

Phonological Awareness Intervention in Bilingual Language Development

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Abstract

Purpose: The purpose of this study was to explore the relationship of phonological awareness in the spelling and reading skills in bilingual language development to improve speech and language services. This study sought out to reach the research goal of understanding whether or not phonological awareness skills improve reading and spelling abilities in bilingual children.

Method: Nine universities with speech and language programs were chosen. Three of which were from the Midwest, three from the East, and the remaining three from the South. In total, eight speech language pathologists who have worked with bilingual children completed an online survey regarding their demographics, opinions, and experiences in working with this population.

Results: Overall, the speech language pathologists that have integrated phonological awareness intervention in therapy with bilingual children have noticed an improvement in spelling and reading skills. The speech language pathologists noticed these improvements in both of the child's languages rather than in only one language. Many respondents, including those who did not target phonological awareness for reading and spelling deficits, recommended using this method with bilingual children.

Conclusion: The limited sample size created the challenge to generalize the information found to the overall population. A correlation between increased phonological awareness and improvements in spelling and reading was still found, however. Using phonological awareness intervention may be an important first step for speech language pathologists in working with bilingual children. It may be important that teachers stay informed on this intervention as well and possibly use more phonological awareness tasks in the classroom. Rhyming, segmenting, and blending are tasks that participating speech language pathologists recommend.

Key words: bilingual language development, phonological awareness, spelling, reading

Phonological Awareness Intervention in Bilingual Language Development

Achieving a level of communicative proficiency in two languages is the standard definition of bilingualism (Kałamała et al., 2022). Bilingualism, according to current research, is a multifaceted experience that should be classified based on a variety of factors such as bilingual onset, language competency, language switching, and everyday language use. There isn't a study that has looked into the pattern of individual differences in bilingualism that is readily available (Kałamała et al., 2022). However, there are existing notions that bilingual children may have different academically based struggles compared to their same aged, monolingual peers. It is believed that bilingual children may struggle with their reading and spelling abilities. It is well acknowledged that third graders who cannot read at grade level are unlikely to catch up (Hopewell & Escamilla, 2014). It is predicted that by this time, good readers will continue to get stronger, but weak readers will remain weak readers.

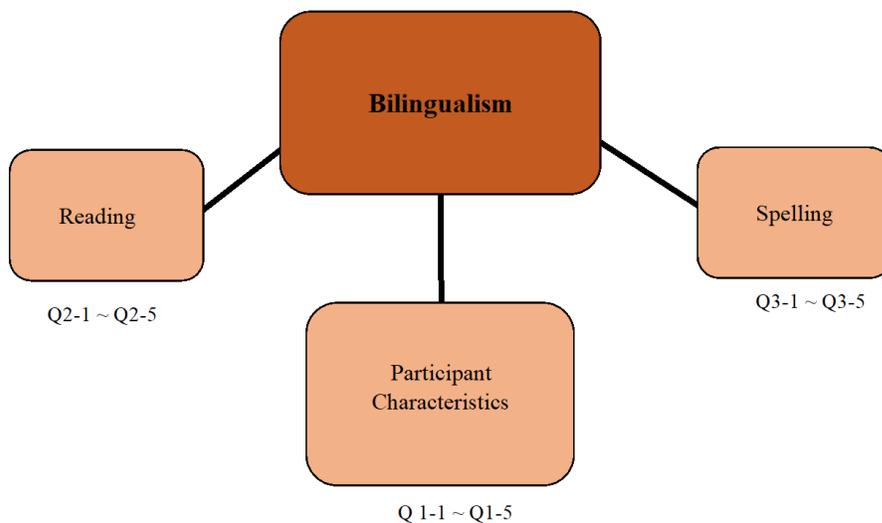
Spelling and reading skills play an important role in the development of overall language. To speak a language fluently, children must learn and effectively employ a wide range of language skills (Barak et al., 2022). Key preconditions for the development of literacy are the capacity for learning and the availability of lexical representations, both of which are likely to have significant effects on speakers' linguistic abilities. As a result, it is critical to comprehend how a child's linguistic abilities develop (Barak et al., 2022). One element of language that plays a key role in the development of a child's linguistic abilities is phonological awareness.

