

PARAPROFESSIONAL PROXIMITY AND DECISION MAKING DURING
INTERACTIONS OF STUDENTS WITH VISUAL IMPAIRMENTS

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DEDICATION

To my parents, Bill and Barbara,

for their love and support,

and

To Jacob,

you are the light of my life

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ABSTRACT

This study examined two aspects of the use of paraprofessionals with students with visual impairments: 1) the effect of paraprofessional proximity on the students' interactions with peers and teachers in the regular education classroom, and 2) factors that may influence a paraprofessional's decision to interact or not interact with a student with a visual impairment. The four student/paraprofessional case studies included data collected by means of classroom observations, demographic forms, and semi-structured interviews. The classroom observation data were analyzed using the chi-square statistics to determine relationships between paraprofessional proximity and classroom activity setting, interaction participants, interaction initiators, and type of interaction that occurred. The data collected through the interviews were coded to determine themes. The data from all the case studies were cross analyzed to determine relationships and themes across cases.

Proximity of paraprofessionals to students with visual impairments in the regular education classroom appears to have an effect on the interactions that occur between students with visual impairments, peers, and teachers. More interactions occurred between students and peers and between students and teachers when paraprofessionals were at a distance. Also, when paraprofessionals were at a distance, peers and teachers were more likely to initiate interactions with students with visual impairments.

The decision making process for paraprofessionals is complicated. Factors that may influence how paraprofessionals make decisions concerning students with visual impairments were professional experience, personal experience, education level and type,

and how roles and responsibilities were defined. All the paraprofessionals in the study indicated at some point during data collection the need to promote independence in their students.

CHAPTER 1

INTRODUCTION

The passage of Public Law 94-142, *The Education for All Handicapped Children Act*, in 1975 was a turning point in the education of children with disabilities. This law, which guarantees a free and appropriate public education (FAPE) with special education services, related services, and individualized education programs for each handicapped child, provided for the education of children with special needs in the regular public school setting. Since then the education of children with disabilities in the regular education classroom has become the accepted paradigm for what a free and appropriate public education should be. However, in the process of providing this education, school districts have been scrambling to meet the needs of children with disabilities using qualified personnel. To help fill this void, paraprofessionals are being tapped to provide more academic and instructional support.

Prior to the passage of PL 94-142, paraprofessionals were used as aides and assistants for clerical and other non-teaching supports in the schools. Usually parents and other volunteers performed such duties. Students with disabilities who were included in the general education setting were generally not supported by a paraprofessional but instead had strong parental advocates and regular education teachers who were willing to make the adjustments necessary for the inclusion (Avery, 1968; Bourgeault, 1960; P. Rosenblum, personal communication, February 20, 2006; Scott, 1957; Shumway, 1964). After the passage of PL 94-142, teachers increasingly became overwhelmed with the number and diversity of special needs students being included in the regular classroom.

Concerns about social and academic failure as well as health and safety issues for the mainstreamed child surfaced (French & Chopra, 1999). As a result, paraprofessionals have become an automatic solution for the support of children with disabilities who are integrated into the regular education classroom (Marks, Schrader, & Levine, 1999; Werts, Wolery, Snyder, & Caldwell, 1996). With the increased use of paraprofessionals, very little empirical data has emerged to demonstrate the effectiveness of this practice. The research that has been conducted has been an attempt to understand what issues exist in the use of paraprofessionals with the special education population. Topics of concerns that have emerged from the research are defining roles and responsibilities, supervision, training, and proximity (Downing, Ryndak, & Clark, 2000; French, 2001; Giangreco & Broer, 2005; Giangreco & Doyle, 2002; Giangreco, Edelman, Broer, & Doyle, 2001; Giangreco, Edelman, Luisell, & MacFarland, 1997; Griffin-Shirley & Matlock, 2004; Marks, et. al., 1999; McKenzie & Lewis, 2008; Minondo, Meyer, & Xin, 2001; Riggs & Mueller, 2001; Werts, Zigmond, & Leeper, 2001). For the population of students with visual impairments, the research on the use of paraprofessionals is even more limited. In the research that has been conducted that address the specific needs of paraprofessionals who work with students with visual impairments similar concerns as of that to the general special education population have been identified. One area in particular that has a paucity of research but has a great effect on students in the regular classroom is paraprofessional proximity. Paraprofessional proximity can have a negative effect on appropriate interactions within the regular education classrooms (Giangreco, et. al., 1997; Russotti & Shaw, 2001). Social and classroom interactions for students with visual

impairments have been an ongoing concern of professionals in the field, as evidenced by the research studies being conducted on the subject (Celeste, 2007; D'Allura, 2002; Erwin, 1993; Jindal-Snape, 2004; Kekelis & Sacks, 1992; Sacks & Wolffe, 1998; Wolffe & Sacks, 1997). The importance of social interactions for students with visual impairments, as indicated by the research and the lack of research of how paraprofessional proximity affects that interaction, demonstrates a need for further research. In order to plan effective programs for students with visual impairments, it is necessary to understand the impact of a paraprofessional on the student.

Purpose of the Study

Students with visual impairments have unique needs in an inclusion setting. Much of the material presented in classes is presented visually, which often prohibits the student from being able to access their materials. In addition, many students with visual impairments are unable to recognize visual social cues from teachers and peers. The use of a paraprofessional can be a great asset to the student in the classroom for accessing information, but previous studies of students with special needs have shown that paraprofessionals can create dependency, reduce teacher engagement, and reduce social interactions (Giangreco, et. al., 1997; Marks, et. al., 1999).

The purpose of this study was to examine the effect that proximity of a paraprofessional of a student with a visual impairment has on the students' interactions with peers and teachers. In addition, the study explored factors that may influence a paraprofessional's decision to interact or not interact with the student.

Research Questions

To achieve the purpose of this study the following research questions were examined:

1. What are the types of interactions that occur between a student with a visual impairment and the paraprofessional?
2. What percentage of interactions between paraprofessionals and students with visual impairments are student initiated?
3. Do paraprofessionals maintain different distances from students with visual impairments across three different observation settings?
4. When the paraprofessional is closer, is there less interaction between the student and a) the classroom teacher and/or b) other students?
5. How do paraprofessionals decide to interact with a student with a visual impairment?

CHAPTER 2

REVIEW OF THE LITERATURE

The number of paraprofessionals working with handicapped students has increased dramatically in the last few years (Giangreco, et al., 2001). According to the Study of Education Resources and Federal Funding from the American Institute for Research, in 2000 an estimated 642,000 instructional paraprofessionals were employed in the United States (Chambers, Lieberman, Parrish, Kaleba, Van Campen, & Stullich, 2000). At that time an estimated 50% were working in special education programs, 18% in bilingual programs, 18% in Title I schools , and 14% in other school programs (Schmidt & Greenough, 2002). Between 1980 and 2003 the number of instructional aides grew more rapidly than most other school staff categories including that of teachers (Snyder, Tan, & Hoffman, 2006). This increase in the use of paraprofessionals appears to be due to several factors. School systems perceive the use of paraprofessionals instead of teachers as a cost saving measure (“Study Finds”, 2000; Mueller & Murphy, 2001). Some schools use paraprofessionals as a way to facilitate inclusion (Giangreco, 2003). With the shortage of qualified teachers, paraprofessionals are employed to help manage increasing teacher caseloads. Also, pressure by parents and regular education teachers to make sure children are adequately supported has increased the use of paraprofessionals (Giangreco, et al., 1997).

Legislation

With the focus on highly qualified educational personnel in schools due to the No Child Left Behind (NCLB) legislation, and requirements from Individuals with

Disabilities Education Improvement Act of 2004 (IDEIA), such as FAPE and least restrictive environment (LRE), lawmakers, school administrators, educators, parents, and paraprofessional organizations are looking at the roles of paraprofessionals more closely. Until recently, paraprofessionals had no qualification standards but were put into a position of expertise due to the lack of personnel. In many situations the least qualified person (i.e. paraprofessional) was responsible for the education of the most challenging students (Mueller, 2002). The increased use of paraprofessionals has prompted federal lawmakers to amend the rules that govern paraprofessionals. Title I of the Elementary and Secondary Education Act of 1965 as amended by NCLB requires paraprofessionals to meet higher standards of qualifications. With this new legislation, paraprofessionals are required to have a high school diploma or equivalent and have either an Associate's Degree, two years of study at an institution of higher education, or obtain a passing score on a test that demonstrates knowledge of the ability to assist in teaching reading, writing, and mathematics. In addition to the expanded requirements, the legislation also defines the duties and responsibilities of a paraprofessional and makes clear that a paraprofessional is not to provide instructional service unless under the direct supervision of a qualified teacher ("No Child Left Behind Act of 2001", 2002). Although these new requirements only pertain to schools that receive Title I money, they represent best practices for everyone.

