Northern Illinois University

Use of Family History Information in School-Based Prevention Practice

A Thesis Submitted to the

University Honors Program

In Partial Fulfillment of the

Requirements of the Baccalaureate Degree

With University Honors

Department of

Communicative Disorders

By

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May 12,2007

Introduction

Research studies have demonstrated the impact of a positive family history in children, and the likelihood that they may develop specific language impairment (SLI). SLI is a high incidence condition, estimated to affect 7% of the kindergarten population (Tomblin, Records, Buckwalter, Zhang, Smith, & O'Brien, 1997). SLI is characterized by pronounced difficulty with language development in the absence of frank neurological, cognitive, social, or hearing impairments (Leonard, 1998). Children identified as having SLI display asynchronous language development with pronounced difficulties in the development of morphosyntax. It is important to note that specific language impairment differs from a language delay. A child that demonstrates a language delay would demonstrate language skills that are slow to emerge, but language skills develop in the same sequence seen in typically developing children. Implications of a language delay suggest that a child will overcome the delay and catch up (Reed, 1994). Noting this distinction, it is important to recognize that children identified as language disordered will not simply catch up to their peers. A review of the literature on children at risk for developmental language and/or reading disabilities reveals the importance of early screening and identification for maximizing language and academic outcomes. Thus, best practice would indicate the need to implement early screening and identification of children with or at-risk for language and/or reading disabilities to achieve optimal developmental outcomes.

Early Identification of Specific Language Impairment/Reading Impairment

The implementation of growth curve models may be used to map the developmental course of children beginning at 30 months of age, and continuing throughout development. Data indicates that children with lower productivity scores at 30 months of age grew more slowly, and fell further behind their typically developing peers over time (Hadley & Holt, 2006). These tense growth trajectories provide information that may predict future language impairments in children identified as at-risk populations. Healthcare providers, early childhood educators, and parents need to be aware of the implications of slow grammatical development. Recognition of the five tense morphemes: third person singular present, past tense, auxiliary BE, auxiliary DO, and copula BE. A delay in the development of tense marker usage would provide a significant component in the early screening and identification of children at risk for SLI at the time of preschool entry.

Childrens' symbolic play skills may also be assessed to assist with the prediction of receptive and expressive language skills. The use of inflectional morphology may be assessed during play to determine early language delays. As early as two years of age, children at risk for dyslexia will score significantly lower than their age matched peers on expressive language tasks and maximum sentence length tasks. It is interesting to note that a child's language abilities may be predicted through the assessment of the degree of sophistication demonstrated during their symbolic play (Lyytinen, Poikkeus, Laakso, Eklund, & Lyytinen, 2001). This is another indicator that healthcare providers, parents, and educators should recognize in the early childhood populations. A child demonstrating difficulty with rapid response to verbal instructions, present tense, the superlative, and the elative form, should elicit the need for

potential further evaluation by responsible caregivers and professionals. Children with a family history of dyslexia will score lower than their age matched peers with no family history on object naming tasks and the use of inflectionary grammar.. At risk children will also produce shorter utterances than low risk children (Lyytinen, 2001). A summary of findings from other studies is provided in Table 1.

Genetic Basis of Language and Reading Impairments

Current research has explored the link between a positive family history of speech, language, andlor reading disabilities and the likelihood of similar disabilities in offspring/siblings. The incidence in families with a positive history incidence increases to approximately 20% to 40% (Choudhury & Benasich 2003). Deficits in comprehension and expressive language usage may be identified during the early childhood and preschool years. These children will require optimal intervention to remediate speech and language deficits. Numerous studies have suggested a gender-specific component, with males identified more often than females. Sons are more likely than daughters to develop language deficits in the preschool years (Choudhury, 2003). Research has also shown that children with spoken language impairments have high rates of speech and language impairments in their nuclear and extended family members (Rice, Haney, & Wexler, 1998). Speech and language pathologists should be aware of the potential genetic linkage when working with young children at risk for speech and language impairments. An increased incidence of similar disabilities in younger family members of children who come from families with positive histories is causal to their developmental progress.