The capability to recognize and modify the sounds in words is known as phonological awareness (Lesaux & Siegel, 2003). One of the cognitive processes thought to be crucial in the development of spelling and reading is phonological awareness. Gaining access to linguistic knowledge through the written representation of language is a necessity for learning to read

(Laurent & Martinot, 2010). Readers must be able to decode phonological forms in order to identify a written word. To achieve this, the child must separate the phonemes from the graphemes. Words include an order of letters that each have a corresponding sound, which together create the spoken word we have in speech. Children, therefore, need to become aware of the various factors of language and have the capability to manipulate those factors (Laurent & Martinot, 2010). Understanding what phonological awareness is and its relationship with reading and spelling raises the thought that increased phonological awareness skills through phonological awareness intervention may lead to improved reading and spelling skills in bilingual language development. There has been previous research performed within this topic._

Figure 1.

Conceptual Framework



Note. Conceptual framework dividing the overall topic into three themes.

Figure 1 is a conceptual framework involving the findings of past studies within the topic of bilingual language development. The topic has been divided between three separate themes:

participant characteristics, spelling, and reading. Within the participant characteristics theme, there have been many differences and similarities between studies in this topic. Many published articles have begun their research of bilingual language development at a young participant age. The majority of studies within this literature review involved only children (Chiappe et al., 2007; Lafrance & Gottardo, 2005; Liow & Lau, 2006; Swanson et al., 2005; Yeong et al., 2014; Yeong & Liow, 2011). This is most likely due to the researchers begin heavily interested in what takes place during the development. One article, however, included adult participants instead of children (Lee et al., 2005). This specific study included forty-three Korean-English bilingual students. The researchers decided to use adult participants to review the outcome in bilingual language development. Through reviewing the literature of bilingual language development through the theme of participant characteristics, the need for more studies focusing on older participants is highlighted. There are not many studies that involve adult participants readily available. While all of the articles included bilingual participants, only two incorporated monolingual children as well (Chiappe et al., 2007; Yeong et al., 2004). Including monolingual children is important because we have a lot more research about their language development compared to bilingual children. Therefore, including monolingual children while focusing on bilingual children may help guide research.

The second theme, as depicted in Figure 1, is spelling. Phonological awareness skills are important for spelling in bilingual children as the correlation between an increase in phonological awareness and better spelling skills has been reported in numerous studies (Chiappe et al., 2007; Lee et al., 2005; Liow & Lau, 2006; Yeong et al., 2014; Yeong & Liow, 2011). Inversely, a strong relationship between low phonological awareness skills and poor spelling skills has also been found (Yeong et al., 2014). These findings are significant because

children must be able to break down a spoken word into its individual sounds before choosing the appropriate code to represent those sounds when spelling.

Reading is the third theme shared in Figure 1. The results found regarding the relationship between phonological awareness and reading are similar to the previously stated correlation between phonological awareness and spelling. Phonological processing skills are important for reading in bilingual children. The reading skills of bilingual children often rely on their phonological awareness skills; therefore, a strong relationship has been found between phonological awareness and reading (Lafrance & Gottardo, 2005; Swanson et al., 2005; Yeong et al., 2014). An increase in phonological awareness skills promotes reading skills. Contrarily, a decrease in phonological awareness skills results in lower reading skills (Lafrance & Gottardo, 2005). Understanding this possible correlation is important because children learning to read must be able to decode written words into individual sounds and then combine those sounds to create words.