Special Education Paraprofessional Research

Prior to the mid 1970s, articles that addressed inclusion of children with visual impairments into local schools presented narratives on single experiences (Avery, 1968;

Bourgeault, 1960; Scott, 1957; Shumway, 1964). Paraprofessionals are not mentioned as part of the child's educational team. If someone did assist in the integration, contact time with the student was gradually decreased until assistance was no longer provided. The regular education teacher was fully responsible for the student's education with support from a resource teacher for program planning, classroom adaptations, and specialized instruction such as braille.

When I reviewed data based literature, several themes of research emerged which are supported by legal proceedings as areas of concerns about paraprofessionals. The authors of the articles identified key topics in the use of paraprofessionals: roles and responsibilities, training, supervision of paraprofessionals, and proximity of a paraprofessional on a student's ability to integrate effectively into a regular education classroom.

Paraprofessional Roles and Responsibilities

The roles and responsibilities of the paraprofessional are changing from non-instructional support personnel to a role of more instructional involvement. With the shortage of qualified special education teachers, especially in low incidence areas (visual impairment, deaf and hard of hearing, and autism), as well as an increase in the number of students with disabilities being integrated into the regular classrooms, paraprofessionals are being required to perform more duties, which encompass a wider range of activities, including direct teaching (Downing, et al., 2000; Giangreco & Broer, 2005; Giangreco & Doyle, 2002; Griffin-Shirley & Matlock, 2004; Marks, et al., 1999; McKenzie & Lewis, 2008; Riggs & Mueller, 2001). While most of the direct teaching is

from teacher planned lessons, at times the paraprofessional is also responsible for creating the lessons. Actually, paraprofessional teaching responsibilities cover a wide range of specific skills across both academic and non-academic subjects (Downing, et al., 2000). In fact, according to a survey done by Giangreco and Broer (2005), paraprofessionals are providing substantially more direct instruction than special education teachers. In descending order of time spent after instruction, paraprofessionals are also responsible for behavioral support, student supervision, clerical, and personal care (Giangreco & Broer, 2005; Giangreco & Doyle, 2002). Within the vision field, responsibilities of a paraprofessional include material adaptation (braille, large print, tactile graphics), reinforcement of specialized skills (orientation and mobility, daily living, assistive technology, ocular aids), and facilitation of social skills (Griffin-Shirley & Matlock, 2004; McKenzie & Lewis, 2008). Paraprofessionals also collaborate with other team members and communicate with parents (Giangreco & Broer, 2005; Giangreco & Doyle, 2002). The subject of paraprofessional role and responsibility has been showing up in due process hearing cases more and more. Parents are requesting that paraprofessionals be highly trained as well as have specific training appropriate for working with their child. In *Hendrick Hudson District Board of Education v. Rowley* (1982) the Supreme Court said that the implementation of an instructional program was left to the state. In many of the hearings it was stated that the assignment of a paraprofessional was at the discretion of the school district and not part of the IEP process. As long as it could be shown that the paraprofessional had received the training needed to implement the IEP the hearing officer decided for the school district

(Independent School District No. 11, Anoka-Hennepin, 2001; Southern Regional Board of Education, 2002; Moorestown Township Board of Education, 2003). The due process hearings that have been mentioned deal with children who have disabilities other than visual impairment. No cases were found at this time involving a student with a visual impairment but the indicated cases do raise the question of what this means for a student with a visual impairment. With the specialized needs of such a student in the area of braille, technology, orientation and mobility, and material adaptations, what kind of training would be considered appropriate?

Paraprofessional Training

Another concern that has emerged from research is the need for more training both for paraprofessionals and the teachers who supervise them. In a study conducted by Riggs and Mueller (2001), in which 758 paraprofessionals in Vermont were surveyed, many paraprofessionals had to learn on their own what needed to be done and what defined their role and responsibilities. Often a school is so desperate for help that they will hire unqualified personnel. Without training, a paraprofessional can be employed to work with students in all grade levels and academic subjects. Even regular and special education teachers are not expected to have academic skillfulness across all levels, yet it is expected that an untrained paraprofessional is capable of performing all these duties. Often in-service training is provided after a paraprofessional is hired, however, many say that the training is not relevant to their jobs (Giangreco & Doyle, 2002).

Schools are allowing paraprofessionals to work with the most challenging students with little or no training. With the special education population, besides

academics, the paraprofessional also needs to know specialized skills such as sign language, braille, physical care, understanding of the importance of social skills, and behavior management techniques. In one survey asking 97 paraprofessionals who work with visually impaired students what additional training they needed or desired, the top three areas were adaptive technology, braille, and tactile graphics (Griffin-Shirley & Matlock, 2004) . In a more recent study conducted by McKenzie and Lewis (2008), the top three training needs of 107 paraprofessionals identified were adaptive technology, techniques of instruction, and braille.

Many regular education teachers have higher expectations of a special education paraprofessional's ability than what actually exists. Paraprofessionals tend to receive little or no training on educational concepts. When regular education teachers turn instructional responsibility over to the paraprofessional, students tend to receive less than competent instruction (Giangreco, et al., 1997).

Paraprofessional Supervision

Along with the need for paraprofessional training, French (2001) found in a survey of 321 special educators that there is a need for training in paraprofessional supervision. Of the 321 special educators only 25% had no supervisory role. Of the 75% who did supervise paraprofessionals, 88% indicated that they had no supervisory training other than real life experience. In several cases an administrative law judge (ALJ) has specified that a paraprofessional must “work under the supervision of professional personnel who are appropriately authorized to provide direct services in the same area where the paraprofessional provides assistive services” and “not serve as a substitute for

appropriately authorized professional personnel (104 LRP 10804)” (Sioux City Community School District, 2003).

Paraprofessional Proximity

When a paraprofessional enters a regular education classroom, several concerns may arise, depending on how well a paraprofessional understands her role and responsibility. One major factor is the proximity of the paraprofessional to the student (Giangreco, et al., 1997; Werts, et. al., 2001). Proximity is the physical distance from and amount of time spent with a student. Werts et al. (2001) examined the relationship between paraprofessional proximity to a student and the student’s amount of academic engagement. By applying a single subject alternating treatment design, the researchers found that the close proximity of a paraprofessional encouraged more academic engagement, however the quality of the work produced when actively engaged was not included as part of the study. In fact the authors mention that afterward they were told that the student’s work was not productive.

Sometimes close proximity is necessary due to tactile signing, or instructional interactions, but many times the close proximity can interfere with the student’s ability to participate in the class. When a paraprofessional is in close proximity and readily available, the regular education teacher may give the responsibility for the education of the student with a disability to the paraprofessional.

However, close proximity can also interfere with a student’s ability to interact with classmates. Giangreco et al. (1997) found in a study of deaf-blind students that paraprofessional proximity impacted student-peer interactions. In addition, they found

that paraprofessionals were frequently removing the students with disabilities from the group for instruction even when the class was doing the same thing, or to travel to another room before or after class. This promoted a feeling with all the students and teachers of the student with disabilities of not being part of the class. This separation plus the close proximity of the paraprofessional inhibited the interactions of the students with peers. It was difficult for peers to interact when the paraprofessional was hovering over the student with the disability (Giangreco, et al., 1997). When the paraprofessional was absent, peers tended to fill in the gaps for the student with the disability. Malmgren and Causton-Theoharis (2006) found that more interactions occurred between a student with Emotional and Behavior Disorders (EBD) and his peers when the paraprofessional was not present.

As seen in *Sacramento City Unified School District, Board of Education v. Rachel H.* by Robert Holland (1994), FAPE and LRE are applied to non-academic benefits also. Social interaction is seen as a very important educational aspect for all students but of particular importance to students with disabilities. Many times parents feel that a paraprofessional needs to be with their child continuously for the child to gain educational benefit. However, as seen from the research, the presence of a paraprofessional can be a hindrance to social interaction. In *Limestone County Board of Education* (1999), the parents were requesting a full time paraprofessional to accompany their visually impaired child into all mainstreamed classes. The school district argued that the purpose of the mainstreaming was to provide socialization and that the presence of

the paraprofessional would interfere with that. The decision was for the school district, stating that the paraprofessional would be counterproductive for socialization.

The close proximity of a paraprofessional can also interfere with the student's ability to make decisions. With a paraprofessional available, students with disabilities, especially communication difficulties, begin to rely on the paraprofessional to communicate for them. If the student relies on the paraprofessional, the paraprofessional may not always communicate accurately what a child wants. The student is left feeling like he has no control over personal decisions. In Waterbury Board of Education (2002) the hearing officer determined that the close proximity of a paraprofessional would be stigmatizing and create a situation of dependency.

