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“Birth Order’s Effect on Language Delay Detection in Young Children”

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The University of Southern Mississippi

“Birth Order’s Effect on Language Delay Detection in Young Children”

by

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A Thesis
Submitted to the Honors College of
The University of Southern Mississippi
in Partial Fulfillment
of the Requirements for the Degree of
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in the Department of Speech-Language Pathology

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Abstract

In the field of Speech-Language Pathology, research has shown that the earlier a child is diagnosed with a speech and language disorder, the better the prognosis is for a favorable therapy outcome (Carroll, Bowyer-Crane, Duff, Hulme, Snowling, 2011). This researcher concentrated on how the birth order of a child can affect the prognosis of a speech and language delay. For this study, the goal was to collect quantitative data in order to view the extent of the correlation between birth order and the age of diagnosis. A sample population was found at the DuBard School of Language Disorders at the University of Southern Mississippi. The participants were parents of children who attended the DuBard School of Language Disorders. These participants were given a questionnaire that would bring further understanding to what extent birth order affects early detection of language and speech delay. Information provided in the study was analyzed through using SPSS and averages to view trends. Upon evaluating the data, the researcher showed that the birth order of a child had no correlation to early speech and language delay detection. Furthermore, this research adds to the field of Speech-Language Pathology, since there are no studies currently published reviewing both birth order and the time of diagnosis of a speech and language delay.

Keywords: birth order, Speech Disorder, DuBard School of Language Disorders, parent knowledge, language delay, Language Disorder

Table of Contents

List of Tables.....	vi
Chapter 1: Introduction.....	1
Chapter 2: Literature Review.....	3
Birth Order.....	3
Early Childhood.....	6
From Childhood to Adolescence.....	8
Parent Knowledge.....	10
Chapter 3: Methodology.....	11
A. Sample.....	11
B. Variables.....	11
C. Data.....	12
D. Instruments and Procedure.....	14
Chapter 4: Data Analysis.....	15
A. Level of Measurement.....	15
B. Data.....	16
Chapter 5: Conclusion.....	21
References.....	24
Appendix A.....	27
Appendix B.....	29
Appendix C.....	30

List of Tables

Table 1: Age at Diagnosis.....	17
Table 2: Birth Order of Child.....	18
Table 3: Age Diagnosed and Birth Order Correlation (Spearman's Rho).....	19
Table 4: Descriptive Analysis.....	19
Table 5: Percent Correct of Parent Knowledge Questions.....	20

Chapter 1: Introduction

Early identification of language delays is critical in a child's development. Parents are usually the first adults who notice an issue in their child's speech development, which leads them to seek help. Early successful treatment of a disorder is of greatest importance for the development of the language-impaired child. Untreated language delays can result in poor academic performance and inappropriate social interactions.

Birth order has been a variable in numerous studies (Eckstein & Kaufman, 2012). Birth order is a key ingredient of "sibling rivalry," which appears to be a universal family phenomenon. Many scholars wonder if birth order can significantly influence factors such as personality, intelligence, and physical appearance, among others. In the field of Speech-Language Pathology, then, one might wonder if birth order can affect different aspects of speech development.

With each child who has a speech and language disorder, warning signs and symptoms vary with each type of disorder. What one child might be suffering from will be different from the next, so the symptoms and onset of disorders are going to be contrastive, and they may occur at alternating stages of development. Problems come into play in detecting these disorders when parents are unaware of the timeline in which different symptoms should be noted, or when behaviors should stop and/or be happening. With speech development, there are numerous stages through which a child passes. There are developmental scales that judge the child's acquisition process toward the development of speech. The stages of speech development include: crying, cooing and laughter, vocal play, babbling, and the jargon stage. Each of these stages have a broad timeline in which one skill should end and the next should begin. Problems arise, though,

when parents are unaware of the timeline and they do not know what to look for at different stages of their child's speech development, presumably with their first-born.

In most family situations, the first-born child is typically the guinea pig for the parents. With every aspect of that child's life, most parents are unaware of warning signs that should concern them. This includes speech development. Parents may continue to think that their child's speech is normal, or if problems are detected, the speech will improve with age; therefore, speech disorders many times go undetected until a much later age. Problems arise from the late detection of a speech disorder since the younger a child is, the easier it is to correct any learning disorder they might have. Typically, as a child matures, difficulties increase in regard to treating a speech disorder. With young children, their brain processes are still developing. During those years of development, various speech patterns are being encoded, and the corrections are easier to learn. As children mature and continue to exhibit difficulties with speech, they can be viewed as intellectually disabled depending on how severe the disorder is.