The overall number of studies regarding the relationship that phonological awareness has in the spelling and reading development of bilingual children is lacking. There are not many studies that observe the role of phonological awareness in depth. More specifically, there aren't any studies that observe this kind of intervention in speech and language therapy for bilingual children. The specific tasks recommended by speech language pathologists has not been studied either. From this accumulation of lacking data, the research goal of understanding whether or not phonological awareness skills improve reading and spelling skills in bilingual children was created. To reach this goal, the following research questions were created. Does phonological awareness intervention improve reading and spelling abilities in bilingual children? Does phonological awareness intervention improve only L1 or both L1 and L2? Do speech language

pathologists recommend phonological awareness intervention to increase reading and spelling skills in bilingual children?

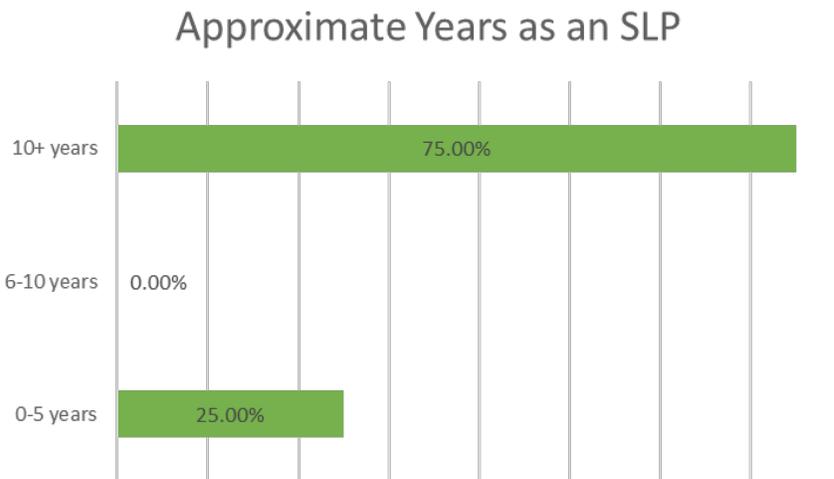
Three predictions were created based upon the past studies. The first prediction is that speech language pathologists that have worked with bilingual children have seen improvements in reading and spelling due to phonological awareness practice. The prediction was created upon the finding that there is a strong correlation between more phonological awareness practice and increased reading and spelling skills (Chiappe et al., 2007; Lafrance & Gottardo, 2005; Lee et al., 2005; Liow & Lau, 2006; Yeong et al., 2014). The second prediction is that improvements from phonological awareness practice will be seen in both L1 and L2 rather than in only one language. It has previously been found that L1 and L2 reading skills have a strong relationship with phonological awareness and that phonological awareness can be universal across languages (Lafrance & Gottardo, 2005). Lastly, it is predicted that the majority of speech language pathologists will recommend using phonological awareness intervention to improve reading and spelling skills. This was predicted based upon a study that found children who did not receive direct phonological awareness instruction did not receive as many gains on their reading skills as those who did (Swanson et al., 2005).

Method

Participants

In the beginning, fourteen individuals consented to participate in the study. However, it was discovered after analyzing the data that not all responders completed the questionnaire. Many left a few items unanswered. Thus, a challenge was created in order to collect enough evidence to validate the previously stated predictions. The data from a total of eight respondents was studied after filtering the data by eliminating respondents who left questions unanswered.

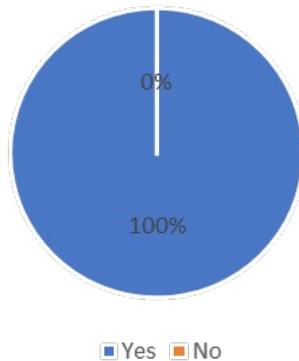
Many individuals received an email asking to participate (see Appendix A). Criteria for selecting subjects of interest relied on their location. Three universities each were chosen from the Midwest, East, and South. The universities from the Midwest included Indiana State University, Indiana University, and Purdue University. The universities from the East included the University of Maryland, the University of North Carolina, and New York University. The universities from the South included Oklahoma State University, Texas State University, and the University of Tulsa. Possible participants were found by searching online at the speech language pathology programs of the previously listed schools. From this point, contact information of the faculty and staff affiliated with the programs were found. Taking all of the email addresses from those that had observable credentials as speech language pathologists, mass emails were sent asking for the participation in the survey (see Appendix A). After consenting to the survey, the respondents were taken immediately to the first few questions. One of these questions involved asking the respondent if they have ever worked with bilingual children. Those that answered “no” were immediately taken to the end of the survey and were asked no following questions. The first sampling method used was purposive sampling. Only speech language pathologists who have had experience in working with bilingual children were selected. The second sampling method used was snowball sampling. The email asked recipients to forward the email on to other speech language pathologists that they know who work with bilingual children (see Appendix A).