In studying proximity of a paraprofessional to the student, researchers have demonstrated positive social interaction effects when paraprofessionals have been trained to facilitate social interactions with classroom peers (Causton-Theoharis & Malmgren, 2005; Devlin, 2005) as well as increased social interactions when using natural supports (i.e., peers, classroom teacher) for students with disabilities in the classroom instead of a paraprofessional (Carter, Cushing, Clark, & Kennedy, 2005; Erwin, 1996).

Paraprofessionals and Students with Visual Impairments

Very few studies exist that examine the use of paraprofessionals with students who have visual impairments. The four studies described below comprise the entire body of published research specific to paraprofessionals and students with visual impairments.

Giangreco, et al. (1997) conducted research to investigate the effect of proximity of the paraprofessional on a group of deaf-blind students. All the subjects had additional

disabilities such as cognitive delays and other health impairments. This qualitative study used observations of the paraprofessionals and students in typical school day activities including group activities with peers. In addition, interviews were conducted with adult team members to better understand the information obtained from the observations. They found that paraprofessionals tended to be in close proximity to the students on an ongoing basis. Eight sub-themes emerged as being influenced by the proximity of the paraprofessional. The sub-themes were: 1) interference with ownership and responsibility by general educators, 2) separation of the student from the classmates, 3) dependency of the students on adults, 4) impact on peer interactions, 5) limitations on receiving competent instruction, 6) loss of personal control of the student, 7) loss of gender identity by the student, and 8) interference with the instruction of other students. The results from this study, though not generalizable beyond the study group provides compelling evidence for further investigation into the role of paraprofessionals.

A qualitative study conducted by Erwin (1996) involved one preschool student with a visual impairment. Erwin used observations and interviews to look at the kind of adaptive strategies and natural supports used to include a preschool child in a regular preschool setting. One finding in the study showed that the paraprofessional was crucial in the student's inclusion. The research points out that the paraprofessional does not need to hover over the student, however, it is very important that the paraprofessional be well trained in knowing how to provide feedback and assistance that will help the student develop confidence and independence.

In addition to the two previously mentioned qualitative studies, the following two published studies examined the roles, responsibilities, and training of paraprofessionals who serve students with visual impairments (Griffin-Shirley & Matlock, 2004; McKenzie & Lewis, 2008).

Griffin-Shirley and Matlock (2004) conducted a survey that was disseminated through the Association for the Education and Rehabilitation of the Blind and Visually Impaired website. The survey targeted support personnel including paraprofessionals, classroom assistants, O&M assistants, and braillists. Paraprofessionals and other support personnel were asked about their demographics, job titles, responsibilities, level of training they had received and training they desired. The survey was completed by 97 participants across 21 states. Of the respondents, 76% identified their title as a classroom assistant but 75% identified their role as a paraprofessional. The training identified that was received the most were sighted guide, braille, teamwork, and adaptive technology. Most often the training was obtained through in-service or one-on-one with their employer. The training identified as most desired was adaptive technology, braille, tactile graphics, and low vision training.

McKenzie and Lewis (2008) conducted a survey study examining the roles and responsibilities of paraprofessionals working with students with visual impairments from the view points of both teachers of the visually impaired and paraprofessionals. In addition, the researchers asked what training the paraprofessionals have received and what training they still desired. 293 TVIs and 107 paraprofessionals responded to the survey. The TVIs reported that the general responsibilities of the paraprofessionals were

modifying materials, supervising meals, preparing large print, preparing braille, behavioral management, feeding, supervision on buses, tutoring, clerical. The paraprofessionals reported modifying materials, preparing braille, preparing large print, behavior management, ordering materials, supervising meals, supervising on buses, supervising during recess, feeding, performing assessments as their general responsibilities. When asked about core curriculum direct instruction, 78.8% of the TVIs indicated that the paraprofessional did not provide direct instruction, whereas only 64.5% of the paraprofessionals indicate they provided no direct instruction. An interesting note is that a high percentage of paraprofessionals did indicate they provided direct instruction in the expanded core curriculum areas, especially in daily living and social skills.

Conclusion

With the number of paraprofessionals nearly doubling since 1980 and the new regulations from NCLB requiring paraprofessionals to be better educated, the roles and responsibilities of paraprofessionals are being examined more closely. Recent research indicates that areas of concern in the use of paraprofessionals are proximity, student interaction with peers and regular teachers, training and supervision of the paraprofessionals, and definition of role and responsibilities (Russotti & Shaw, 2001). Other problems include regular education teachers becoming less engaged with students who receive paraprofessional support (Giangreco, 2003), and relying too much on paraprofessionals, which can adversely affect social growth and development of independence (Giangreco, 2003). Research needs to be conducted to determine effective methods for the employment of paraprofessionals for instructional support in the regular

education setting. In addition, research is needed to clarify the roles and responsibilities of paraprofessionals working with students with visual impairments and to determine effective training methods for paraprofessionals that work with children with visual impairments. The focus of the current study, effects of paraprofessional proximity on interactions in the regular education classroom and paraprofessional decision making, is intended to add additional information to the literature to assist in determining effective training methods for paraprofessionals who work with students with visual impairments.

CHAPTER 3

METHOD

Through the literature review, several topics of concern with the use of paraprofessionals were highlighted, including definition of roles and responsibilities, training, and proximity. This multiple case design study, which involved four paraprofessional/student teams, examined the relationship between paraprofessional proximity and the interactions between a student with a visual impairment and others in the classroom. In addition, the researcher identified factors that may influence a paraprofessional's decision to interact or not interact with the student. Case studies allow the researcher to systematically gather enough information about the subject of study in order to understand how the subject functions (Berg, 2004). This case study was strengthened by the use of a mixed method design that incorporated both quantitative and qualitative data.

Case Study Method

According to Creswell (2007), many different approaches to qualitative research exist, including narrative research, phenomenology, grounded theory, ethnography, and case study. Many times the type of approach a researcher chooses to use, depends on the researcher's worldview. Creswell suggests four world views or "basic set of beliefs that guide action" (p.19) that are frequently used by qualitative researchers. They are social constructivism, advocacy/participatory, postpositivism, and pragmatism. Of those world views, pragmatism has the qualities that suit most closely the case study method. According to Creswell researchers who hold this worldview use a) multiple methods to

answer research questions, b) quantitative and qualitative data collection, and c) focus on the practical results of the research. The focus of the research is the problem to be studied more than the method that is being used to conduct the research.

The use of case studies as a way to conduct qualitative research is not a new method (Berg, 2004; Stake, 1995). Case studies have historically been used in medicine and law to help students move from foundational theory to practice (Berg, 2004). The case study has been defined in various ways. Creswell (2007) defines a case study as “the study of an issue explored through one or more cases within a bounded system” (p. 73). A bounded system is one that has boundaries to what is being researched such as a specific place or topic. Yin (1989) defines a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident and which multiple sources of evidence are used” (p.23). The key in this definition is real-life events. These events can not be manipulated, which therefore allows the researcher to get a true feel for the phenomenon. However, this also reduces the ability to generalize the results. Many researchers generally agree on two points about case studies: the case study is a method for doing qualitative research within a bounded system, and it uses multiple methods of data collection (Creswell, 2007; Merriam, 1998; Yin, 1989).

The parameters of a case study can be defined by the size of the bounded case as well as by the purpose of the analysis. The case study can involve one person, several people, a group, an activity, or a program. The purpose of the analysis can be defined by whether the focus is on one concern and uses one bounded case to illustrate that concern,

on one concern but uses multiple cases to illustrate, or if the focus is on the case itself because of a unique situation (Creswell, 2007). In addition, Yin (2003) discusses three different types of case studies that can be used within a single case design or multiple case design. An exploratory case study is used to help define questions and hypothesis for future studies. The data from an explanatory case study is used to show a causal relationship. A descriptive case study allows the researcher to provide a complete description of the phenomenon being study in real life context.

In this multiple case study, a prior literature review provided the theory that is driving this descriptive study that examines the effects of a paraprofessional on student interactions. The research takes place within a bounded system and using multiple data collection methods.

Study Participants

Study participants consisted of four paraprofessional/student teams. The paraprofessional/student teams were selected based upon the following student and paraprofessional criteria: students (1) were identified as having a visual impairment based on the definitions from the Individuals with Disabilities Education Act (IDEA), (2) had visual impairment and additional disabilities that included specific learning disabilities (SLD), other health impairment, speech and language, (3) used braille as the primary reading medium, (4) received regular education instruction for at least 40% of their day based on the Arizona State Service Codes A and B, (5) was in grade 1-8, and (6) was assigned a paraprofessional by the IEP team. All selection criteria were established by the researcher prior to contact with the school. Students were selected based on convenience

without regard for ethnicity, gender, or characteristics other than those stated above.

Informed written parental consent and child assent was obtained for each child.

Paraprofessional consent was obtained for each paraprofessional participating.