Table 1

Key **Studies**	Findings	**Implications**
(Hadley & Holt, 2006)	Single word utterances, word combinations, and longer sentence like growth lay the foundation for tense marking. Children who displayed low productivity scores were not catching up with their peers over time. Children with a high risk family history displayed a flat trajectory in growth over time.	Using a growth model approach and a clinical marker approach can improve the identification of children at risk of developing a speech and language impairment.. These children who are at risk will need to be identified and seek early intervention when warranted.
(Choudhury & Benasich, 2003)	Specific Language Impairments clearly aggregate in families at an incidence of 20%-40%. At three years of age children with a positive family history were found to be more likely to score lower on tests of language expression and comprehension than their peers with a negative family history.	Children born into a family with a history of speech and language disorders are at a significantly higher risk of developing such disorders.
(Rice, Haney, & Wexler, 1998)	Affectedness of speech/language disorders and reading/spelling/learning disorders was higher in the positive family history probands. Significantly more speech and language difficulties were reported in the proband group. In the nuclear families, the probands group reported significantly higher rates of speech/language difficulties compared to the control families.	In this study children with grammatical deficits were more likely to come from families with a history of speech/language impairments.
(Flax, Realpe-Bonilla, Hirsch, Brzustowicz, Bartlett, & Tallal,2003)	In probands and affected family members, language impairment and reading impairment were more likely to co-occur than occur alone.	Language impairment and reading impairment occur at a much higher incidence in families of a speech and language impairment proband.
(Lyytinen, Poikkeus, Laakso, Eklund, & Lyytinen, 2001)	Symbolic play and language test scores were lower in the Dyslexia group. The Dyslexia group also produced shorter utterances than the control group. The earliest reliable measure of dyslexia risk was the maximum sentence length at 2 years.	Children identified as late talkers at risk for Dyslexia do not catch up developmentally to their age matched peers not identified as at risk for Dyslexia, and are at higher risk for delays in language acquisition.

Early studies have reported that 28% to 63% of children identified with a specific language impairment had at least one other family member identified as impaired. Many researchers began focusing their work on determining the nature of such language problems. Significant evidence has been gathered support the hypothesis that SLI may aggregate in families, and that there may be a genetic link. Children identified as having SLI are significantly more likely to have a positive family history of impairment along with a significantly higher overall impairment rate in family members (Tallal, Hirsch, Realpe-Bonilla, Miller, Brzustowicz, Bartlett, & Flax, 2001). Tallal and her colleagues correlated family aggregation on current testing compared to family history questionnaires. It was found that the rates of affectedness in family members based on current testing were not significantly different from rates of affectedness derived from family history questionnaires. This data is extremely significant in relation to this capstone because even though it may not be feasible to directly test all children entering kindergarten programs, with proper intake forms children can still be identified upon entry in to the school system.

Previous research has studied the genetic linkage between SLI in families. Current research is studying the aggregation of reading impairments in families as well as co-occurrence of language impairments (LI) and reading impairments (RI; Flax, Realpe- Bonilla, Hirsch, Brzustowicz, Bartlett, & Tallal, 2003). Data were examined for family members ofthe SLI proband to determine family aggregation for reading impairment and the co-occurrence of a reading impairment along with a language impairment.. Data revealed such results: 100% of the probands met the diagnostic criteria for LI and 68% ofthe probands also met diagnostic criteria for RI (Tallal et. aI, 2003). The implications of this study provide clinicians and future clinicians

data supporting the importance of familial history in children with a possible language or reading impairment. . The results of this study showed that for the probands and their affected family members, LI and RI were more likely to co-occur than to occur alone. These results strengthened researchers' hypothesis that LI and RI occur at a much higher incidence in the families of an SLI proband. Familial genetic studies are proving more substantial in determining the etiology of such impairments. Family aggregation studies have shown that children born into families with a positive family history of LI are significantly higher risk for LI and/or RI. With the knowledge gained through this study clinicians will hopefully realize the importance of obtaining a thorough family history when working with children who have deficits in language.