Figure 2.

Note. Approximate years the participants have worked as speech language pathologists.

Figure 3.

Have you ever worked with bilingual children?

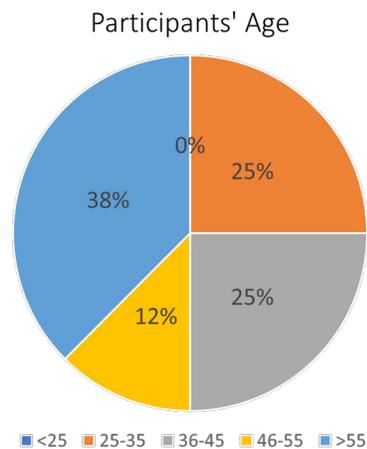


Note. The percentage of participants that have worked with bilingual children.

The first section of the survey involved gaining the demographic information from the speech language pathologists. The data on the approximate number of years that the participants worked as speech-language pathologists is shown in Figure 2. Less than five years, six to ten years, and more than ten years in this field were the answer options for the first question. According to the responses, 25% had less than five years' experience, 0% had between six- and ten-years' experience, and 75% had more than ten years' experience. Figure 3 is a pie

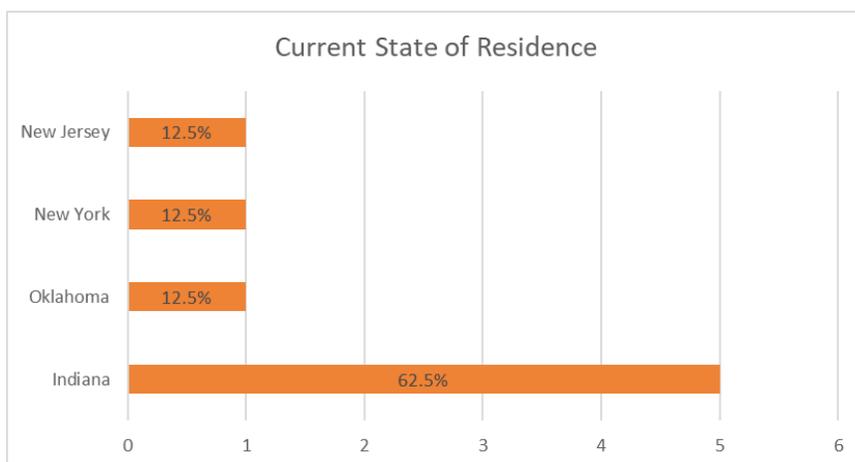
chart that depicts the responses to the second demographic information question asked. This question asked the speech language pathologists if they have had any previous experience in working with bilingual children. The blue portion represents the participants that responded 'yes'. 100% of the respondents answered with the option 'yes'. This is due to the skip logic put into place for the individuals that answered 'no', as previously stated.

Figure 4.