Setting

The study took place in four different regular education classrooms where a student with a visual impairment was served by a one-on-one paraprofessional. The classrooms were located in elementary and middle schools. Each paraprofessional/student team was observed for a total of six hours. The observations occurred on different days during different hours of the school day. No more than three hours of observation occurred on any one day. Observations done in this manner allowed the researcher to capture the true nature of the activities and interactions taking place in the classroom. Activities during these observations were categorized into three types: 1) unstructured class time with no instructional activity taking place (e.g. transition times), 2) semi-structured class time that was instructional time but not strictly teacher-directed instruction time (e.g. group activity, or silent work time), and 3) structured class time with no peer interaction expected (e.g. teacher instruction).

Instrumentation

Demographic Information

The results of the case study were strengthened by the use of three different instruments for collecting data. Demographic information was obtained from each paraprofessional through an oral interview using the form shown in Appendix A. This information included data about each paraprofessional participant related to the type of

training (in-service, college courses, etc.), specialty areas covered (braille, tactile graphics, optical devices, social skills, etc), length of time working as a VI paraprofessional, and job responsibilities. To provide a broader understanding of the paraprofessional work situation, demographic information for each child, including child age, grade level, visual diagnosis, degree of visual impairment, age of onset, and percentage of time in the classroom, was collected. The Teacher of the Visually Impaired (TVI) was asked to provide the information on the student demographic form shown in Appendix B to the Principal Investigator.

Classroom Observation Form

The second data collection instrument was used to record observations in the classroom. A recording sheet was used to record the types of student interactions occurring with the paraprofessional, peer, or teacher. The form documented who initiated an interaction, with whom the interaction took place, the initial interaction type, and the type of classroom activity occurring at the time of the interaction. The proximity of the paraprofessional at the time of the interaction was also recorded on the data sheet. The data recording form and observation codes are shown in Appendix C.

Paraprofessional Interviews

The third instrument consisted of an open-ended interview questionnaire found in Appendix D. The interview questions consisted of two parts. Part One was used to gather information from paraprofessionals about their effectiveness in working with students with visual impairments. Part Two used various videotaped hypothetical scenarios with questions that asked what they would do in that situation and why. The topics of the

scenarios were developed based on personal experience of the researcher from 18 years of working with students with visual impairments and the paraprofessionals assigned to them. Once the topics were developed, feedback on the topics was requested from three colleagues with similar experience to determine if the scenarios were realistic representations of situations encountered in the regular educational setting. These scenarios were used to gather information about how a paraprofessional decides to interact with a student. The scenarios were developed prior to the observations and staged on video for the paraprofessionals to view.

Recruitment

Recruitment began with contacting teachers of visually impaired students from school districts in Arizona to determine if they had any students who fit the participation criteria as verified by the student's IEP. Five to seven participants were identified. Once possible participants were identified, the PI contacted the school districts and principals of the schools to obtain permission to pursue the research. Once permission was received, written materials were given to the classroom teachers and paraprofessionals explaining the study, detailing eligibility criteria, describing the type of data collection to be used, and specifying the time commitment that would be required of the paraprofessional. A packet was then sent home to parents. If the parents gave their consent, the PI then met with the student to obtain his or her assent for the observations. Paraprofessionals received \$30 for their participation in the interview phase.

Data Collection Procedures

Prior to beginning data collection, the researcher observed in each of the classrooms for at least one hour to allow for sensitization. In addition, the TVI working with each student was asked to complete the demographic data form for that student.

The researcher collected data during six hours of classroom observations for each of the four paraprofessional/student teams. The observations occurred on different days during different times of the school day when possible. No more than three hours of observation occurred on any one day. During the observations, data collection sheets were used to record pre-determined type of initiated interaction (academic question, request for help, redirection, academic comment, social question or comment), who initiated the interaction (student, peer, teacher, paraprofessional), the type of activity occurring (unstructured class time, semi-structured class time, structured class time), and the proximity of the paraprofessional at the time of the interaction (near or distant). Near proximity during an interaction was defined as 1) paraprofessional making physical contact with student, 2) sitting in chair immediately next to student, or 3) standing or kneeling next to student's desk or table. Distant from the student was defined as anything other than near proximity, including if the paraprofessional was out of the room. The recording sheets were used to record each new initiated interaction. Interactions were defined as taking place between the student with the visual impairment and another person in the classroom. A new initial interaction was determined to occur if a five second break existed between interactions with the same person or if the people involved in the interaction changed. In addition, interactions could be verbal or non-verbal, such as

placing a hand on the student's shoulder to redirect behavior. Each new initial interaction was recorded. The duration of each interaction was not recorded at this time.

The interview portion of the study consisted of three parts, all of which were audio-taped. First the paraprofessionals were asked demographic information which included identifying job responsibilities. The second part consisted of the interview protocol asking questions about the video-taped scenarios that were developed based on experiences of the Principal Investigator and colleagues. After watching five sets of different topical scenarios consisting of two contrasting story lines, the paraprofessionals were asked if they would react similarly to the paraprofessional in the first video or the second video and why. A description of each set of videos is listed in Appendix E. The third part of the interview protocol consisted of asking paraprofessionals about their effectiveness in working with their students. The interviews were audio-taped and then transcribed.

Data Analysis

Data analysis of multiple case studies consists of two phases (Merriam, 1989). In the first phase called the within-case analysis, data is analyzed for each case by itself. In the second phase called the cross-case analysis, the categories developed for each case study are then compared to determine common characteristics and develop new categories that encompass all data sets.

The examination of the data included both qualitative and quantitative analysis. The qualitative data obtained from the paraprofessional interviews were analyzed through a content analysis process called open coding. Open coding is a tool for categorizing data

that is often used in grounded theory methodology (Strauss & Corbin, 1990) but is also an appropriate analysis strategy for using in case studies. According to Merriam (1998) organizing data into categories constitutes data analysis. Through open coding the researcher was able to organize the data into distinct elements of meaning and then group similar elements into categories. This was an intuitive process guided by the purpose of the study. The coding of data was guided by two criteria established by Lincoln and Guba (1985, as stated in Merriam 1998, p. 179). First the elements need to reveal information relevant to the study and second, the element should be the smallest piece of information that can be understood by itself.

The qualitative data obtained during the classroom observations were examined using nonparametric statistics. This type of quantitative analysis was determined to be the most appropriate statistics for use with the obtained nominal data. Once observations were completed, data was coded by number. The data was then run through Statistical Analysis Software (SAS) and sorted by teams to determine frequencies and percentages for each of the five observation variables. Chi-square values were then calculated for pairs of variables with effect size determined by the Cramer's V statistic. Once statistical values were computed, each frequency table was examined to determine what numbers contributed to the significance of Chi-square.

Each case study was analyzed separately using the qualitative and quantitative analysis processes. The data from the individual case studies was then combined and analyzed using the same procedures as used with the individual case study analysis.

Reliability and Validity

Reliability with the case study design is such that it would allow another person to accurately replicate all aspects of the study and come to conclusions similar to that of the original study (Yin, 1998). For each case study conducted in this research, the exact same procedures were used. All observations were conducted prior to the paraprofessional interviews to avoid paraprofessional bias during the real-life context of the observations. All interviews followed the order of paraprofessional demographic information, scenario questions, and effectiveness questions. In addition to the aforementioned protocol the following steps were employed to provide reliability and validity checks throughout the study.

Classroom Observations

Reliability data was collected using a second observer. The second observer was trained by the researcher to use the recording sheet by using a coding system (Appendix C) and practicing by observing in classrooms with no research subjects. The second observer was a doctoral student in the Special Education program. Research data collection began once the researcher and second observer reliability was at 80% agreement or above for three consecutive observation periods. To increase the reliability of the data collected, the second observer collected data on 30% of the observations.

Data was entered into an Excel spreadsheet. To verify data entry accuracy, a second person was recruited to double check the entries. Interobserver agreement was determined by taking the number of agreements on all frequency data points and dividing by the total number of agreements and disagreements of all frequency data points. This

method was used because the data was collected based on the frequency of interactions and not interactions that took place during a specific interval. Therefore, individual interactions could not be compared to determine agreement. Interobserver agreement for individual teams ranged from 84.4% to 91.7%. The overall interobserver agreement was 87.45%.

Paraprofessional Interviews

Reliability was enhanced in the interview process by audio-taping all the interviews. The audio tapes were then transcribed into a word document. The PI listened to each audio-tape again while reading the word document to verify the accuracy of the transcription.

Internal validity was strengthened by enlisting a colleague knowledgeable about the area of visual impairments and classroom settings to independently develop elements of meaning from all interviews and then to independently code the elements into thematic categories. Agreement for each stage was determined by dividing the number of agreements by the total number of agreements and disagreements. If the score was less than .85, the researcher and colleague discussed and clarified the elements of meaning and categories until agreement was obtained. Three areas of the interviews, job responsibilities, effectiveness in helping students learn, and the scenarios, were coded separately based on the questions asked, to determine themes. Themes that were agreed upon for job responsibilities were modifying and adapting materials, communication with others, student support, skill reinforcement, supervisory responsibilities, student advocacy, and instructional assistance. Themes associated with effectiveness in helping

students learn were supporting student independence, facilitating student problem solving, paraprofessional self-improvement, and provision of materials for student learning. Themes determined from the answers to the scenario questions were student independence, self-advocacy, and development of peer relationships.

