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PRAGMATIC LANGUAGE IN DEAF AND HARD OF HEARING STUDENTS: CORRELATION WITH SUCCESS IN GENERAL EDUCATION

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DEAF AND HARD OF HEARING CHILDREN have shown delays and difficulties in pragmatic behaviors due to insufficient exposure to common daily discourse and underlying impoverishment in all components of language development. In a study in a school district in a southeastern U.S. state, the researchers investigated the relationship between socio-linguistic pragmatic competence in 81 deaf and hard of hearing students and these students' degree of hearing loss, communication mode, and degree of success in general education. Two measures, one devised by the state's department of education and one developed within the local school system, were used: the Criterion-Referenced Competency Test (Georgia Department of Education, 2000) and the Socio-Pragmatic Skills Checklist for Deaf and Hard of Hearing Students (Cobb County School District, 1997). The researchers found that whether the students used spoken language or signed language, socio-pragmatic language had a high, positive correlation with academic outcomes.

A hearing loss influences all aspects of a child's language acquisition, from vocabulary and grammar (Marschark et al., 2009) to speech (Tobey, Geers, & Brenner, 1993) and reading (Mayer & Leigh, 2010). While gains may be made in the area of semantics (Grimshaw, Adelstein, Bryden, & MacKinnon, 1998), serious gaps in syntactic development may not be overcome with either time or instruction (Curtiss, Fromkin, Krashen, D. Rigler, & M. Rigler, 1977; Grimshaw et al., 1998), regardless of the communication mode that is used (Figueras-Costa & Harris, 2001; Peterson & Siegal, 1998; Scott, Russell, Gray, Hosie, & Hunter, 1999); pragmatic lan-

guage skills may also lag (Jung & Short, 2002; Lederberg & Everhart, 2000). Deaf and hard of hearing children have delays and difficulty in pragmatic competence because of insufficient exposure to common daily discourse and its underlying speech, semantic, morpho-syntactic, and metalinguistic supports (Brackett, 1997; Ciocchi & Baran, 1998; Duncan, 1999; Schum, 2000). Yet little is known about the relationship between pragmatic language and academic achievement in deaf and hard of hearing students who do and do not sign, which is the focus of the present article. We use the term *deaf and hard of hearing children* (rather

than *children who are deaf and hard of hearing*) because the former is more frequently used by the Deaf community.

Review of the Literature

Pragmatic language skills are those used socially to achieve goals in different contexts and with different audiences. Children learn pragmatic language skills through exposure to proficient users of the language, which allows them to become members of a social culture, express wants and needs, act appropriately in varied situations, converse effectively, and show empathy (Phelps-Terasaki & Phelps-Gunn, 1992). Deaf and hard of hearing children exhibit difficulty developing pragmatic language (Jung & Short, 2002; Lederberg & Everhart, 2000). Even those who are native signers (i.e., had Deaf parents and learned American Sign Language as a first language) exhibit some areas of deficiency or delay in pragmatic development (Wolfe, Want, & Siegel, 2003). Recently, pragmatic language use has been investigated under the umbrella of Theory of Mind (ToM). ToM reasoning involves the ability to understand mental states such as the beliefs, desires, and intentions of others, and how these differ from one's own mental states. ToM is fundamental to communication and social relationships, especially in the areas of irony, jokes, and deception (Hughes & Leekam, 2004; Peterson & Siegal, 2000, 2002). Early-signing deaf and hard of hearing children show more developmentally appropriate responses to ToM tasks than their late-signing counterparts (Schick, J. deVilliers, P. deVilliers, & Hoffmeister, 2007). Deaf and hard of hearing children experience a gradation in difficulty in the ability to comprehend direct, indirect, deceitful, and ironic communication acts through linguistic and extralinguis-

tic means in a manner similar to children with normal hearing, though on a relatively delayed basis (DeMarco, Colle, & Bucciarelli, 2007).