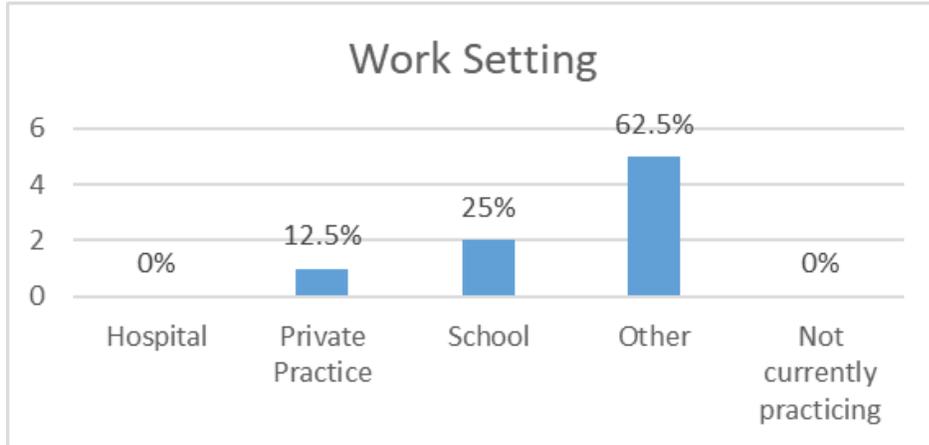


Note. The percentages of participants found in specific age groups.

Figure 5.



Note. The current location of all participants.

Figure 6.

Note. The setting in which the participants are practicing.

The participants' average age in years is shown in Figure 4. Ages under 25 are represented by dark blue, whereas those between 25 and 35 are represented by orange, 36 to 45 by gray, 46 to 55 by yellow, and over 55 by blue. As shown in Figure 4, none of the participants are younger than 25. Ages 25 to 35 and 36 to 45 account for 15% of participants. 12% of the participants are aged 46 to 55. Participants older than 55 make up 38% of the sample. The participants' state of residence is displayed in Figure 5. Initially, participants were asked to identify both their state and county; however, because some participants failed to do so, only their states were examined and put into graph form. The number of responses is indicated on the x axis of the bar graph, and the states provided by the participants are listed on the y axis. It was found that 62.5% of participants are from Indiana, followed by a percentage of 12.5% of participants which are from Oklahoma, New York, and New Jersey each. Figure 6 is a bar graph that displays the settings in which the participants are working. Hospital, private practice, school, other, and not currently practicing were the response options provided to them. According to the graph, 0% work in a hospital or do not currently practice, 12.5% work in private practice, 25% work in schools, and 62.5% work in other settings.

Procedure

In order to reach the goal of understanding whether or not phonological awareness skills improve reading and spelling abilities in bilingual children, the original research questions were modified into a variety of survey questions (see Appendix B). The perspective of a speech language pathologist was sought after in the creation of the questionnaire. The questions were shaped in a way to gain information on the speech language pathologists' demographics, opinions, preferences, expectations, attitudes, knowledge and outcomes in working with bilingual children.

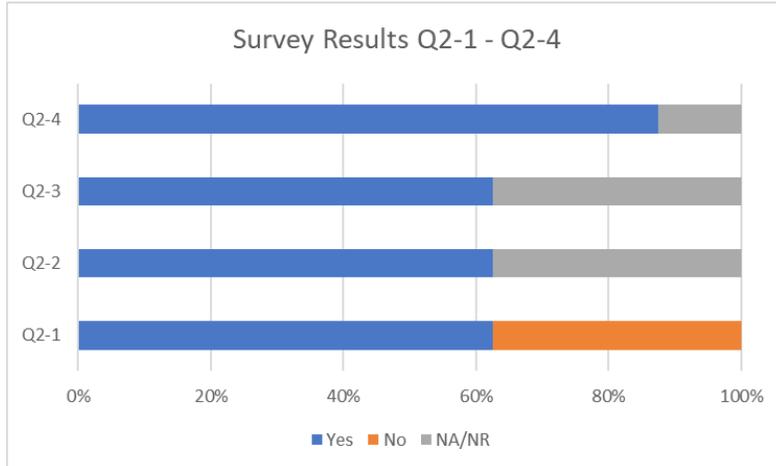
The questionnaire consisted of three different sections: participant characteristics, reading, and spelling. Each section included five survey questions (see Appendix B). The questions in the reading and spelling sections are similar and only involved the interchanging of the words "spelling" and "reading". This is due to the desire of gaining specific and individual information on both reading and spelling. The human subjects approval from the ISU IRB was not required. Because it is not intended for publication or to add to the body of generally applicable information, it was not necessary for this survey. A follow-up email was sent out to all of the initial candidates reminding them about our survey and the date it would be closing.