Use of Clinical Tools to Obtain Family History Information

Obtaining accurate family history information on children with speech and/or language disorders is an essential part of clinical practice. Parent report provides clinicians with useful information regarding a child's language abilities. There are several different clinical tools utilized by speech language pathologists to obtain extensive background information on nuclear family members with a history of speech and language disorders. Family history may be obtained using questionnaires, interview, or direct testing. Questionnaires can be very efficient when gathering information from a large group of individuals. When parents are provided with a detailed tool using an open ended question format they are more likely to be as descriptive of their child's language development along with family history report. Face-to-face interviews are a very reliable tool for clinicians when obtaining history on a child. Norm referenced testing requires a performance of -1.25 standard deviations or poorer on at least two of the five

composite language measures based on the Test of Language Development-Primary 2 and a story retelling and comprehension task (Tomblin et. al, 1996). Although quite reliable, unfortunately, such direct testing is time consuming and not useful when a large population needs to be tested. Lewis and Freebairn (1993) presented the family history interview as a reliable tool for obtaining family history information. In school based practice the most feasible method of obtaining a family history would be through a questionnaire format.. As previously stated, questionnaires can be a very useful tool used to obtain family history information and language development milestones. The use of such a tool can be extremely cost effective and can be filled out and returned to school administrators in a timely fashion.

One way to identify children with a positive family history is to gather this information during routine case history. When children enter kindergarten, case history information is obtained as part of kindergarten registration. Snow, Bums, and Griffin (1998) have suggested that gathering family history information documenting any parents' or siblings' speech, language, or learning disabilities could be very useful as part of school-based programs designed to prevent reading and academic difficulties. The advantages and disadvantages of different methods used to gather family history information is summarized in Table 2.

The purpose of the current project was to examine the methods three school districts employ for gathering case history information as part of kindergarten registration, in general, and information about family history of speech, language, and/or reading disabilities in particular.

Table 2

Study	Method	Focus	Advantages/Disadvantages
(Lewis & Freebaim, 1993)	Face-to-face interview	Nuclear and extended family members (speech, language, reading, writing, LD, stuttering)	A: Complete record sufficient for pedigree analysis. Reliable. D: May not be feasible for all purposes, particularly when information is to be gathered in large groups of individuals in a short period of time.
(Rice, Haney, & Wexler, 1998)	Mostly phone interviews. Some personal interviews.	Nuclear and extended family members. (Handedness, age, history of speech, language, reading, spelling, and learning difficulties.)	A: Listing method was preferred and more effective. D: Parent/guardian may not know each individual's early clinical status. Parent/guardian uncertainty. Symptoms may not be evident in some individuals due to their compensation to the difficulties.
(Tallal, Hirsch, Reaple-Bonilla, Miller, Brzustowicz, Bartlett, & Flax, 2001)	Self-report questionnaires.	All nuclear family members of the SLI probands and the matched controls. (Extensive family history questionnaire: personal, medical, and educational information)	A: Less costly. Results can be mailed in prior to assessment.. D: Informant may forget a family member's condition Information given may not be clear.. Informant is less likely to be thorough.

Method

Three school districts were identified for this project and will be identified as A, B, and C. These school districts were chosen based on the differences in size and demographics. The size and demographic data can be found in Table 3. Formal requests were sent to personnel within the school districts to obtain the current tools used to gather demographic/developmental

history for children entering Pre-Kindergarten and Kindergarten programs. The packet that was mailed out included a letter of introduction, a brief summary of research findings, and a school request for the summary of information (see Appendix A for packet mailed to school districts). Once all the information was gathered from each school district, each tool was examined independently. The analysis focused on: (a) if information on family history of speech, language, and learning disabilities in family members and (b) if so, how it was gathered. An analysis checklist was developed and used by the undersigned to investigate how information is gathered by each school district (see Appendix B for analysis checklist).

Table 3

School District	**White**	**Hispanic**	**Native American**	**Black**	**Asian**	**%Of Low Income**	**Instructional Expenditure Per Pupil (2003-04)**	**Operational Expenditure Per Pupil (2003-040**
School District A	87.1%	5.7%	0.7%	3.1%	1.8%	13%	$4,627	$8,679
School District B	69.6%	15.9%	0.2%	9.9%	2%	33%	$5,526	$8,604
School District C	44.7%	39.3%	0.2%	7.1%	7.5%	40%	$5,258	$8,641

Results

Kindergarten intake packets were received from school district Band C; no information was received from district A. District B specifically asked at what age the child began to talk in sentences. There were no questions pertaining to (a) a family history of speech, language, and/or learning disabilities, or (b) previous speech and language services/early intervention that the child may have received prior to kindergarten. However, there were several questions pertaining to emergent literacy skills, use of hearing aids, and the primary language spoken in the home.