With birth order, the first-born will most likely be diagnosed with a communication disorder at a later date. Siblings born after the first child will most likely be diagnosed earlier than their older siblings. This is presumed because parents have acquired the necessary knowledge needed to identify the symptoms and warning signs from observing their first-born. Thus, parents will be aware of significant signs of development with later-born children.

The problem and purpose of this study is to see if a correlation exists between the age of diagnosis of a speech and language disorder developed in children and the birth

order of the child. To what extent does birth order play a role in determining the timeline for a speech and language disorder to be diagnosed?

Chapter 2: Literature Review

Birth Order

The topic of birth order is an area of interest for many researchers (Eckstein & Kaufman, 2011, Horner et al. 2012, Ghanizadeh, et al. 2012). Through studying birth order, researchers try to figure out the differences among siblings (Eckstein & Kaufman, 2011, Horner et al. 2012, Ghanizadeh, 2012). Eckstein and Kaufman (2011) examined birth order to view if there was a trend between birth order and personality of each sibling. Their study was based on past studies of behavioral scientist Alfred Adler. Adler is famously known for studying birth order in family units and the personality effects of that order. Eckstein and Kaufman used past Adler studies to shape their own study. They looked at different models of research to see if there was a link between different personalities and siblings. An interesting aspect to this study occurred when Eckstein and Kaufman talked about how parents have so many aspirations for the eldest child. Eckstein and Kaufman included an account by Zajonc (2001) which stated, “Joy, pride, concern, anxiety, and fulfillment dominate parents’ dispositions, and all reactions to first infants’ behaviors carry an element of uncertainty and require constant adaptation. On the birth of the second born child, experience makes caregiving easier and allows parents to be a lot calmer” (p. 490). The crux of this statement is that, through experience, parenting will be easier for parents with future children. The empirical information found about birth order proved to be true when it comes to personality. That is important to note, because through

the knowledge of raising the first child, better choices can be made with raising other children in the family unit.

Birth order can also affect academic standing. Horner, Andrade, Delva, Grogan-Kaylor, and Castillo (2012) displayed this in their study “The Relationship of Birth Order and Gender with Academic Standing and Substance Use Among Young in Latin America.” This study was also influenced by the Adlerian theory of birth order (Horner, 2012). The purpose of this study was to look at the youth in Chile to see if birth order affected the education and achievement of a child and whether the child also used drugs. Research was gathered in this study through cross-sectional data from a Santiago Longitudinal Study, which was an NIDA-funded study about families in Chile. In total, there were 946 youth of low economic status who participated in various interview-questionnaires and surveys administered by psychologists. Through these interviews, three variables were taken into consideration: the dependent variables were the substance use of the individual and the academic standing. The independent variable, birth order, was divided into four categories -- first-born, only child, middle child, and youngest child. In this study, though, the first-born children were analyzed more frequently than the other children. After all the tests and interviews, results were shown that the Adlerian theory does support populations that are not American. A family’s day-to-day routines and the parents’ expectations could be an indicator of whether or not a child will participate in substance abuse at a later age. Since older siblings are under more pressure to succeed, it is assumed that most times those children are less likely to abuse drugs. That is where birth order comes into play. Birth order plays a role in whether or not children will abuse drugs, given the circumstances and pressure that each child should

face. The Santiago study is especially important; it showed how parents have different expectations for each child. According to their birth order, there were higher expectations for the first-born, and the younger siblings did not receive as much pressure from their parents.