Validity and Reliability

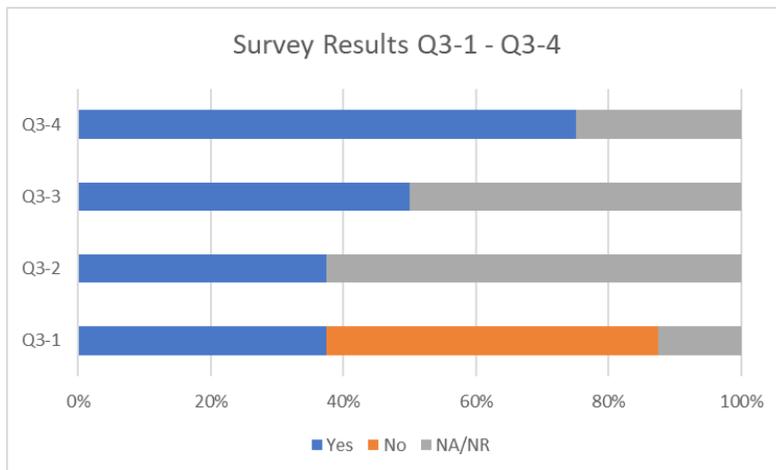
There are two different methods of validity that can be applied to this survey. To assess the validity of the survey, face validity can be used. In this measurement, it is determined whether or not the survey appears to measure what it is supposed to measure. Content validity is also appropriate. The degree to which the survey items represent the targeted domain can be measured. There are three different types of validity that would not be appropriate for the survey. The first inappropriate validity method is predictive validity. Predicting performance is not an

option since only the opinions and experiences of speech language pathologists working with bilingual children were sought after. The second inappropriate validity method is concurrent validity. There were no surveys or studies performed regarding bilingual language development around the same time, so it is not possible to validate whether or not the survey is backed up by another measurement. The last validity type that is not applicable to the survey is construct validity. Subjective assessments and empirical data are key components of construct validity. There are no test scores or data to be compared to the judgements of the speech language pathologists.

This study can be subjected to two different reliability methods. To assess the reliability of the survey, test-retest reliability can be used. The consistency of the survey results can be measured by sending out a similar survey to the same participants. The second applicable reliability measure is inter-observer reliability. The frequency data of each survey question can be gathered to determine the level of agreement between individual observers. While there are two applicable reliability types that can be used for the survey, there are two methods that would be inappropriate. The first unsuitable reliability method is parallel reliability. There is no equivalent form of the survey, only one form of the survey exists. The second inapplicable reliability method is internal consistency. There are not enough question items involved in our survey to be split in half to check the internal consistency.

Figure 7.

Note. Survey results from the first four questions in section two of the survey.

Figure 8.

Note. Survey results from the first four questions in section three of the survey.

Results

The survey results were ultimately inconclusive. As previously stated, the overall sample size was small as it only consisted of eight respondents who completely answered the survey. Regardless, the research questions may still be answered. The first research question is as follows: does phonological awareness intervention improve reading and spelling abilities in bilingual children? Figure 7 shows the data from the first four questions in section two of the

survey (see Appendix B) in a single bar graph that lists the yes (blue), no (orange), and not applicable responses (gray). 62.5% of the participants have targeted phonological awareness in bilingual children with deficits in reading skills. The total percentage of participants who focused on phonological awareness while working with bilingual children with reading deficits and saw improvements in the children's reading skills was 100%. This information partly answers the first research question. According to the participants in the survey, phonological awareness intervention improves reading abilities in bilingual children. Figure 8 displays the results from the first four questions in section three of the survey (see Appendix B). Only 37.5% of participants have targeted phonological awareness in bilingual children with deficits in spelling skills. Out of those participants, 100% of them have seen improvements in the children's spelling skills. This information aids in completely answering the first research question. Phonological awareness intervention improves spelling abilities as well in bilingual children.