Deaf and hard of hearing students in mainstream or inclusive environments have difficulty with social participation, communication, and affective interaction (Weisel & Bar-Lev, 1992). Likeability and popularity among school-aged children with normal hearing correlates with pragmatic language behaviors (Conti-Ramsden & Botting, 2004; Fujiki, Brinton, Hart, & Fitzgerald, 1999). Being liked and accepted by other children correlates with academic success in school (Rubin, Bukowski, & Parker, 1998). Deaf and hard of hearing students have shown significantly lower academic achievement levels than hearing children (Marschark, 2003; Schirmer & Winter, 1993; Yoshinaga-Itano & Snyder, 1996). During free play or unstructured activity, students in inclusive settings tend to spend time with and communicate more with those of like hearing status (Kluwin, 1996; Lloyd, Mann, & Peers, 1998; Stinson & Whitmire, 1992). Deaf and hard of hearing adolescents in general education classrooms express feelings of isolation (Leigh, 1999; Stinson, Whitmire, & Kluwin, 1996), and some prefer to attend classes in settings with other students of similar hearing status as opposed to general education classrooms (Stinson & Whitmire, 1992).

Deaf and hard of hearing students who spent more time in the general education setting in high school and participate in classes that are more academic have a stronger tendency to follow a college preparatory track and have higher academic achievement scores than those less involved in general education (Kluwin, 1993). Those who spent more time in separate or special classes tended to take fewer

academic classes and participate more in vocational training. Further, students who spend more time in general education demonstrate greater social maturity than those who are included less (Kluwin & Stinson, 1993). Better pragmatic language skill could be described or perceived as greater social maturity.

Placement in special classes and the frequent exclusion of deaf and hard of hearing students from social interactions limit these students' exposure to strong adult and peer social models; these students' teachers are less likely to establish social norms comparable to those set by regular educators (Schloss & Smith, 1990). Consequently, deaf and hard of hearing students are less likely to be challenged to meet increasingly higher standards of social performance. Young deaf and hard of hearing students exhibit a higher cognitive quality of play when paired with students of normal hearing status (Levine & Antia, 1997). Successful inclusion of deaf and hard of hearing children may depend partly on the extent to which they can adjust emotionally and socially to the environment (Gray, Hosie, Russell, & Ormel, 2001).

According to the U.S. Department of Education (2005), the states have reported that 86% of deaf and hard of hearing children are educated in the general education environment. The outcomes of this major inclusion effort have been mixed. Academic achievement has improved for those students who were better able to integrate socially and communicatively with hearing children (Levine & Antia, 1997; Luckner & Muir, 2001, 2002), but overall achievement levels for deaf or hard of hearing students have not shown improvement (Marschark, 2003; Schirmer & Winter, 1993; Yoshinaga-Itano & Snyder, 1996). New paradigms of co-enrollment of deaf and

hard of hearing children in general education classes have further complicated the matter, with some students making great strides and other not progressing as rapidly (McCain & Antia, 2005). In addition, the field of deaf education is compelled to follow such procedures as those proposed by the response to intervention movement (Moore, 2008), whether they benefit deaf and hard of hearing students or not.

Luckner and Muir (2001, 2002) surveyed 20 successful deaf and hard of hearing students who were achieving in the mainstream, and offered factors that contributed to the success of these students. Among the themes that surfaced in discussions with all study participants were social skills, friendships, self-advocacy skills, and communication. Advocates call for pragmatic language instruction to occur within the context of social situations. They point to the importance of learning in context so that learning is meaningful, remembered, and generalized.

Poor pragmatic language competence may be a barrier to successful inclusion (Cassie, 2000; Lederberg & Everhart, 2000). To investigate this barrier, we examined the relationship between communicative competence in the form of pragmatic language skill and success in the general education environment for deaf and hard of hearing students. We formulated two research questions: (a) What is the relationship between level of pragmatic competence in deaf and hard of hearing students and their degree of success in general education? (b) What is the relationship between degree of hearing loss and the mode of communication deaf and hard of hearing students use and these students' level of pragmatic competence?