Another study that examined birth order was conducted by Ghanizadeh, Abotorabi-Zarchi, Mohammadi, and Firoozabadi (2012). Until now, there are no known connections between ADHD and gender/birth order. The purpose of this study was to see if birth order proved to be a factor in the severity of ADHD. In this study, researchers used a clinical sample of 173 children with ADHD and 43 without ADHD. Variables were provided, and the severity of the ADHD in the children was recorded. The children and their parents were also interviewed. After conducting the interviews, the researchers showed that there was no clear correlation between a child having ADHD and birth order. The fact that the onset of ADHD is more genetically based than environmentally based suggested that birth order is not a factor, but that does not mean that birth order cannot affect other variables (Ghanizadeh, et al., 2012)

Birth order has shown to be a reoccurring variable in various studies. (Eckstein & Kaufman, 2011, Horner et al., 2012, Ghanizadeh et al., 2012). The fact that this variable has been used in so many different studies shows how interesting and influential it is. To have a topic like birth order used in a study shows the complexity of a certain topic and how the variable of birth order can be a determinant.

Early Childhood

In the treatment of speech disorders, early childhood is a crucial developmental period. By instilling correct ways of communication in young children, results of communication skills are long lasting. Case-Smith and Holland (2009) partnered together to look into different services given to young students. Their study focused on certain service deliveries that are better for young children. They conducted this study by investigating reports referencing different forms of special delivery for children and how effective each one was. Through various case studies, Case-Smith and Holland found that in order for a child to receive proper treatment, three components are required: a therapist working with teachers to ensure there is no conflict in developing a therapy plan for the child; a flexible schedule for the child to be able to keep up with; and accurate documentation regarding logistics of the services. There are service delivery models that utilize best practices to facilitate a child's learning; therefore, it is very important that certain models are used to ensure that a child learns efficiently and that those models have a longer lasting effect.

During the learning stages of early childhood, an important aspect of child's retention is the proactive and fundamental learning achieved in preschool. This is the age when children are most exposed to interactions with children their own age, and that is when their language starts to develop. Researchers Glogowska, Campbell, Peters, Roulstone, and Enderby (2002) collaborated and presented a study that investigated whether or not, and to what extent, community speech and language therapy was effective in preschool students. For this study, the researchers examined different questionnaires and qualitative interviews. After reviewing the questionnaires and

interviews, they found that there were no indicators regarding how effective speech and language therapy was with these children since research was more qualitatively-based than quantitatively-based. However, there was some insight into how parents felt their child was changed through treatment. Even though the effectiveness of Speech-Language Pathology therapy was limited in preschool students, seeing the parents' perspectives was beneficial. These researchers showed that speech and language therapy in young children was crucial to successful language development.

Another study that has recently included preschoolers is one that compares the child's health status and way of life to their language skills. van Agt, Essink-Bot, van der Stege, Ridder-Sluis, and de Koning (2004) conducted a study in which parents of preschoolers answered a questionnaire regarding the well-being of their child's language development. The purpose was to see if there were any links between how well a child learns a language and the quality of life of that child. The researchers found that the importance of keeping up with the developmental timeline of child language learning was crucial. The fact that the child's quality of life could be an indicator of how effective his or her language development was may lead to detecting language disorders at an earlier age.

As children are diagnosed with language disorders at a young age, intervention can be provided and progress can be made. There are some instances, though, when children are being misdiagnosed with a language disorder when they do not have one. Wood and Valdez-Menchaca's study (1996) covered this topic. Their study focused on children with expressive language disorders or ELD. For the experiment, a group of 20 young adults experienced with child care were assigned to interact with two groups with

four children in each group. Three children with normal language development and one child who had been previously diagnosed with an ELD, were in each group. In one of the groups, the girl with the ELD was labeled so the adults knew she had been diagnosed with an ELD, and in the other group, there were no labels. Once the adults interacted with all of the children, they filled out a questionnaire regarding the children and their responsiveness and how social the children were. The researchers found that in the group with the label, the child with the ELD had lower scores of sociability than others; whereas, in the group without the label ELD, the researchers found that the unlabeled ELD child performed and interacted just as much as any other child in the group. This evidence seemed to support the idea that giving children a diagnostic label may hinder the child's development in other areas. Early identification of a language disorder is crucial; however, labeling a language disorder erroneously in a young child can be detrimental.

From Childhood to Adolescence

Most people only correlate language disorders with early childhood, but they have just as much, if not more, impact on adolescents. Adolescents with language and speech disorders are of interest to Speech-Language Pathologists over the years (Joffe, Nippold, & Oetting, 2012; Conti-Ramsden, St Clair, Pickles, & Durkin, 2012). In one study, Joffe, Nippold, and Oetting (2012), looked at past speech therapy techniques used with adolescents and techniques presently used to determine if progress was made with various treatment techniques. These authors compared studies and techniques over the past 20 years to see how therapy had advanced for adolescents. They found that there

have been advancements in the therapy outcome with adolescents, but there was still more progress to be made.