The second research question is as follows: does phonological awareness intervention improve only L1 or both L1 and L2? As depicted in Figure 7, 62.5% of participants responded that reading skills in both L1 and L2 are improved by this intervention. Figure 8 relates that only 50% of participants believe they saw improvements in spelling in both languages while the other 50% only saw growth in one language. When comparing these results from the third question in section two and the third question in section three (see Appendix B), it can be deduced that phonological awareness intervention can improve both L1 and L2.

The last research question was, do speech language pathologists recommend phonological awareness intervention to increase reading and spelling skills in bilingual children? Figure 7 shares that percentage of participants that would suggest using this intervention to target reading skills in bilingual children is 87.5%. It is important to note that some of these

participants involved those who chose the “no” option to Question 1 (see Appendix B). The reasoning for their decision is unknown but would be interesting to research in a future study. Figure 8 shares a somewhat similar result. 75% of participants recommend using this intervention to target spelling skills in this population. This data leads to the answer that the majority of speech language pathologists recommend phonological awareness intervention to improve the spelling and reading skills of bilingual children.

Discussion

In hopes to answer the research questions to reach the goal of understanding whether or not phonological awareness skills improve reading and spelling abilities in bilingual children, a survey was sent out to numerous speech language pathologists involved in a university’s speech and language program. In total, nine different university programs were targeted. Even through both purposive and snowball sampling, very few participants were involved in this study. This made the survey results seem to be not as definite. Nevertheless, answers to the research questions have been found within analyzing the results of the survey. Phonological awareness intervention improves the spelling and reading abilities in bilingual children. This improvement can be seen in both languages, rather than in only one of the child’s languages. Lastly, the majority of speech language pathologists recommend phonological awareness intervention to improve the spelling and reading skills of bilingual children.

The results are surprising when compared to the initial predictions and previous studies. More specifically, all three predictions that were made before sending out email invitations to the survey (see Appendix A) were correct. The first prediction, as previously stated, was that speech language pathologists that have worked with bilingual children have seen improvements in reading and spelling due to phonological awareness practice. The findings from the survey

completely back up this prediction, as depicted in Figure 7 and Figure 8. Previous studies have found similar results. Strong correlations between a child's phonological awareness skills and their reading and spelling skills has been previously been found (Chiappe et al., 2007; Lafrance & Gottardo, 2005; Lee et al., 2005; Liow & Lau, 2006; Yeong et al., 2014). Phonological processing skills has been found to predict both spelling skills and reading skills in this population (Lafrance & Gottardo, 2005; Yeong & Liow, 2011).

The second prediction was that improvements will be seen in both L1 and L2 rather than in only one language. This prediction was found to be true after analyzing the survey results. The respondents who used phonological awareness practice in their intervention for spelling and reading skills in bilingual children found improvements in both languages. The findings from the survey are consistent with the findings in the past studies. Previous studies have found that phonological awareness has a strong relationship with both L1 and L2 reading skills (Lafrance & Gottardo, 2005). Phonological awareness skills have been found to be universal across some languages.

The final prediction was that the majority of speech language pathologists will recommend using phonological awareness intervention to improve reading and spelling skills. Survey results revealed that this prediction was also true. Many respondents, including those that have not yet used this intervention type, recommend using it with bilingual children. This finding was found to be consistent with previous studies. It was found in a past study that children who did not receive direct phonological awareness instruction did not receive as many gains on their reading skills as those who did (Swanson et al., 2005).