Methodology

We used a quasi-experimental, correlational research design to determine the relationships among pragmatic competence, mode of communication, degree of hearing loss, number of segments in the general education classroom, and success in general education, using ex post facto data. The setting was a large metropolitan public school district in the southeastern United States. The district served a diverse population of more than 106,000 students in 120 schools. Five variables were used in the analysis: (a) pragmatic language skill, (b) criterion-referenced test scores, (c) number of segments in general education for academics, (d) degree of hearing loss, and (e) mode of communication. A two-tailed Pearson's product-moment coefficient of correlation was used to determine the presence of significant relationships among pragmatic language skill, tests scores, and the number of segments in general education. Analysis of variance (ANOVA) was applied to determine significant differences in pragmatic language skills by degree of hearing loss and mode of communication. Finally, independent *t* tests of means were used to determine significant differ-

ences in pragmatic language skill and the student modality used to obtain access to the general education environment.

Participants

Eighty-one students in kindergarten through eighth grade participated in the present study. Table 1 provides the participants' mode of communication and degree of hearing loss by grade level. Less than one fourth of the participants (22%) used sign language. Twenty-four participants, or almost one third of the sample (30%), used cochlear implants. Sixteen of the implant users communicated orally; eight used sign language.

Instrumentation

Socio-Pragmatic Skills Checklist for Deaf and Hard of Hearing Students

The Socio-Pragmatic Skills Checklist for Deaf and Hard of Hearing Students, or SPSC-DHH (Cobb County School System, 1997), is a pragmatic skills checklist created specifically for the evaluation of deaf and hard of hearing students. This instrument has been used in the school district in which the present study was conducted since 1997, in keeping with

Table 1
Participants' Mode of Communication and Degree of Loss by Grade

Grade	Mode of communication				Degree of hearing loss						Total
	Oral		Sign		Moderate		Severe		Profound		
	n	%	n	%	n	%	n	%	n	%	
K	9	14.3	3	16.7	3	12.5	3	14.3	6	16.7	12
1	12	19.0	0	0.0	6	25.0	2	9.5	4	11.1	12
2	5	7.9	0	0.0	2	8.3	3	14.3	0	0.0	5
3	8	12.7	1	5.6	3	12.5	3	14.3	3	8.3	9
4	1	1.6	5	27.8	1	4.2	0	0.0	5	13.9	6
5	10	15.9	1	5.6	3	12.5	3	14.3	5	13.9	11
6	9	14.3	1	5.6	3	12.5	3	14.3	4	11.1	10
7	6	9.5	3	16.7	2	8.3	2	9.5	5	13.9	9
8	3	4.8	4	22.2	1	4.2	2	9.5	4	11.1	7
Total	63	77.8	18	22.2	24	29.6	21	25.9	36	44.4	81

the initial eligibility requirements for the deaf and hard of hearing program. Beginning in the 2003–2004 school year, teachers in the program also used the SPSC-DHH to evaluate students' pragmatic competence in order to measure their yearly progress.

Kindergarten Assessment Program

Because the state board of education required that public school kindergarteners be assessed for first-grade readiness even though the state test (see below) did not have a kindergarten section, the Kindergarten Assessment Program (KAP) was adopted. All of the state's public school kindergarten students participated in the KAP without exemption or accommodation unless otherwise specified in an individualized education program (IEP) or an assessment plan for students with limited English proficiency. The KAP measures 32 kindergarten standards and assesses in the areas of literacy, math, and socioemotional development. Performance assessment rubrics are used to define student progress and attainment for each activity. KAP scores range from 100 to 200. Scores of 147 or below indicate that a student has not acquired the basic skills necessary to proceed to first grade. Scores from 148 to 160 indicate readiness with assistance, and scores of 161 and above indicate readiness for first grade.

Criterion-Referenced Competency Test

The Criterion-Referenced Competency Test, or CRCT (Georgia Department of Education, 2000), is based on knowledge deemed most critical for students at each grade level by the state. Scores are collected for grade levels 1–8. Scores on the CRCT are expressed as scaled scores from 150 to 450 for each grade and content area.