District C provided several resources for parents in addition to the intake forms. District C's kindergarten intake form also asked at what age the child started talking. Again, there was no question about a family history of speech, language, and/or learning disabilities. District C requires mandatory kindergarten screenings, but it was not clear from the forms received what domains were included in the screening. District C also provided their service team referral form which asks about previous services using a closed-question format (i.e., yes/no). Services listed included: previous speech and language services, reading support, special education services, early intervention, developmental preschool, social work, and 504 Plan. The referral form does not ask about services received by any other family members. It was not clear if this form is used prior to kindergarten entry or only for referral upon teacher evaluation. District C also obtained information on the primary language spoken in the home. Finally, District C sent parents many different materials describing strategies to increase language use and reading at home. Some techniques described were: modeling, expanding, self-talk, and use of gesturing.

To summarize, both districts asked about age at which the student began talking or using sentences, but more information about the child's language use would be pertinent to their

development. . Given expectations for language development at kindergarten entry, it would be beneficial to ask whether the child is able to share 2-3 sentences about a personal experience or whether the child currently speaks in complete or telegraphic sentences. To make the format easier for parents, the forms could provide two examples, one age appropriate and the other not, and ask questions such as: Which story/sentence sounds most like the way your child talks right now? Neither district asked about the family history of speech, language, and/or learning disabilities. Given the considerable evidence regarding the high incidence of family aggregation of speech and language disorders, it would seem important to add this information to current intake forms. Similarly, information about prior services was not included directly on the intake forms. It seems likely there may be other forms used to gather this information (as was the case for District C); however, when identifying children's risk for language and reading difficulties in the early school years, it would be helpful to have a record of prior services, even if the child no longer seems to need services. For example, some children who talk late seem to resolve this early delay on their own. Others may resolve with the assistance of early intervention services. An additional question that identifies whether the child with a history of talking late received early intervention services as a toddler, provides additional information about the individual child's risk for subsequent language/reading difficulties. Revisions to kindergarten intake forms will provide school districts with a better tool for identifying students with or at-risk for developmental language disorders. Early identification is crucial to maximizing students' educational outcomes.

Discussion

Research studies have demonstrated the impact of a positive family history in children, and the likelihood that they may develop a language or reading impairment. . Early screening,

identification, and appropriate therapies will reduce the negative educational impact upon children, while at the same time maximizing their potential development. Tallal et. al (2003) reported that when language impairments occur in families with a SLI proband, there is a significant co-occurrence of reading impairments. Even though such research may not determine the extent that genetic factors contribute to this pattern of co-occurrence, it remains essential that speech and language pathologists in the early childhood setting recognize the importance of a detailed health and developmental history, as well as a detailed social and family history, in assessment of young children. Children with a positive family history are at a considerably higher risk for developing a reading impairment than their typically-developing peers. Flax et al. (2003) have recommended comprehensive speech and language assessment upon referral (Flax et aI., 2003). Minimally, school-age children with a positive family history shouldbe monitored carefully to ensure a successful transition to literacy, even if they enter kindergarten with functional spoken language abilities.

Based upon evaluation of several school districts' kindergarten intake forms, it evident that with revisions these tools can be more effective in the identification of children with developmental language disorders. With the addition of a few focused questions, school personnel are provided with the information needed to identify children who may require immediate attention or more careful monitoring during the kindergarten year. Although a question asking about family history information upon entry into kindergarten may be a sensitive issue for some families, and as such, the way in which this information is gathered, stored, and shared must protect the confidentiality of the child and the family and the educational benefit of this information must be clearly explained to the families. Comprehensive implementation, data collection, and analysis of information obtained through application of such standardized tools

will promote the timely identification of at-risk children, and facilitate optimal utilization of speech and language pathology resources to help insure appropriate progress monitoring, therapeutic interventions, and ultimately, the maximal academic achievement of students.