Researchers wonder how effective therapy is as they start with children and continue into adolescence. Conti-Ramsden, St Clair, Pickles, and Durkin (2012) collaborated in a study in which the purpose was to look at verbal and nonverbal skills trajectories of adolescents with specific language impairments. A group of 242 children was gathered and evaluated on how verbal or nonverbal they were. After evaluating these children, there was a visible increase in verbal skills over a one-year span in children with a specific language impairment. The authors showed that from an average age of seven, there was an increase in verbal skills as each child aged.

Adolescents with language disorders are not as common as young children with such disorders. For this reason, therapists are normally not present in higher education facilities because they are treating young children in lower elementary schools. Nippold (2010) pointed out the treatment of adolescent language disorders is paramount. In this informative article, Nippold gave some suggestions regarding how adolescents can be helped. The first step is through the education of knowledge of adolescent therapy techniques to undergraduate and graduate students in the field. What is effective for younger children in therapy is not necessarily appropriate for young teens due to their advanced pragmatic and syntactic skills. Clinicians must have experience in a higher education facility. With such experience, therapists get a feel for this age group and become better at treating adolescent language disorders. Within a higher learning environment, Nippold (2010) pointed out that it is important to have intervention that is evidence-based, so that those receiving therapy thrive in social and academic situations.

She recommended that a credited course be given to those adolescents called “Effective Communication,” which was first recommended in 1993 by Larson, McKinley, and Boley. This is an intense one semester course where adolescents are encouraged to do well since it is a graded course. Clinicians were made aware of the other courses the students were taking and had knowledge of what they were learning so that different subjects were integrated into the therapy session. Nippold hoped that by taking these measures, adolescents could be provided with the proper therapy they needed in order to succeed and thrive.

Parent Knowledge

How much parents know about Language and Speech Disorders can affect how early speech therapy takes place (Carroll, Bowyer-Crane, Duff, Hulme, & Snowling, 2011). There were numerous informative sites that were beneficial to parents who were curious about the language development of their child. One such website is KidsHealth.org. In one article called, “Understanding Normal Speech and language Development,” a step-by-step list was given on the development of a child’s language. This is useful, because it gives a timeline of indicators regarding milestones of speech development. Another website with information about language development in children was ASHA.org. ASHA, which stands for American Speech-Language-Hearing Association, has different articles that can help guide parents on their child’s speech and language development. One such article, “Speech Sound Disorders,” discussed speech sound disorders and listed various facts about them. Parents’ knowledge of their child’s language development was crucial to the future welfare of the child.

Chapter 3: Methodology

Sample

Thirty adults and children were used for this study. The participants included 30 parents of school-aged children attending the DuBard School of Language Disorders at the University of Southern Mississippi. A sample size of 30 was selected because it was thought that having 30 participants would likely elicit a trend in the data collected. This trend would either prove the hypothesis given with the correlation between birth order and language detection delay, or it would not. Participants were the first 30 parents who responded to a questionnaire distributed through the teachers of the DuBard School of Language Disorders. A total of 63 questionnaires were distributed based on the number of children enrolled in the program. In this case, if a sufficient number of questionnaires was not received, the questionnaire would have been redistributed to the parents. It was necessary that the parent who filled out the questionnaire had a child with a speech and/or language disorder. The staff was instructed to place a questionnaire in each child's folder and to send it home for the parent to fill out and return to the teacher. Each teacher was told that the surveys would be collected within a week of sending them out.

Variables

The independent variable in this study was birth order. Birth order is the order in which each child is born. Birth order does not change, but it can influence how quickly and effectively a child is diagnosed with a speech disorder. This research looked at birth

order as stated by the parent's answers on the questionnaire. The questionnaire included various situation-based questions describing a child's speech and language development. The parents were given a scenario of child language and speech development and were instructed to choose the best therapy option. Parents were also asked to fill out a personal section along with a series of multiple-choice questions. Questions in the personal section included the following: how many children reside in the home, their ages, and the birth order of the child enrolled at the DuBard School of Language Disorders (first, second, third, etc.). By asking such questions, there was evidence to correlate the extent to which birth order influences the time in which a child is detected with a speech and language disorder. In addition, the parents' knowledge regarding their child's speech development was determined. This elicited insight on how much knowledge the parents had regarding their child's speech development.