The scaled scores are equivalent across all test forms and grade levels. However, the means, standard deviations, and standard errors of measurement are unique to each grade and content area because the scaled scores are based on the standards for each area. Standards vary in difficulty across content and grade levels. Scores above 350 indicate a level that exceeds the standards for the test, scores from 300 to 349 indicate a level that meets the standards for the test, and scores below 300 indicate a level that does not meet the standards. A score of 300 is the state's minimum proficiency level.

Segments in General Education

Each school day is divided into segments of instruction. The number of segments per week a student participates in general education is determined by an IEP team. IEP teams place students in general education classes based on their anticipated success in that environment. The Individuals With Disabilities Education Act requires that IEP teams construct a plan offering a free appropriate public education (FAPE). If FAPE is provided, as required by law, students are placed in an environment appropriate to meet their educational needs (U.S. Department of Education, 2004).

Procedures

Binaural pure-tone averages were compiled from the most current audiometric information for each student in the sample. The school district was required by the state to test and provide annual audiometric information for each student served by a deaf and hard of hearing program. Each student's level of hearing loss was classified as either moderate, severe, or profound (Roeser & Downs, 1995). Moderate hearing loss is considered

to begin at 30 dB, so it was not necessary to create a mild loss category for the present study, as students with mild-level hearing losses did not qualify for service under special education in the program under study unless there were mitigating circumstances.

For the purposes of the study, the mode of communication in the general education classroom was considered to be sign language if the student required an educational interpreter for the deaf in order to gain access to classroom instruction. If a student did not require an educational interpreter in general education, then the student was considered an oral student. This information was obtained from reports of interpreter need on existing-caseload lists.

Teachers of deaf and hard of hearing students who knew the students best rated all students in the sample group on the SPSC-DHH. CRCT scores in reading and math were collected for participants in grades 1–8. Spring KAP scores were collected for kindergarten-age participants. The number of segments each participant spent in regular education academic instruction was gathered from the least restrictive environment (LRE) reports that teachers produced annually. This information was compiled from the service plan pages of student IEPs. Students who participated only in specials (e.g., physical education, art, and music) were considered to have no (0) segments of academic instruction in general education. Only academic classes were counted as segments in general education for the sample group. For example, a student receiving only math instruction in general education was considered to have one segment per day; a student receiving math and science was considered to have two segments; a student receiving math, science, and social studies was consid-

ered to have three segments; a student receiving math, science, social studies, and language arts was considered to have four segments; and a student receiving math, science, social studies, language arts, and reading was considered to have five segments. A student receiving all academic instruction in general education was considered to have six segments per day.

Results

Pragmatic Language Competence, Academic Performance, and Segments

Results of the SPSC-DHH for kindergarteners ($N = 12$) revealed a mean score of 70.75 (range 51–90, SD 14.80), and for students in grades 1–8, a mean of 75.67 (range 57–89, SD 8.57). The mean KAP score in the sample group was 165.33, which indicated that most students demonstrated readiness for first grade. Fifty percent of the kindergarteners ($n = 6$) scored below 147 and 50% scored above 161, with 2 of those making perfect scores of 200. None scored in the middle range, 148–160. This polar variation in KAP scores is consistent with the wide dispersion seen in pragmatic competence scores for kindergarteners. On the CRCT Reading, 19 students did not meet expectations, 19 exceeded expectations, and 31 met expectations, with the mean score of the sample group near the midpoint of the *meets expectations* range ($x = 325.23$). On the CRCT Math, 16 did not meet expectations, 45 met expectations, and 8 exceeded expectations.