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Appendix A

Packet Mailed to School Districts

March 29,2007

School Address

To Whom It May Concern:

I am a University Honors student at Northern Illinois University. To graduate with Honors, NIU students are required to complete a senior capstone 'project.. As part of my capstone, I have studied the increased incidence of language and reading problems among children with a positive family history of speech, language, and learning disorders under the direction of Dr. Pamela Hadley from the Department of Communicative Disorders. Enclosed you will find a summary of a few recent studies. In many studies, a history of speech, language, and/or learning disorders is gathered through interviews or routine case history questionnaires. Snow, Bums and Griffin (1998) have suggested that gathering family history information could be very useful as part of school-based programs designed to prevent reading and academic difficulties.

The purpose of my project is to examine and summarize the forms used by several school districts at the time of kindergarten registration to learn about the kinds of developmental and family information that is typically gathered. I would like to obtain a copy of the case history information you obtain during your district's kindergarten registration. Districts will not be identified by name in the summary. If you are willing to share a copy of your form, I have provided a stamped self-addressed, envelope for your convenience. In addition, if you would like a copy of the summary, please sign the enclosed request and return it along with your forms.

Thank you in advance for your assistance with this project.. If you have any questions or concerns, please feel free to contact me (see below) or my capstone supervisor, Dr. Hadley (815-753-5692).

Sincerely,

Bridget M. Nora
Northern Illinois University
[redacted]

[redacted]
bnora@niu.edu

Improving the Early Identification of Children with Developmental Language Disorders Using Family History Information

Specific language impairment (SLI) is a high incidence condition, estimated to affect 7% of the kindergarten population (Tomblin, Records, Buckwalter, Zhang, Smith, & O'Brien, 1997). SLI is characterized by pronounced difficulty with language development in the absence of frank neurological, cognitive, social, or hearing impairments. Although it is possible to identify SLI during the preschool years, the vast majority of these children reach kindergarten undetected. That is, Tomblin and his colleagues found that approximately 5 of every 7 children identified with SLI had not been previously identified or received treatment during the early childhood years. Given the importance of spoken language development to literacy and academic achievement, earlier identification of these children is of considerable importance to the educational community.

Snow, Burns and Griffin (1998) have suggested that gathering family history information documenting any parents' or siblings' speech, language, or learning disabilities could be very useful as part of school-based programs designed to prevent reading and academic difficulties. Current research has revealed the increased incidence of language and/or reading disabilities in children with positive family histories. For example, Rice, Haney, and Wexler (1998) found significantly higher rates of speech/language difficulties in the family members of a group of children with SLI as compared to control children. Choudhury and Benasich (2003) found that children born into families with a positive family history of speech and language disorders are at a significantly higher risk of developing such disorders and are at greater risk for reading and academic difficulties. At three years of age children with a positive family history were found to be more likely to score lower on tests of language expression and comprehension than their peers with a negative family history. In addition, Flax, Realpe-Bonilla, Hirsch, Brzustowicz, Bartlett, and Tallal (2003) found that in identified children and their affected family members, language impairment and reading impairment were more likely to co-occur than occur alone. Language impairment and reading impairment occur at a much higher incidence in families of a speech and language impaired child.

It seems likely that systematic use of family history information might improve the early identification of children at risk for developmental language disorders by allowing school personnel to focus more attention on children with an elevated risk of language, literacy, and academic difficulties. If you are willing to anonymously share information and interested in receiving a summary of how this type of information is being gathered, please sign the enclosed request and return it along with your district's form.

Feedback Return Form

Circle One:

Yes I would like to receive the summary of information.

No I would not like to receive the summary of information.

Please provide the address you would like the information to be sent:

_____

_____

_____

_____

Please Print Name:

_____

Please Sign Name: Date:

_____ _____

Appendix B

Analysis Procedures

1. Does intake form ask about major language milestones?
No
If yes, which ones?

2. Does intake form ask about family history of speech, language, and/or learning disabilities?
No
If yes, go to question 3.

3. Does form describe characteristics of speech, language, learning disabilities?
No, assumes knowledge of these disorders.

Yes, describes symptoms.

4. How does form ask about family history?
-open ended?

5. Does form focus parents on family members?
-Father

-Mother

-Siblings

-AuntslUncles

-Cousins

-Grandparents

University Honors Program

Capstone Approval Page

Capstone Title: (print or type):

Use of Family History Information in School-Based Prevention Practice

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Faculty Supervisor (print or type): Pamela A. Hadley

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Date of Approval (print or type): 5-12-2008