The dependent variable in this study was the time it takes for a child to be diagnosed with a language and speech disorder. This variable was tested by asking questions regarding the number of children the parent has, their ages, whether or not any of the children have speech or language disorders, and if so, the ages at which they were diagnosed. The information from these questions helped determine how the parents' indication of a speech and language delay resulted in earlier recommendations for therapy.

Data

Data was analyzed from items on a questionnaire distributed to parents. This questionnaire was not developed previously in another study, so a new questionnaire was

originated. A questionnaire was used because in the field of Speech-Language Pathology, there is no data that coincides with birth order. Thus, data collection was necessary for the purpose of this research, and was gathered through the use of the questionnaire-survey. Also, according to Bowling (2005), using questionnaires in health profession related studies provided the most substantive evidence when analyzing quantitative and qualitative data. Since there was no current research pertaining to this study, and a questionnaire was the most adequate form for gathering information in terms of being unbiased and objective, a questionnaire was used for gathering information. Analysis was conducted based on answers provided by parents. The questionnaire was designed to contain a series of scenarios about various cases of children with and without speech and language disorders. The parents read the scenarios and responded to how necessary and pertinent it was to treat the child. The multiple-choice answers to the scenarios included the following: no treatment is needed, treatment is needed but not immediately, treatment is needed soon, and treatment is needed immediately. The questionnaire was developed to target the variables being analyzed, birth order, and time taken to diagnose a speech and language delay. Based on the parents' responses to the questions, insight was gained concerning their knowledge of a child's speech development. This insight led the researcher to infer parents could accurately discern when therapy was needed based on whether they have had children before and are aware of speech and language development.

Due to time constraints, no pilot study was conducted for the purpose of this research. The data collected from this research was solely reflective of the 30 surveys that were collected from the DuBard School of Language Disorders. Because of the select

responses reported, there were weaknesses in regard to the study technique. One restriction was the limitation of evaluating only one school. Expanding the questionnaire to include other institutions would allow for varied responses. The DuBard School for Language Disorders participants provided valid information regarding the research being conducted. However, there was another factor that could have broadened the scope of information received. Culture was an aspect that was limited for this study. At the DuBard School of Language Disorders, only one dominant ethnicity was represented, so there was not a good cross section of multicultural subjects included. Given that there were study limitations, further analysis is necessary to determine the correlation between variables. There was enough information, though, to view a trend in the data received from the 30 surveys.

Instrumentation and Procedures

This research was conducted through the use of a questionnaire. With the responses provided by parents with children, a correlation was made on whether birth order had any effect on how early or late a speech disorder was detected. A total of 63 questionnaires were distributed, but the first 30 turned in were analyzed. Questions on the questionnaire were composed of scenarios about children with pending speech disorders and the parents had to determine the necessary means of treatment for those children. Three scenarios were used for this section. The sample size used for this study was sufficient to show a trend in two variables: whether there was a correlation between how much parents know about the language development of a child and how early they referred their child for speech therapy. Also, since no more than three scenarios were

used, the questionnaire was not too lengthy, and parents were more likely to answer the questions on the survey. The other half of questions the parents answered pertained to personal information about the parents and their child. These questions included how many children resided at home, their ages, whether any of them had been diagnosed with a speech and/or language disorder, and if so, the age that they were referred for therapy. Once the questionnaires were completed, each one was analyzed according to the parents' answers to the questions. Based on Speech-Language Pathology standards, the parents' answers were analyzed to evaluate if the parent was knowledgeable about speech development and if their personal information section of the questionnaire was reflective of that knowledge. This information also was used to determine if birth order was a factor in the time frame in which speech disorders were detected by the parents.