The relationship for kindergarteners between the pragmatic language competence score and the KAP was strong, above .60, $r(11) = .71, p < .001$. The relationships between pragmatic language competence and academic performance (CRCT test scores) in grades 1–8 were in the moderate range: between .40 and .60. The corre-

lation coefficient r revealed a statistically significant relationship between pragmatic language skills and scores on the SRCT tests for reading, $r(68) = .43, p < .001$, and math, $r(68) = .49, p < .001$. The null hypothesis was rejected. All of the relationships were statistically significant positive relationships, which indicated that as the pragmatic language competence scores of the students increased, so did their academic achievement as measured by criterion-referenced tests.

A Pearson’s coefficient of correlation procedure was used to determine if a relationship existed between pragmatic language competence and the amount of time spent in general education each week. Analysis revealed a statistically significant correlation in the moderate range (between .40 and .60), $r(80) = .44, p < .01$. The relationship was a positive relationship, which indicated that as the pragmatic language competence scores of the students increased, so did the number of segments students spent in general education for academics. The null hypothesis was rejected. Table 2 provides the means and standard deviations for the SPSC-DHH, KAP, and CRCT scores and correlations between the SPSC-DHH and the KAP, CRCT, and number of segments.

Pragmatic Language Competence, Degree of Hearing Loss, and Mode of Communication

An independent t test was used to examine the relationship between the dual, categorical variable of modality (oral or sign) and the continuous variable, pragmatic language skill. Table 3 shows the means and standard deviations of pragmatic language competence by mode of communication and degree of hearing loss. The group using sign language had slightly more dispersion and a slightly lower mean for pragmatic language competence. The group using oral communication had a mean pragmatic language score only slightly higher than the overall mean for pragmatic language of 74.93. The mean pragmatic language score for the group using sign was only slightly lower than the overall mean. The independent t test yielded no significant difference between the modes of communication in relation to pragmatic skill, $t(79) = .95, p = .34$. The analysis showed that pragmatic skill had little variance related to the type of modality employed. This finding indicated that skill in socio-pragmatic language behaviors was not related to the use of sign versus the use of oral communication in general

Table 2
Means and Standard Deviations of Academic Performance and Pragmatic Language Competence

Tests	<i>n</i>	<i>M</i>	<i>Range</i>	<i>SD</i>	<i>Correlation with SPSC-DHH</i>
SPSC-DHH (kindergarteners)	12	70.75	51–90	14.80	
SPSC-DHH (grades 1–8)	69	75.67	57–89	8.57	
KAP	12	165.33	120–200	25.96	.71**
CRCT Reading	69	325.23	259–410	37.19	.43*
CRCT Math	69	317.13	258–374	24.12	.49*
Number of segments	81	18.83	5–34	9.2	1.44*

Notes. CRCT, Criterion-Referenced Competency Test. KAP, Kindergarten Assessment Program. SPSC-DHH, Socio-Pragmatic Skills Checklist for Deaf and Hard of Hearing Students.
* $p < .01$.
** $p < .001$.

Table 3
Means and Standard Deviations of Pragmatic Language Competence by Mode of Communication and Degree of Hearing Loss

Mode of communication	Pragmatic language competence		
	<i>n</i>	<i>M</i>	<i>SD</i>
Oral	63	75.49	9.53
Sign	18	73.00	10.68
Degree of hearing loss			
Moderate	24	74.46	8.80
Severe	21	78.05	10.68
Profound	36	73.44	9.71

education classes for the sample group. The null hypothesis was not rejected.

Three categories were used in defining degree of hearing loss: moderate, severe, and profound. Students in the moderate range ($n = 24$) achieved a mean of 74.4 and standard deviation of 8.80 on the SPSC-DHH; those in the severe range achieved a mean of 78.0 and standard deviation of 10.60; and those in the profound range achieved a mean of 73.4 and standard deviation of 9.71. An ANOVA of the SPSC-DHH by degree of hearing loss (see Table 4) indicated that there was no significant difference between the mean scores in pragmatic language competence among the three degrees of hearing loss. As hearing loss varied from moderate to profound, no corresponding variation of significance was found in pragmatic language competence. Dispersion was greatest for the group with severe hearing loss, which was also the group with the highest mean scores on pragmatic language competence. Students with severe hearing loss performed

better than those with moderate hearing loss, and those with moderate hearing loss performed only slightly better than those with profound hearing loss. These findings indicated that skill in socio-pragmatic language behaviors might not be related to the severity of hearing loss in the sample group, $F(2, 78) = 1.53$, $p = .22$. The null hypothesis was not rejected.