External validity or generalizability was addressed using multiple case studies and cross case analysis. Using a cross case analysis with multiple case studies provides a way to strengthen the results of the study. Even though generalizability is difficult because real-life situations are have unique characteristics, Yin (1998) suggests that multiple case study design provides the replication needed to prove or disprove a theory.

Summary

The goal of this study was to investigate how paraprofessional proximity affects interactions within regular education classrooms and how paraprofessionals decide when to interact with students with visual impairments. In order to explore those phenomena, data was collected through classroom observations, demographic information, and paraprofessional interviews. The findings of this study will contribute to a better understanding of the impact of employing paraprofessionals with students with visual impairments and will provide information to improve paraprofessional training.

CHAPTER 4

RESULTS

The present study examined two aspects of concern associated with paraprofessionals who are assigned one-on-one to a student with a visual impairment. The first aspect deals with the effect of paraprofessional proximity on the interactions between a student with a visual impairment and his teachers and also between the student with a visual impairment and his peers. The second aspect of concern explored the decision making process of paraprofessionals when interacting with students. The following research questions guided the study:

1. What are the types of interactions that occur between a student with a visual impairment and the paraprofessional?
2. What percentage of interactions between paraprofessionals and students with visual impairments are student initiated?
3. Do paraprofessionals maintain different distances from students with visual impairments across three different observation settings?
4. When the paraprofessional is closer, is there less interaction between the student and a) the classroom teacher and/or b) other students?
5. How do paraprofessionals decide to interact with a student with a visual impairment?

These research questions were answered using classroom observations and open-ended interviews. The results are presented in the form of four case studies and a cross-case analysis, in which the categories developed for each case study were compared to

determine common characteristics and develop new categories that encompass all data sets (Merriam, 1989). The specific research questions will be discussed in the cross case analysis section.

The information in the four case studies was obtained from a paraprofessional demographic form (Appendix A), a student demographic form (Appendix B), classroom observation (Appendix C), and interview questions (Appendix D). As part of the interview protocol, paraprofessionals were asked to watch video taped scenarios. A description of each video taped scenario is presented in Appendix E.

Case Study 1

Student Demographics

The 12-year-old student attended an elementary school and was in fifth grade. He was diagnosed with optic nerve hypoplasia with hand movement in the right eye and light perception in the left eye. The visual impairment was present at birth and the student had no other disabilities as identified in his IEP. He was assigned a one-on-one paraprofessional as per the IEP and participated in the regular education classroom approximately 63% of the time.

Paraprofessional Demographics

The paraprofessional was a Caucasian female who is a little over 60 years of age. Her education consisted of a bachelor's degree in secondary education and all but two courses toward a master's degree in special education. She was also certified as a teacher of the visually impaired (TVI). She indicated that she had training specific to the education of visually impaired students in human guide, braille, adaptive technology,

daily living skills, O&M, eye conditions, social skills, low vision, tactile graphics, and optical devices. She had additional training in child development, understanding IEPs, and general computer skills. She received her training through employer in-service, one-on-one training with the student's TVI, workshops, with the majority of her training through university courses. The paraprofessional indicated that she had six years of paraprofessional experience and that all six years were spent with the student from this study.

Classroom Observations

Table 1 presents the percentages for each of the five areas of interest in terms of total interactions as well as the percentages of interactions when the paraprofessional is in close proximity to the student or at a distance.

The type of classroom activity that occurred most often during the observations was semi-structured time (59.35%). Interactions between the student and the paraprofessional occurred most often (54.47%), as compared with student interactions with others. Interactions within the category of "other" occurred more frequently than interactions with peers. The "other" category included interactions that were not specifically directed toward anyone. The paraprofessional initiated interaction 48.78% of the time. No peer initiated interaction occurred with the student during the observations. Most of the total interactions that occurred were from the category of directives/comments (75.61%). The paraprofessional was near to the student more than half the time (56.1%).

The chi-square analysis was applied to determine if a relationship existed between the variables classroom activity setting, interaction participants, interaction initiator, type of interaction, and proximity of the paraprofessional. All the chi-square tables that were statistically significant are shown in Appendix F. Two of the statistically significant chi-square tables are being discussed in the text due to larger effect sizes for the relationships between variables. A third contingency table that will be discussed shows percentages relative to interaction participants by interaction initiators, however, because of the large number of structural zeros (cells not expected to contain data) a chi-square statistic was meaningless.

The relationship between the proximity of the paraprofessional and the person with whom the student was interacting was statistically significant, $\chi^2 (3, N = 123) = 100.4525, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .9037. As shown in Table 2 (Appendix F, Table F1), 89.66% of the interactions occurred between the student and the teacher and 92.31% of the interactions occurred between the student and peers when the paraprofessional was distant. When the paraprofessional was near, the student interacted with the teacher 10.34% and with peers 7.69% of the total interactions.

The relationship between the proximity of the paraprofessional and the initiator of the interaction was statistically significant, $\chi^2 (2, N = 123) = 78.4203, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .7985. As shown in Table 3 (Appendix F, Table F3) the student initiated 72.22% of the interactions and the teacher initiated 24.07% of the interactions when the paraprofessional was distant. When

the paraprofessional was near, the student initiated 13.04% of interactions and the teacher initiated 2.90% of the interactions. The remaining initiations were by the paraprofessional. The teacher was more likely to initiate an interaction with the student when the paraprofessional was at a distance (86.67%).

A chi-square statistic was inappropriate for use in determining a relationship between who initiated the interaction and who participated in the interaction due to the number of cells with structural zeros, however, the computed contingency table provides useful data for exploring what might be occurring in the classroom. As shown in Table 4 the student initiated the interaction with the teacher 48.28% and with peers 100% of the time. The teacher initiated the interaction with the student 51.72 % of the time and no peers initiated interactions with the student.

Job Responsibilities

The paraprofessional was asked to describe what activities are performed as part of the job. The paraprofessional indicated that she modifies and adapts materials including the production of braille. She communicates with the parents concerning homework, especially if there is a big test. Communication with the parents also includes social/emotional aspects of the student's day that she feels the parents should know about such as if the student has had a particularly hard time at school that day either with classmates or schoolwork. The paraprofessional communicates with teachers, specialists, and staff who are involved with the student to provide consistency in the student's program. Additional responsibilities include providing student support in the classroom with activities the student may have difficulty accomplishing independently, advocating

Table 1

Interaction Totals and Paraprofessional Proximity Percentages for Case Study 1

	Total Interactions (123)	Proximity: Near (69)	Proximity: Distant (54)
Setting			
Structured	35.77 (44)	81.82 (36)	18.18 (8)
Semistructured	59.35 (73)	38.36 (28)	61.64 (45)
Unstructured	4.88 (6)	83.33 (5)	16.67 (1)
Interaction Participant			
Teacher	23.58 (29)	10.34 (3)	89.66 (26)
Peer	10.57 (13)	7.69 (1)	92.31 (12)
Paraprofessional	54.47 (67)	97.01 (65)	2.99 (2)
Other	11.38 (14)	—	100.00 (14)
Interaction Initiator			
Student	39.02 (48)	18.75 (9)	81.25 (39)
Teacher	12.2 (15)	13.33 (2)	86.67 (13)
Peer	—	—	—
Paraprofessional	48.78 (60)	96.67 (58)	3.33 (2)
Type			
Question	21.95 (27)	44.44 (12)	55.56 (15)

Table 1 (Continued)

	Total Interactions (123)	Proximity: Near	Proximity: Distant
Comment/Directive	75.61 (93)	60.22 (56)	39.78 (37)
Request for Help	—	—	—
Redirection	0.81 (1)	100.00 (1)	—
Social	1.63 (2)	—	100.00 (2)
Proximity			
Near	56.1 (69)		
Distant	43.9 (54)		

Note. Dashes indicate no observed data. Blank cells indicate no data anticipated.

Table 2 (Table F1)

Proximity by Interaction Participant 2x4 Chi Square Table for Case Study 1

Proximity	Interaction Participant				Total
	Teacher (n=29)	Peer (n=13)	Paraprofessional (n=67)	Other (n=14)	
Near (n=69)					
Row	4.35%	1.45%	94.20%	—	100%
Column	10.34%	7.69%	97.01%	—	
Distant (n=54)					
Row	48.15%	22.22%	3.70%	25.93%	100%
Column	89.66%	92.31%	2.99%	100%	
Total	100%	100%	100%	100%	

Note. $\chi^2 (3, N = 123) = 100.4525, p < .0001, V = .9037$. Dashes indicate no observed data.