Chapter 4: Data Analysis

Level of Measurement

The data obtained from the surveys were analyzed and organized onto a spreadsheet in order to evaluate any correlation between birth order and the time taken to diagnose a child with a speech and language disorder, given a parent's knowledge of speech and language disorder characteristics. Along with said correlation, the data also provided the elapsed length of time of therapy since diagnosis and the age at which the child was diagnosed with a speech and language disorder. Along with a spreadsheet, data were analyzed through SPSS. The SPSS program was used to determine if there was a correlation between birth order and the time taken to diagnose a child with a speech and language disorder. The data collected for this study was analyzed from the questionnaires

distributed. There was no pilot study conducted or preliminary data collected prior to sending questionnaires to the DuBard School of Language Disorders due to time constraints.

Data

For this research, a total of 30 participants' questionnaires were analyzed. The survey was volunteer-based and sent to the parents of the children at the DuBard School of Language Disorders. Because this research was volunteer-based, the parents had to complete a consent form that was reviewed by the International Review Board before completing the questionnaire. Appendix B on page 28 includes the consent form that was distributed. There was no child participation in this study. The survey distributed is shown as Appendix A on page 26.

After retrieving the surveys, the information obtained for each sample was reviewed. The first analysis was the age at which the child, who is enrolled at the DuBard School for Language Disorders, was diagnosed with a speech and language disorder. For example, the age of diagnosis of 0 indicates that the parents reported that their child was diagnosed at birth with a speech and language disorder. In addition to being diagnosed at birth, children in this study were diagnosed at various months during the year, and this was indicated with the use of decimals. For example, one child's age of diagnosis was 1.8 years. This indicated that the child was diagnosed with a speech and language disorder at the age of one year and eight months. All of the ages that were submitted for this study and their incidence are shown in Table 1. Based on the surveys received, the average age of a child diagnosed with a speech and language disorder was 3.71 years. To see the

correlation between birth order and the age at which the diagnosis was given, the participant's responses were separated into first born and those born after the first child. Averages were then determined and they are represented in Table 1. All of the children were included in this table and they were not separated into first-born and those after first born in order to view the average ages of diagnoses reported.

Table 1
Age at Diagnosis

Age at Diagnosis (Year and months)	Frequency	Percent
0.0	1	3.3
1.1	1	3.3
1.6	1	3.3
1.8	1	3.3
2.0	5	16.7
2.6	1	3.3
3.0	5	16.7
4.0	3	10.0
5.0	5	16.7
6.0	3	10.0
7.0	4	13.4
Total	30	100.0

A total of 9 children who were first-born, and 21 children who were born after the first child were accounted for from the surveys provided. Table 2 shows the numerical order of the child born and how frequently the first-born, second-born, third-born, and fourth-born children appeared in the study. In regard to the children who were first-born, the average age of speech and language disorder diagnosis was 4.4 years. Meanwhile, for the children who were born after the first born, the average age of diagnosis with that population was 3.76 years. Based on these averages, a trend was shown between the average age of diagnosis of first-born children and children born after

the first-born with a speech and language disorder. This trend assumes that first-born children have a later age of diagnosis than those born after the first-born. This trend supported the hypothesis that birth order had an effect on the time of diagnosis of a speech and language delay. Despite a trend, further analysis of this data disregarded the correlation between birth order and the age of diagnosis.

Table 2

Birth Order of Child

Birth Order of Child	Frequency	Percent
First	9	30.0
Second	14	46.7
Third	6	20.0
Fourth	1	3.3
Total	30	100.0

In order to evaluate the correlation between two different variables, birth order and the age of diagnosis, Spearman's Correlation was used for this study. In order to make those calculations, the values of the age of diagnosis and the birth order of those children were analyzed. The birth order of the child was entered numerically, so each birth order was given a number, one being the first born and only child, two the second born, three the third born, and four the fourth born. Once calculations were made analyzing the two variables, the researcher determined the correlation coefficient to be 0.024 and the significance to be 0.900 as shown in Table 3. Since the correlation coefficient was within the two-tailed significance of 0.900, there was no significant difference between the values of birth order and the age of diagnosis for a child with a speech and language disorder.

