to spell

words. We conjecture one additional possibility is that the students wrote words based on how they heard or lipread the word produced, which may be different from what hearing people hear. Alternative explanation would be the use of invented spelling that is not based on any type of phonological knowledge. It may be that students are writing letters in a random order because they know they need to document text but do not have any additional linguistic tools at their disposal.

Some students wrote the first letter(s) of the English words, possibly based on what they have heard in spoken language and/or seen in lipreading, fingerspelling, and/or written text (Lederberg et al., 2019). Interestingly, this strategy was used only by students in the conventional stage when there were more attempts at writing phrases. It may be that as students attempt to express more through writing, they are in need of strategies to translate their ideas into written words. Because they had greater language skills and knew the first letter of the English word that corresponded with the concept they had in mind, they proceeded to document it in their writing. It is possible that in the absence of more robust spelling strategies, students find this placeholder strategy (Ewoldt, 1981) to be most effective.

Interliteracy Skills

When students were unfamiliar with how certain concepts were written in print, a few of them strategically used ASL phonetic applications. Signed words when written often involve English letters or numbers that have corresponding handshapes (Wolsey et al., 2018). In this study, a student wrote "S5" on their paper to represent the signed word "scared," which is formed through a combination of the "S" and "5" handshapes. The student could be purposefully using this as a placeholder strategy or just accessing their full linguistic repertoire to document the concept.

A large number of students in the study utilized syntactic applications in their writing by following word order commonly found in ASL and writing the corresponding English words for each sign. Yet, many ASL features that are produced through facial expressions and visual-spatial features were omitted in their writing such as prepositions, adjectives, and adverbs. Being able to translate and document these linguistic features into print requires higher metalinguistic knowledge of both languages (Wolbers et al., 2014). Students who do not have adequate language skills in their home languages, ASL, and/or English, and thus possessing a smaller overall linguistic repertoire, and less metalinguistic knowledge in those languages, have less resources to draw upon when engaged in writing activities. A larger linguistic repertoire would allow for more robust use of translanguaging practices.

In Wolbers et al. (2014)'s study, deaf middle school students applied complex ASL linguistic features in their writing such as plurality and adverbs (e.g., "house house all over"), adjectives (e.g., "she lives in a house blue"), topicalization (e.g., "homework I detest"), conjunctions (e.g., "all can go understand only children"), and rhetorical questions (e.g., "I bought shoes why old shoes don't fit anymore"). The researchers noted an increase in topicalization and rhetorical questions in students' writing over time and attributed this to the growth in ASL proficiency leading to expanded linguistic repertoire that can be used in writing. Meanwhile there was a decrease in the other ASL linguistic features in their writing over time to which the authors attributed to students' growing metalinguistic knowledge of ASL and English. There is a clear connection between access to languages, growth in linguistic competence and metalinguistic awareness, and the use of translanguaging practices. These intricate translanguaging practices found in the Wolbers et al.'s study were not seen in this study,

bringing light to the ways language deprivation and/or ineffective instruction restricts deaf students' language and writing resources.

RQ D: Language Deprivation

It was reported that students in this study did not have any additional disabilities other than their deafness; therefore, their existing language and writing resources and restricted translanguaging practices were likely to be linked to chronic impoverished language access during early years. For some, their experience of language deprivation was perpetuated throughout their schooling years due to inaccessible academic environments where spoken English was primarily used (Caselli et al., 2020). Language deprivation is known to affect deaf people's cognition in recalling experiences from the past, developing and sequencing their thoughts, and answering questions (Gulati, 2019). Features unique to language deprivation that longitudinally impact the development of cognitive and linguistic resources are described below.

Incomplete Ideation

Incomplete ideation was the prominent unique feature found in deaf emergent writers in grades 3-6. Some students in this study had incomplete ideation in writing (and also signed or spoken language when asked about their writing), indicating that they did not have sufficient vocabulary and linguistic features in any language in order to be able to understand, reflect, and respond to the prompt. In contrast, deaf students who experience lesser impact of language deprivation do not exhibit the same level of difficulty in expressing ideas in the language(s) they are most familiar with (William & Lowrance-Faulhaber, 2018; Wolbers et al., 2014). This study reveals that the extent of deaf students' written expressions is shaped by the ideas they can come up with in any expressive language and their existing linguistic and semiotic resources in translating these ideas into written text.

Limitations and Future Directions

Limitations

There were several limitations in this study. First, small sample size is a common limitation found in most studies on deaf students due to the nature of low incidence disability.