Discussion

The present study investigated the possibility that socio-pragmatic language competence in deaf and hard of hearing students is related to their degree of success in general education. Success in general education was equated with success on criterion-referenced tests and the amount of time or number of segments deaf and hard of hearing students spent in general education environments in which they were placed by their IEP teams. The study also investigated the relationships between socio-pragmatic competence and both the mode of communication used by deaf and hard

of hearing students in general education and these students' severity of hearing loss.

Pragmatic Language Competence and Academic Performance

The first research question was, *What is the relationship between level of pragmatic competence in deaf and hard of hearing students and their degree of success in general education?* The analysis revealed a statistically significant relationship between pragmatic competence in deaf and hard of hearing kindergarteners (as shown on the SPSC-DHH) and scores on the KAP, a measure of preparedness for first-grade work. Results also revealed statistically significant relationships between pragmatic competence and scores on the CRCT for math and for reading for grades 1–8.

These findings indicated a significant positive relationship between general education criterion-referenced test scores and sociolinguistic pragmatic skills for deaf and hard of hearing kindergarteners. This outcome is consistent with findings from a study of hearing children that found academic functioning in reading and writing to be dependent on early pragmatic skills (Reeder, Shapiro, Watson, & Goelman, 1996). A number of researchers in the field have drawn parallels between barriers to successful inclusion and a deficit in language-related pragmatic competence in deaf and hard of hearing students (Cassie, 2000; Lederberg & Everhart, 2000). Students in general education must interact with their teachers and fellow students in ways that provide them the information and skills required to demonstrate learning.

The relationship between pragmatic language and academic skills was also found for children in grades 1–8, with a significant positive correlation

Table 4
Summary Table of Analysis of Pragmatic Language Competence by Degree of Hearing Loss

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	288.89	2	144.45	1.53	.22
Within groups	7361.80	78	94.38		
Total	7650.69	80			

between pragmatic competence and the number of time segments in which deaf and hard of hearing students were placed in general education. Those students who spent more time in general education classes for academics had better socio-pragmatic language than those who spent less time. These results are consistent with those of a study by Kluwin (1993) in which the amount of time an IEP team placed a deaf or hard of hearing student in the general education environment was related to academic success. In the present study, pragmatic language ability was correlated with both academic test scores and the amount of time spent in general education classrooms. The scores for deaf and hard of hearing children from kindergarten through eighth grade correlated in the study, with pragmatic language ability and success on reading and math academic tests, indicating that further research is needed to determine the causal direction of the relationship and what might be done in general education to promote acquisition of pragmatic language skills.

Pragmatic Language Competence, Degree of Hearing Loss, and Mode of Communication

The next research question asked was, *What is the relationship between degree of hearing loss and the mode of communication deaf and hard of hearing students use and these students' level of pragmatic competence?* In the present study, no statistically significant relationship was found between pragmatic competence and any of the three hearing loss level groups. The degree or severity of hearing loss had no significant relationship to socio-pragmatic skills for the sample group. Although some studies have suggested that as the degree of hearing loss increases, so does the effect