Table 3 (Table F3)

Proximity by Interaction Initiator 2x4 Chi Square Table for Case Study 1

Proximity	Interaction Initiator				Total
	Student (n=48)	Teacher (n=15)	Peer (n=0)	Paraprofessional (n=60)	
Near (n=69)					
Row	13.04%	2.90%	—	84.06%	100%
Column	18.75%	13.33%	—	96.67%	
Distant (n=54)					
Row	72.22%	24.07%	—	3.70%	100%
Column	81.25%	86.67%	—	3.33%	
Total	100%	100%	—	100%	

Note. $\chi^2 (2, N = 123) = 78.4203, p < .0001, V = .7985$. Dashes indicate no observed data.

Table 4

Interaction Participant by Interaction Initiator 4x4 Contingency Table for Case Study 1

Interaction Participant	Interaction Initiator				Total
	Student (n=48)	Teacher (n=15)	Peer (n=0)	Paraprofessional (n=60)	
Teacher (n=29)					
Row	48.28%	51.72%			100%
Column	29.17%	100%			
Peer (n=13)					
Row	100%		—		100%
Column	27.08%		—		
Paraprofessional (n=67)					
Row	10.45%			89.55%	100%
Column	14.58%			100%	
Other (n=14)					
Row	100%				100%
Column	29.17%				
Total	100%	100%	—	100%	

Note. Dashes indicate no observed data. Blank cells indicated structural zeros.

for the student, reinforcing student independence, and supervising travel.

Decision Making

The results from the questions asked about the videotaped scenarios indicate the paraprofessional had a firm belief in the need for student independence and self-advocacy. For each set of scenarios the paraprofessional indicated she would behave more like the paraprofessional in the video that showed less paraprofessional involvement and more student independence.

Abacus. The paraprofessional indicated she would encourage the student to be more proactive in locating his abacus by prompting the student in what to say such as “What do you need? Do you need to ask your friend for something?” When initially working with the student she reflected that she would have gone to the regular education peer and asked for the return of the abacus.

Getting braille paper. The paraprofessional firmly chose the video that showed student independence in getting the braille paper. She said “I don’t think any person, whether they have a disability or not, would want to be grabbed by the arm and pushed along.” When she first started working with the student she was instructed by the TVI to offer her elbow to guide the student instead of pushing or pulling him. One comment about the video, though, was that she would have had paper at the student’s desk instead of storing it in a place that required the student to get up and get it.

Orientation and mobility. The paraprofessional chose the video in which the paraprofessional stops and discusses with the student that people are standing in the hallway and what the student should do. In her experience she indicated that most of the time she will be walking behind the student and will verbally prompt the student by

saying “There’s people ahead. Let’s see what you need to do.” She stated that she is working to make the student aware of his surroundings and to make appropriate decisions for himself. When the paraprofessional first started working with the student, she was very aware of teaching manners, including not just barging through a group of people. She was more likely to talk to the student after an incident about appropriate manners than prompting appropriate behavior beforehand.

Snack time. The paraprofessional chose the video in which no assistance was offered to the student for opening up a snack because of the student’s need to develop independence. However, she did indicate that because the student was having such a hard time with the crackers package, that a little more assistance or verbal communication would have been warranted so that he would not be the object of stares. The paraprofessional stated that when she first started working with the student she was probably more helpful than she should have been. She continues to catch herself taking his hand and putting it on something instead of giving the student time to search for it himself or asking the student if he needs help.

Spelling a word. The paraprofessional preferred the video that showed the student asking a peer for help reading a word. She felt this promoted student independence and peer assistance instead of reliance on the paraprofessional. When first working with the student, the paraprofessional stated that in this situation, she might have gone over just to see what was going on but would hopefully not have said anything. She has noticed that when she is in close proximity, the student will ask her questions instead of peers or the

teacher. In those instances the paraprofessional will say to the student “You know, why don’t you ask someone sitting next to you?”

Effectiveness

The paraprofessional indicated that she is effective in working with her student by promoting independence. She believes that “all kids learn they have to do it by themselves”. She tries to step back and let the student do it by himself even if it means he does everything wrong. She will ask him questions to help the student think about possible solutions instead of giving him the answer. The paraprofessional stated that she frequently asks herself “What can I do to make sure the student is independent?” Another aspect of being effective as a paraprofessional is that she is at his desk during math class to read the material that is written on the board. If she is not there, the student would sit and do no work.

In order to be more effective the paraprofessional stated that even though she tries to step back, she feels she needs to step back even more. At times, she has difficulty finding the line between being near for assistance and removing herself for independence. She would also like to be more effective in educating other personnel about the need to allow the student to be independent and that she does not need to be with the student all the time. As an example of this need, the paraprofessional stated that at one point during this year, she was sitting in another part of the room when the teacher told the students to get their reading books out. When the student with the visual impairment did not get his book out the teacher told the paraprofessional that the student needed help getting his reading book instead of talking to the student.

This paraprofessional does feel she is effective in helping her student learn but also recognizes areas in which she needs to work to become more effective. The training she has received at the university level has helped her improve her effectiveness as has talking with the other university students in her classes. “I know I was doing a lot right but then I realized there is an awful lot more I could be doing that I didn’t know about.”

Case Study 2

Student Demographics

The 13 year old student attended a middle school and was in seventh grade. She was diagnosed with sclerocornea, glaucoma, aphakia, keratoplasty, and tarsorrhaphy with no light perception in the right eye and light perception in the left eye. The visual impairment was present at birth and the student had no other disabilities as identified in her IEP. She was assigned a one-on-one paraprofessional as per the IEP and participated in the regular education classroom approximately 70% of the time.

Paraprofessional Demographics

The paraprofessional was a Caucasian female who was 59 years of age. Her education level consisted of some college. She indicated that she had training specific to children with visual impairments including human guide, braille, adaptive technology, orientation and mobility, tactile graphics, and optical devices. Additional areas of training as a paraprofessional included understanding IEPs, sexual harassment, and CPR/first aid. She received her training through employer in-services, one-on-one training with the TVI, and workshops. She estimated that the total amount of training specific to children with visual impairments was at least 10 hours. The paraprofessional indicated that she

had a total of eight years of paraprofessional experience, with the last three years being the paraprofessional for the student in the study.

Classroom Observations

Table 5 presents the percentages for each of the five areas of interest in terms of total interactions as well as the percentages of when the paraprofessional is in close proximity to the student or at a distance.

The type of classroom activity that occurred most often during the observations was semi-structured time (75.86%). Interactions between the student and the paraprofessional (43.68%) and the interactions between the student and her peers (36.4%) occurred more frequently than the interactions between the teacher (13.41%) and the “other” category (6.51%). The “other” category included interactions that were not directed at anyone specific. The student initiated interactions 56.7% of the time with peers initiating interactions 14.18% of the time. Most of the interactions that occurred were directives or comments (60.15%). The paraprofessional was near to the student more than half the time (68.58%).

The chi-square statistic was applied to determine if relationships exist between the variables classroom activity setting, interaction participants, interaction initiator, type of interaction, and proximity of the paraprofessional. All the chi-square tables that were statistically significant are shown in Appendix G. Two of the statistically significant chi-square tables are being discussed in the text due to larger effect sizes for the relationships between variables. A third contingency table that will be discussed shows percentages relative to interaction participants by interaction initiators, however, because of the large

number of structural zeros (cells not expected to contain data) a chi-square statistic was meaningless.

The relationship between the proximity of the paraprofessional and the person with whom the student was interacting was statistically significant, $\chi^2 (3, N = 261) = 54.7701, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .4581. As shown in Table 6 (Appendix G, Table G1), 71.43% of the interactions of the student/teacher interactions and 43.16% of the student/peer interactions were when the paraprofessional was distant. When the paraprofessional was near, 28.57% of all student/teacher interactions and 56.84% of all student/peer interactions took place. Also of note is that the 82.35% of student interactions in the "other" category took place when the paraprofessional was near. Some examples of "other" interactions occurred during class work groups that included the paraprofessional. The student would verbalize to her group without directing the comments or questions to anyone in particular. In these situations the paraprofessional encouraged the student to interact with her peers.