Table 3

Age Diagnosed and Birth Order Correlation (Spearman's Rho)	
Correlation Coefficient	0.024
Significance (2-tailed)	0.900
N	30

Following the correlational analysis, descriptive analysis was performed to indicate whether there was a discrepancy with the data that resulted in the lack of a correlation. The results of the descriptive analysis are shown below in Table 4. According to the data analysis, the important factor to consider was the mean. The mean for this study was the subjects' average age at the time of diagnosis and their birth order. The means for the first and second child showed a decreasing trend that supported the hypothesis, which stated that children born after the first-born were diagnosed earlier than those who were first-born. The mean for the third-born child increased, however, which was inconsistent with the prior means. Since the third-child mean did not follow the negative correlation that was preceded from the first two means, this variable was the factor in which this set of data was not significant and showed no correlation for the purposes of this study.

Table 4

Descriptive Analysis			
Order of Child Born	N	Mean	Standard Deviation
1.00	9	4.39	2.571
2.00	14	2.96	1.186
3.00	6	5.33	1.633
4.00	1	2.00	-
Total	30	3.83	1.990

The next variable reviewed on the survey was the knowledge of the parent who had a child diagnosed with a speech and language disorder. In the questionnaire distributed, three scenarios were given for the parents to analyze. Parents were asked to respond with the answer they thought was the best option regarding the necessity of speech and language therapy. According to the 30 surveys, 16 parents answered all questions correctly, 11 parents answered 2 questions correctly, and 3 parents answered 1 question accurately; this information is displayed in Table 5. The purpose of looking at the number of correct responses from parents was to see if there was a relationship between the parents' knowledge of speech and language development who have first-born children and those who have children with speech and language disorders born after the first child.

Table 5
Percent Correct of Parent Knowledge Questions

Number Correct of Scenario Questions	Frequency	Percent
1	3	10.0
2	11	36.7
3	16	53.3
Total	30	100.0

After separating the number of correct responses into the two categories of those with first-born children and those born after the first born, results were analyzed. With reference to first-born children, those parents on average answered 2.11 questions correctly. On the other hand, parents with children who were born after the first-born on average answered 2.53 of the questions with accuracy. Given this information, there

appeared to be a trend between birth order and the knowledge of parents, but this evidence was statistically inconclusive.

Chapter 5: Conclusion

The purpose of this study was to determine to what extent birth order affects the time taken to diagnose a child with a speech and language disorder. Appropriate information was collected from the parents of children who were enrolled at the DuBard School for Language Disorders. Approaching this population of parents ensured that the children were relevant to the purpose of the study. In regard to the motivation of this study, the hypothesis was that there was a significant difference between the birth order of a child and the age of diagnosis of a speech and language disorder. This hypothesis led to the thought that a parent who had prior knowledge of speech and language development from having multiple children would be more inclined to refer their child earlier for assessment if they noticed a lack of speech and language development.

Upon completing a thorough evaluation of the factors included in this study, analysis failed to reject the null hypothesis, and it was concluded that there was no significant difference between the birth order of a child and the delay in time to diagnose a child with a speech and language disorder. Based on the data pertaining to birth order and the time taken to diagnose a child with a speech and language disorder, there was no correlation between the means. The first-born children and the second-born children showed a decreasing trend in terms of means, yet the third-born children indicated an increasing trend leading the correlation to be non-significant.

Given that there was no significant difference with the birth order of a child and the time taken to diagnose a speech and language disorder, an outlying source could have obstructed the opportunity for a correlation. This study only took place at one school and 30 questionnaires were taken into consideration. Outcomes could have been limited, and they may not have provided a sufficient amount of data to support a better correlation. Also, the school that participated in this study was predominately one ethnicity, so that could have restricted multicultural aspect in this study. Given that there were different factors that may have negatively affected the outcome of this study, further research needs to be conducted in order to indicate a possible correlation between birth order and the time taken to diagnose a child with speech and language disorders.

Insight was also provided through the consideration of the parents' answers given on the scenario portion of the questionnaire. There was no analysis completed on this variable, parent knowledge, due to the fact there was no correlation represented that would provide an appropriate interpretation in regard to the purpose of this study. This study focused on the correlation between birth order and the time taken to diagnose a child with a speech and language disorder. Although considering a trend between parent knowledge of different sets of parents could have added to this study, there was no way to include that in the analysis. Parent knowledge would have only added to the study had the primary variables of this study shown a correlation.