on language (Anderson & Matkin, 1991; Flexer, 1995; Ross, Brackett, & Maxon, 1991), others have found that degree of hearing loss alone does not predict educational or language performance (Davis, Elfenbein, Schum, & Bentler, 1986), and in some instances, hard of hearing children exhibit delays in verbal, social, and academic performance similar to those shown by children with more severe hearing loss (Antia & Dittillo, 1998; Yoshinaga-Itano & Downey, 1996). Thus, any degree of hearing loss from moderate to profound may have similar consequences for aspects of language acquisition, psychosocial development, and academic achievement. The findings of the present study are consistent, indicating that educators should take just as seriously the needs of children with milder hearing loss as they do the needs of children with more severe loss. Early exposure to accessible language, whether signed or auditory, paves the way for more normal language acquisition and better preparation for school instruction for deaf and hard of hearing children (Moeller, 2000; Nittrouer & Burton, 2001; Yoshinaga-Itano, 2003). Practitioners in the field should reevaluate the very old and simple assumption that severity of hearing loss predicts level of difficulty in all areas underpinning pragmatic development: linguistic ability, social behavior, and psychological adjustment to the hearing loss itself.

Regarding mode of communication and pragmatic skills, no statistically significant difference was found; pragmatic skills correlated with academic outcomes whether the students used oral communication or sign language. This finding reinforces the results regarding level of hearing loss, and is particularly important in that it suggests that educators should be focusing on language per se, rather than the mode through which it is expressed. It

should be noted that the criterion for being considered a sign language user in the present study was the assignment of an educational interpreter for access to the general education setting. The lack of relationship between pragmatic language and method of communication may indicate that when appropriate services and access are provided, mode of communication does not present a barrier.

Placing deaf and hard of hearing students in a general education environment without appropriate individual supports should not be considered *inclusion*. The location of the child in an academic setting should not be confused with the integration of that child into a learning environment. This kind of misunderstanding of inclusion often leads to disaster for the child in terms of wasted time and painful experience (Marschark, Green, Hindmarsh, & Walker, 2000). Successful inclusive practice is more than a physical placement. A fundamental requirement for successful integration into a general classroom should be a solid ability base in pragmatic language (Antia & Stinson, 1999). Social language skills training may be required to enable deaf and hard of hearing students to interact in appropriate ways in a general education classroom. General education teachers who will have these students in their classrooms may need some formal instruction in this area as well.

Limitations of the Study

The present study did not control for age of exposure to accessible language or for whether or not early intervention efforts had been in place for the students in the sample. No information was sought or included regarding any possible previous direct instruction in the area of pragmatics for these students. Cognitive level or intelligence quotient was not included as a

control or variable in the study in order to include or exclude participants. The criteria for being included were a level of hearing loss that qualified a student for eligibility for services from the deaf and hard of hearing program under an IEP and the presence of no additional disability eligibility other than speech and language impairment.

The study was a broad search for relationships among the stated variables within a sample group of 81 students. The choice not to include these additional classifiers was intentional, as the study's purpose was to look for a simple pattern of relationship within a natural, nonmanipulated sample group. Future research should include more specific information about cognitive functioning and general language facility. Though use of amplification was not analyzed in the study, the school district attempted to provide current and appropriate technology to students who were served by the program through the use of FM assistive listening devices fit appropriately according to level of hearing loss.

Future studies should take into consideration whether the children in the sample have had early intervention; the skill levels of interpreters to whom individual children have been exposed should also be considered. Finally, an experimental study with a control group should look at the effects of adding training in pragmatic skills to the curriculum. If direct instruction in socio-pragmatic skill could show a positive relationship with either academic achievement or social acceptance in general education, then the significance of expanding this training would become obvious.

Summary

The socio-pragmatic language skill of the 81 deaf and hard of hearing students in the present study correlated

significantly with success in general education environments regardless of degree of hearing loss or mode of communication (i.e., spoken language or signed language), indicating that deaf and hard of hearing students could benefit from improved socio-pragmatic training. This finding, though not unexpected, provides an impetus to conduct further and more specific research regarding the likely underpinning importance of pragmatic linguistic behaviors to academic success; that is, some students might advance better academically given either informal or formal and direct instruction in related pragmatic skills. Academic outcomes for deaf and hard of hearing students have long lagged behind those of the general student population. Further work is needed to show that direct instruction in social and pragmatic areas could improve achievement for these deaf and hard of hearing students, so that teachers might be provided with evidence-based practice to include in their teaching arsenal.

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