The relationship between the proximity of the paraprofessional and the initiator of the interaction was statistically significant, $\chi^2 (3, N = 261) = 29.5156, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .3363. As shown in Table 7 (Appendix G, Table G3) the student initiated 59.76% of the interactions, the teacher initiated 9.76% of the interaction, and peers initiated 21.95% of the interactions when the paraprofessional was distant. When the paraprofessional was near, the student initiated 55.31% of the interactions, the teacher initiated 1.12% of the interactions, and peers initiated 10.61% of the interactions. Peers were more likely to initiate an interaction

Table 5

Interaction Totals and Paraprofessional Proximity Percentages for Case Study 2

	Total Interactions (261)	Proximity: Near	Proximity: Distant
Setting			
Structured	5.36 (14)	35.71 (5)	64.29 (9)
Semistructured	75.86 (198)	76.77 (152)	23.23 (46)
Unstructured	18.77 (49)	44.90 (22)	55.10 (27)
Interaction Participant			
Teacher	13.41 (35)	28.57 (10)	71.43 (25)
Peer	36.40 (95)	56.84 (54)	43.16 (41)
Paraprofessional	43.68 (114)	88.60 (101)	11.40 (13)
Other	6.51 (17)	82.35 (14)	17.65 (3)
Interaction Initiator			
Student	56.70 (148)	66.89 (99)	33.11 (49)
Teacher	3.83 (10)	20.00 (2)	80.00 (8)
Peer	14.18 (37)	51.35 (19)	48.65 (18)
Paraprofessional	25.29 (66)	89.39 (59)	10.61 (7)
Type			

Table 5 (Continued)

	Total Interactions (261)	Proximity: Near	Proximity: Distant
Question	32.18 (84)	71.43 (60)	28.57 (24)
Comment/Directive	60.15 (157)	70.06 (110)	29.94 (47)
Request for Help	—	—	—
Redirection	—	—	—
Social	7.66 (20)	45.00 (9)	55.00 (11)
Proximity			
Near	68.58 (179)		
Distant	31.42 (82)		

Note. Dashes indicate no observed data. Blank spaces indicate no expected data.

Table 6 (Table G1)

Proximity by Interaction Participant 2x4 Chi Square Table for Case Study 2

	Interaction Participant				Total
	Teacher (n=35)	Peer (n=95)	Paraprofessional (n=114)	Other (n=17)	
<hr/>					
Near (n=179)					
Row	5.59%	30.17%	56.42%	7.82%	100%
Column	28.57%	56.84%	88.60%	82.35%	
<hr/>					
Distant (n=82)					
Row	30.49%	50.00%	15.85%	3.66%	100%
Column	71.43%	43.16%	11.40%	17.65%	
Total	100%	100%	100%	100%	

Note. $\chi^2 (3, N = 261) = 54.7701, p < .0001, V = .4581.$

Table 7 (Table G3)

Proximity by Interaction Initiator 2x4 Chi Square Table for Case Study 2

	Interaction Initiator				Total
	Student (n=148)	Teacher (n=10)	Peer (n=37)	Paraprofessional (n=66)	
Proximity					
Near (n=179)					
Row	55.31%	1.12%	10.61%	32.96%	100%
Column	66.89%	20.00%	51.35%	89.39%	
Distant (n=82)					
Row	59.76%	9.76%	21.95%	8.54%	100%
Column	33.11%	80.00%	48.65%	10.61%	
Total	100%	100%	100%	100%	

Note. $\chi^2 (3, N = 261) = 29.5156, p < .0001, V = .3363.$

Table 8

Interaction Participant by Interaction Initiator 4x4 Contingency Table for Case Study 2

Interaction Participant	Interaction Initiator				Total
	Student (n=148)	Teacher (n=10)	Peer (n=37)	Paraprofessional (n=66)	
Teacher (n=35)					
Row	71.43%	28.57%			100%
Column	16.89%	100.00%			
Peer (n=95)					
Row	61.05%		38.95%		100%
Column	39.19%		100.00%		
Paraprofessional (n=114)					
Row	42.11%			57.89%	100%
Column	32.43%			100.00%	
Other (n=17)					
Row	100.00%				100%
Column	11.49%				
Total	100%	100%	100%	100%	

Note. Blank spaces indicate no expected data (structural zeros).

with the student when the paraprofessional was near (51.35%) and the teacher was more likely to initiate an interaction when the paraprofessional was distant (80.00%).

A chi-square statistic was inappropriate for use in determining a relationship between who initiated the interaction and who participated in the interaction due to the number of cells with structural zeros, however, the computed contingency table provides useful data for exploring what might be occurring in the classroom. As shown in Table 8 the student initiated 71.43% of the interactions with the teacher and 61.05% of the interactions with peers.. The teacher initiated 28.57% of the interactions with the student and peers initiated 38.95% of the interactions with the student.

Job Responsibilities

The paraprofessional was asked to describe what activities are performed as part of the job. She indicated that she modifies and adapts materials including the production of braille. She provides technology support including helping the student with the printer if needed and assisting the student with navigating on the computer with a screen reading program (i.e. JAWs). When materials could not be produced in braille in time for the student to have them in class, the paraprofessional reads assignments or tests to the student. She also works with another special education student during two of the six periods in the day when the student with the visual impairment is either with the TVI or in her home ecology class where she needs no paraprofessional assistance. The paraprofessional stated “A lot of my work is keeping the materials available to her”.

Decision Making

The results from the questions asked about the videotaped scenarios indicate the

paraprofessional had a firm belief in the need for student independence and self-responsibility. For each set of scenarios, the paraprofessional indicated she would behave more like the paraprofessional in the video that showed less paraprofessional involvement and more student independence.

Abacus. The paraprofessional chose the video in which the student was encouraged to ask the peer to return the abacus because she felt the student needed prompting in locating his abacus since when he couldn't find it he just sat and did nothing. When initially working with her student she reflected that in a similar situation she would have gone to the regular education peer and asked for the return of the abacus instead of expecting the student to do it on his own. However, she did mention with her student that "For me to even have to go to speak to her is something I hope I don't have to do too much because we do want her to take the responsibility of asking for help."

Getting braille paper. The paraprofessional chose the video that showed student independence in getting the braille paper. She would want the student to be more independent and not depend on someone to do everything for him. She does confess, though, when she first started working with her student she was overprotective and did too much for her.

Orientation and mobility. The paraprofessional chose the video in which the student is allowed to walk through the group of people standing in the hallway. She indicated she would not talk to the student about what they needed to do because this prevents the student from depending on his own skills and abilities. When she first started

working with the student, she would say “go to the right” or provide some other directional instruction.

Snack time. The paraprofessional chose the video in which no assistance was offered to the student for opening up a snack allowing for independence and hoping that the student would ask a peer for help. When first working with her current student she would have been more like the overly helpful paraprofessional in scenario two. She said, “They respond to it. When you give them that much [help] they expect it.”

Spelling a word. The paraprofessional preferred the video that showed the student asking a peer for help reading a word because it allowed the student to interact with peers and not to rely on the paraprofessional for everything. She indicated when first working with her student, “I just needed to be there for her beck and call.” However, getting to know the student and expectations for the student have helped the paraprofessional step back and allow the student more independence.

Effectiveness

The paraprofessional discussed many ways in which she feels she is effective in helping her student learn. She tries to encourage the student to use her skills to be able to problem solve for herself. The paraprofessional tries to step back and just watch and promote independent thinking. She works hard to make sure the student has all the materials she needs to fully participate in the regular education classroom with minimal assistance from the paraprofessional.

The paraprofessional also indicated that there are ways she needs to work to become more effective in helping the student learn. She feels she continues to be

overprotective, being right there too much of the time. She also feels she needs more training especially in creative ways to produce adapted material and tactile graphics so the student can fully understand the concepts being presented.

She feels her effectiveness with the student has improved. She is less available to the student and requires the student to take more responsibility for her own materials. For example, the student is responsible for ordering her own talking books or for checking with classmates when she misses an assignment. The experience of working with the student and the training received from the TVI have helped her to improve her effectiveness in helping the student learn.

Case Study 3

Student Demographics

The 10 year old student attended an elementary school and was in third grade. He was diagnosed with optic nerve hypoplasia with no light perception in either eye. The visual impairment was present at birth. In addition, he had agenesis of the corpus callosum and received speech and language therapy. The student was assigned a one-on-one paraprofessional as per the IEP and participated in the regular education classroom approximately 53% of the time.

Paraprofessional Demographics

The paraprofessional was a Caucasian female 54 years of age. Her education level consisted of two years of college with one class short of an Associate's degree. She indicated that she had training specific to children with visual impairments including human guide, braille, adaptive technology, daily living skills, orientation and mobility,

communication skills, social skills, low vision training, tactile graphics, and a minimal amount concerning eye conditions. As a paraprofessional, in general, she received training in working with a team, understanding IEPs, CPR/first aid, CIT training (lifting skills), and HANDLE (Holistic Approach to Neurological Developmental Learning Efficiency). The paraprofessional indicated that she received her training through employer in-service, one-on-one training with the TVI, workshops, and a correspondence course to learn braille. She has had 19.5 years of experience as a paraprofessional with the last 3.5 years as a paraprofessional for students with visual impairments.

Classroom Observations

Table 9 presents the percentages for each of the five areas of interest in terms of total interactions as well as the percentages of when the paraprofessional is in close proximity to the student or at a distance.