Second, the precision of our teacher-reported data on students' demographics could not be verified. Data on students' expressive skills in ASL and spoken English were based on a teacher-reported scale of "can express most anything" to "difficulty expressing most things". It was not clear whether students who were identified as being able to express most anything in ASL or spoken English were actually fluent in the language. Some teachers did not possess fluency in ASL or spoken English themselves, impacting their ability to accurately evaluate students' language skills. We did not confirm the data that teachers reported on students' expressive skills as well as their identities and home backgrounds. Not to mention, we did not collect data on the racial identities of Latino students as well as socio-economic statuses of families, which impacted the thoroughness of our analysis.

Third, while the assessors followed a set of instructions that standardized the administration and collection of the writing samples, we did not require them to videotape this process. This means that students' spoken or signed expressive questions nor the assessors' responses were captured on film to ensure guidelines were followed. After collecting a student's writing sample, the protocol required the assessor to ask the student to sign or speak words that were not clear or present in their writing. These words were then annotated on paper by the teacher. Again this process was not filmed and therefore we are unable to confirm the accuracy of the teachers' understanding of students' expressions.

Finally, there are larger problems with using standardized tests because they present the norms of largely white monolingual students as a benchmark. We acknowledge that using these tests as measures of academic achievement comes with complications associated with racism (Holcomb & Lawer, 2020), especially in the areas of language and writing assessments (Flores & Rosa, 2015). Although we did not use standardized tests to measure students' academic achievements, we used them to locate emergent writers for inclusion in this study.

Future Directions

Students' Gender, Race, and Disability. While not the main focus of this study, we found a large number of boys and Black and Latino students in our sample. This does not depart from the wider literature as the literacy achievement of boys is consistently found to be lower than girls likely due to societal conditioning on gender behaviors (Reilly et al., 2019). Similarly, the literacy achievement of Black students, especially boys, is among the lowest of all demographic groups in the U.S. (National Center for Education Statistics, 2019) likely because of the racialized barriers they and their families encounter. A large number of Black and Latino Deaf boys in this study could be reflective of the interlocking systems of oppression (e.g., racism, audism, and linguicism) (García-Fernández, 2020) exacerbating barriers to language access (Maudlin, 2016). We cautiously suggest based on the number of Black and Latino Deaf students in this study and their shared pattern of being placed in educational settings where spoken English is primarily used that there could be a relationship that needs to be explored. Future studies should use more controlled variables to examine these relationships and outcomes.

Deaf Students With Deaf Caregivers. Five students had a deaf caregiver using ASL, which meant they were unlikely to experience language deprivation at home. However, four out of these five students attended schools where spoken English was predominately used. Being in

an academic environment where spoken English with or without sign supports and/or interpreters may have restricted their access to language and learning of writing skills (Caselli et al., 2020). If it is the case that deaf students with signing deaf caregivers experience subpar language access as a direct result of being placed in public schools with inadequate accommodations, then this has even more serious ramifications for those who do not have adequate language access at home. Future studies should investigate deaf students with deaf parents demonstrating emerging writing skills in upper elementary levels to better understand their context with more controlled variables.

Specialized Writing Instruction for Deaf Students. There was a larger number of students in the SIWI group indicating growth in writing. However, we could not pinpoint whether the use of *Language Zone* had a role in expanding their linguistic repertoire. Future research needs to take a closer look at the impact of *Language Zone* on students' emergent writing development and whether language modalities used in the *Language Zone* factor in the pace of their growth.

Conclusion

This study provides evidence that deaf students as old as thirteen years old are developing emergent writing skills not because of their deafness but likely because they were in an environment that produced chronic inadequate language access and support. We call for institutional reform that not only prevents and/or mitigates the effects of language deprivation but also affirms and builds on deaf students' existing linguistic repertoire through translanguaging pedagogy. Systemic practices that undermine deaf students' access to language and learning need to be tackled at all levels of practice, from policy to classroom. This entails having early intervention programs, K-12 school leaders, and teacher preparation programs

working together to address the restrictive nature of spoken-dominant environments in which deaf students often find themselves. We believe that these following examples, if systematically implemented, would minimize the impact of language deprivation and expand translanguaging practices. First, early interventionists and teachers should take advantage of visual-centric multimodalities that include ASL since language is fully accessible to deaf children through these means. Second, teachers should receive training in explicitly modeling and teaching translanguaging strategies through signing, writing, and speaking (if accessible to the child). Third, schools should dedicate efforts in building a multilingual/multimodal community inside and outside the classroom through signing classes offered to hearing families, peers, and community members. Facilitating these equitable practices through training, resources, tracking, and accountability may propel institutional reforms that directly impact teacher practices and student outcomes.

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