Clinical Implications

Ultimately, the survey results appear to be inconclusive due to the very small sample size. However, clinical implications are still able to be found from the results. Information can be drawn from each research question that was covered by survey questions. A starting point for speech language pathologists working with bilingual children has been highlighted within this study. Speech language pathologists that worked with bilingual children and used phonological awareness tasks saw improvements in reading and spelling. Phonological processing skills are important for spelling and reading in bilingual children. Even if they have poorer phonological processing skills, bilingual children still rely on them for reading and spelling (Chiappe et al., 2007; Lee et al., 2005; Liow & Lau, 2006; Yeong & Liow, 2011). In knowing this, using phonological awareness intervention may be a crucial first step for speech language pathologists in working with bilingual children. Another clinical implication involves emphasizing interdisciplinary work between speech language pathologists and teachers. As previously stated, bilingual children may find it difficult to read and spell. Third graders who cannot read at grade level will not likely reach their same age peers (Hopewell & Escamilla, 2014). It is anticipated that by this point, strong readers will only get stronger, while weak readers will stay weak readers. For this reason, amongst others as well, it is important that teachers stay informed on this intervention as well and possibly use more phonological awareness tasks in the classroom. Lastly, tasks to begin with in this intervention method have also been highlighted in the survey results. Some speech language pathologists that participated in the study recommended tasks such as rhyming, segmenting, and blending.

Limitations and Directions for Future Research

There was a considerably large limitation found within the study. The most impactful limitation is due to a small sample size. Only a small number of individuals that were sent the survey decided to participate. Because not all respondents completely answered all of the questions, it was challenging to generalize the information found to the overall population. There were also respondents that had to be taken out of the study because they did not have any experience in working with bilingual children. The snowball sampling method did not work for this study, as individuals were asked to forward the email to others (see Appendix A), but the small sample size reflects that they did not. Future studies should involve a larger sample size. This may be done by locating more speech language pathologists of interest. For example, future studies may want to locate speech language pathologists that work in areas with more bilingual residents.

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Appendix A
Invitation Email

Hello!

You are being invited to participate in a study about Bilingual Language Development. The purpose of the study is to investigate the intervention methods used for reading and spelling deficits for bilingual children. This study is being conducted by Emma Bonham, Katie Grube, Caitlyn Baker, and Dr. Min Han, from the Communication Disorders program at Indiana State University. This study is being conducted as part of a graduate student project for our research methods class.

If you are a speech-language pathologist working in the United States, please consider participating in my survey. It will take approximately 5-8 minutes to complete.

SURVEY LINK:

https://indstate.qualtrics.com/jfe/form/SV_81zWOZgqXkPO6SG

Additionally, if you know of any other SLPs who work with bilingual children, your assistance in forwarding this message to them would also be greatly appreciated.

If you have any questions, please feel free to contact me or the instructor. Thank you for taking the time to complete my survey. Below is our contact information.

Caitlyn Baker

Email: cbaker68@sycamores.indstate.edu

Instructor: Min Han, Ph. D.

Phone: 812-237-3780

Email: Min.Han@indstate.edu

Sincerely,

Emma Bonham

Katie Grube

Caitlyn Baker

Appendix B

Questionnaire

Survey Questions:

Participant Characteristics (Q1-1 ~ Q1-5)

- How old are you?
- How long have you been an SLP?
- Have you ever worked with bilingual children?
- Which setting are you currently practicing in?
- Which county/state are you practicing in?

Reading (Q2-1 ~ Q2-5)

- Have you ever targeted phonological awareness in bilingual children with deficits in reading skills?
- Have you noticed improved reading skills while doing phonological awareness intervention in bilingual children?
- Have you noticed improved reading skills in L1, L2, or both languages while doing phonological awareness intervention?
- Would you recommend targeting phonological awareness to improve reading skills in bilingual children?
- What type of PA activities or tasks have you used for bilingual children to improve their reading skills?

Spelling (Q3-1 ~ Q3-5)

- Have you ever targeted phonological awareness in bilingual children with deficits in spelling skills?
- Have you noticed improved spelling skills while doing phonological awareness intervention in bilingual children?
- Have you noticed improved spelling skills in L1, L2, or both languages while doing phonological awareness intervention?
- Would you recommend targeting phonological awareness to improve spelling skills in bilingual children?
- What type of PA activities or tasks have you used for bilingual children to improve their spelling skills?