Knowing that there was no correlation between birth order and the time elapsed to diagnose a child with a speech and language disorder, further research must be conducted to replicate this study. Expanding the sample size by sending questionnaires to a wide range of schools varying in severity of disorders and ethnicity will allow for a possible

correlation to be confirmed. Knowing where this study needs to be improved will allow for further research to be accomplished more effectively.

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Appendix A

Parent Questionnaire

Child's Age: _____

Age when Diagnosed: _____

How many siblings does the child with a speech and language disorder have: _____

What is the order of the birth for the child indicated above in relation to his/her siblings (first, second, third born, etc.)?

Does the child indicated above have a sibling that also has a speech and language disorder? If so, is the sibling older or younger?

How long (years, months) has the child indicated above been involved with speech and language therapy?

Below are scenarios of children with indicators of a possible speech and language disorder. Read each scenario carefully, and circle the treatment you feel would be best for that child.

1. Betty was a four-year-old student who academically performed to her age level, but was not very social with her peers. She would never talk with any of her fellow students, and when asked to answer a question in front of the class, she showed apprehension and hesitation. Of the following, Betty should:

- A. be recommended for therapy
- B. be watched to see if the pattern continues
- C. be not recommended or be a concern because she is just a quiet girl

2. Elijah, who is 3, just said his first word "Dada". He started his babbling at around 18 months, so his parents are thrilled he is beginning to speak. His parents should:

- A. not be worried with the progression of Elijah's speech since it is in the right order.

- B. be concerned with the progress of Elijah's speech.
- C. continue to watch for changes in his speech and not worry about therapy.

3. Taylor is a five-year-old female who has a total word index of around 250 words. She can put together sentences, but most of her speech is made up of a few words. Taylor should:

- A. be recommended for therapy because she is very much far behind developmentally.
- B. not be recommended for therapy because her vocabulary is still developing.
- C. continued to be watched in case her speech pattern changes.

Appendix B

Consent Form

Title of the study: Birth Order's Effect on Speech and language Delay Detection in Young Children

Introduction: I, _____, have been asked to participate in this study. Victoria Souhlas, undergraduate student, Department of Speech & Hearing Sciences, USM, who is conducting this research, has explained the study through the cover letter attached to this consent form and survey I certify that I am 18 years or older.

Purpose of the Study: The purpose is to obtain information to determine if there is a correlation between the birth order of a child and the latency of detection of a speech and language disorder.

Description of Procedures: This study will be done at the residence of the child enrolled at the DuBard School of Language Disorders. I will be asked to complete a survey sent home with the student. This will take about 10 minutes to complete. Upon completion, I will give the form to the student to then be returned to the teacher. At least 30 participants will be in this study.

Risks and Discomforts: There are no known expected risks from participating in this study.

Benefits: I understand that this study may not have a direct benefit to me, but the knowledge gained will be beneficial to others.

Contact Persons: For more information about this study, I can contact Mrs. Mary Schaub, at 266-5231 or her supervisor, Dr. Steven Cloud at 266-5216. For more information regarding my rights as a research participant, I may contact the Chair of the Institutional Review Board at 266-6820.

Confidentiality: I understand that any information obtained as a result of my participation in this research will be kept as confidential as legally possible. I understand that these research records may be subpoenaed by court order or may be viewed by federal authorities. In any publications that result from this research, neither my name nor any information from which I might be identified will be published without my consent.

Voluntary Participation: Participation in this study is voluntary. I understand that I may withdraw from this study at any time. Refusal to participate or withdraw will not result in loss of benefits or punishment on my behalf. By signing this form, I willingly consent to my participation in this study.

Signature of Participant

Date

Signature of Investigator or Investigator's Representative

Date

This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

Appendix C



INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional-review-board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **14021103**
PROJECT TITLE: **Birth Order's Effect on Language Delay Detection in Young Children**
PROJECT TYPE: **New Project**
RESEARCHER(S): **Victoria Souhlas**
COLLEGE/DIVISION: **College of Health**
DEPARTMENT: **Speech and Hearing Sciences**
FUNDING AGENCY/SPONSOR: **N/A**
IRB COMMITTEE ACTION: **Expedited Review Approval**
PERIOD OF APPROVAL: **03/05/2014 to 03/04/2015**

Lawrence A. Hosman, Ph.D.
Institutional Review Board