The type of classroom activity that occurred most often during the observations was semi-structured time (82.17%). Interactions between the student and the paraprofessional (64.33%) and the interactions between the student and his teacher (21.66%) occurred more frequently than the interactions with peers (14.01%). The paraprofessional initiated 57.96% of the interactions, the teacher initiated interactions 21.02% of the interactions, peers initiated 10.83% of the interactions, and the student initiated 10.19% of the interactions. Most of the interactions that occurred were directives/comments (67.2%). The paraprofessional was near to the student more than three quarters of the time (82.48%).

The chi-square statistic was applied to determine if relationships exist between the variables classroom activity setting, interaction participants, interaction initiator, type of interaction, and proximity of the paraprofessional. All the chi-square tables that were statistically significant are shown in Appendix H. Two of the statistically significant chi-square tables are being discussed in the text due to larger effect sizes for the relationships between variables. A third contingency table that will be discussed shows percentages relative to interaction participants by interaction initiators, however, because of the large number of structural zeros (cells not expected to contain data) a chi-square statistic was meaningless.

The relationship between the proximity of the paraprofessional and with whom the student was interacting was statistically significant, $\chi^2 (2, N = 314) = 131.0416, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .6460. As shown in Table 10 (Appendix H, Table H1), the student/teacher interactions comprised 74.55% of interactions and student/peer interactions comprised 23.64% of interactions when the paraprofessional was distant. When the paraprofessional was near, the student interacted with the teacher 10.42% and with peers 11.97% of the time. The student and peers were more likely to interact when the paraprofessional was near (70.45%) whereas the teacher and student were more likely to interact when the paraprofessional was at a distance (60.29%).

The relationship between the proximity of the paraprofessional and the initiator of the interaction was statistically significant, $\chi^2 (3, N = 314) = 124.1274, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .6287. As shown in

Table 9

Interaction Totals and Paraprofessional Proximity Percentages for Case Study 3

	Total Interactions (314)	Proximity: Near	Proximity: Distant
Setting			
Structured	7.01 (22)	86.36 (19)	13.64 (3)
Semistructured	82.17 (258)	82.17 (212)	17.83 (46)
Unstructured	10.83 (34)	82.35 (28)	17.65 (6)
Interaction Participant			
Teacher	21.66 (68)	39.71 (27)	60.29 (41)
Peer	14.01 (44)	70.45 (31)	29.55 (13)
Paraprofessional	64.33 (202)	99.50 (201)	.50 (1)
Interaction Initiator			
Student	10.19 (32)	90.63 (29)	9.38 (3)
Teacher	21.02 (66)	40.91 (27)	59.09 (39)
Peer	10.83 (34)	64.71 (22)	35.29 (12)
Paraprofessional	57.96 (182)	99.45 (181)	.55 (1)
Type			
Question	25.48 (80)	73.75 (59)	26.25 (21)

Table 9 (Continued)

	Total Interactions (314)	Proximity: Near	Proximity: Distant
Comment/Directive	67.20 (211)	84.36 (178)	15.64 (33)
Request for Help	—	—	—
Redirection	6.69 (21)	95.24 (20)	4.76 (1)
Social	.64 (2)	100.00 (2)	—
Proximity			
Near	82.48 (259)		
Distant	17.52 (55)		

Note. Dashes indicate no observed data. Blank cells indicate no expected data.

Table 10 (Table H1)

Proximity by Interaction Participant 2x4 Chi Square Table for Case Study 3

	Interaction Participants				Total
	Teacher (n=68)	Peer (n=44)	Paraprofessional (n=202)	Other (n=0)	
Near (n=259)					
Row	10.42%	11.97%	77.61%	—	100%
Column	39.71%	70.45%	99.50%	—	
Distant (n=55)					
Row	74.55%	23.64%	1.82%	—	100%
Column	60.29%	29.55%	.50%	—	
Total	100%	100%	100%	—	

Note. $\chi^2 (2, N = 314) = 131.0416, p < .0001, V = .6460$. Dashes indicate no observed data.

Table 11 (Table H3)

Proximity by Interaction Initiator 2x4 Chi Square Table for Case Study 3

	Interaction Initiator				Total
	Student (n=32)	Teacher (n=66)	Peer (n=34)	Paraprofessional (n=182)	
Proximity					
Near (n=259)					
Row	11.20%	10.42%	8.49%	69.88%	100%
Column	90.63%	40.91%	64.71%	99.45%	
Distant (n=55)					
Row	5.45%	70.91%	21.82%	1.82%	100%
Column	9.38%	59.09%	35.29%	.55%	
Total	100%	100%	100%	100%	

Note. $\chi^2 (3, N = 314) = 124.1274, p < .0001, V = .6287.$

Table 12

Interaction Participant by Interaction Initiator Contingency Table for Case Study 3

Interaction Participant	Interaction Initiator				Total
	Student (n=32)	Teacher (n=66)	Peer (n=34)	Paraprofessional (n=182)	
Teacher (n=68)					
Row	2.94%	97.06%			100%
Column	6.25%	100.00%			
Peer (n=44)					
Row	25.00%		75.00%		100%
Column	34.38%		97.06%		
Paraprofessional (n=202)					
Row	9.41%		.50%	90.10%	100%
Column	59.38%		2.94%	100.00%	
Other (n=0)					
Row	—				100%
Column	—				
Total	100%	100%	100%	100%	

Note. Dashes indicate no observed data. Blank cells indicate no expected data.

Table 11 (Appendix H, Table H3) the student initiated 5.45% of interactions, the teacher initiated 70.91% of the interactions, and peers initiated 21.82% of interactions when the paraprofessional was distant. When the paraprofessional was near, the student initiated the interaction 11.20% , the teacher initiated 10.42% of the interactions, and peers initiated 8.49% of the interactions. Peers were more likely to initiate an interaction with the student when the paraprofessional was near (64.71%) and the teacher was more likely to initiate an interaction when the paraprofessional was distant (59.09%).

A chi-square statistic was inappropriate for use in determining a relationship between who initiated the interaction and who participated in the interaction due to the number of cells with structural zeros, however, the computed contingency table provides useful data for exploring what might be occurring in the classroom. As shown in Table 12 the student initiated the interaction with the teacher 2.94% and with peers 25.00% of the time. The teacher initiated the interaction with the student 97.06 % and peers initiated interactions with the student 75.00% of the time. The teacher and peers were more likely to initiate interactions than the student.

Job Responsibilities

The paraprofessional was asked to describe what activities are performed as part of the job. The paraprofessional indicated that she modifies and adapts materials including the production of braille. She provides a lot of reinforcement of instruction of other specialists. She will accompany the student to his O&M lesson, occupational therapy session, and vision classes to learn what needs to be reinforced throughout the school day. She also indicated that she provides instruction on occasion. For example, she

is currently teaching the student normal body movements such as how to jump, skip, and jog. She also teaches the student specific things about the Mountbatten brailier such as how to load the paper. She indicated that she learns the skills first then teaches them to the student. Also, as part of her job, she promotes independence as well as supports the student when necessary.

Decision Making

The results from the questions asked about the videotaped scenarios indicate the paraprofessional had a firm belief in the need for student independence, self-advocacy, and self-responsibility. For each set of scenarios the paraprofessional indicated she would behave more like the paraprofessional in the video that showed less paraprofessional involvement and more student independence.

Abacus. The paraprofessional chose the video in which the student is encouraged to ask his peer to return the abacus. She felt it was important for the student to learn to self-advocate instead of having someone else take care of the situation. When initially working with her student, she reflected that she would have probably handled the situation differently just because she has learned better ways to work with the student through her experiences.

Getting braille paper. The paraprofessional chose the video that showed student independence in getting the braille paper. She indicated the student appeared to be capable of getting the paper on his own. When first working with her student she probably would have offered to help or get the paper for the student. She also mentioned that she would never grab a student's arm but would offer her arm to guide the student.

Orientation and mobility. The paraprofessional chose the video in which the paraprofessional stops and discusses with the student that people are standing in the hallway and what the student should do. With an older student she would not stop the student because they should already understand these skills, however, she would definitely stop the student afterward if they demonstrated inappropriate behavior. With younger students, she would stop them beforehand and discuss the situation and discuss appropriate behavior. When first working with her student she would have stopped the student and discussed the situation. She would have done this to help the student avoid being rude.

Snack time. The paraprofessional chose the video in which no assistance was offered to the student for opening up a snack because of the student's need to develop independence. She indicated she had had the experience of having someone take over and didn't like it. She would help if the student asked for it. When first working with the student she would have offered help instead of waiting for the student to ask for it.

Spelling a word. The paraprofessional preferred neither video. She disagreed with the student calling out instead of raising his hand. Also instead of just telling the student the word, whether by a peer or by the paraprofessional, the student should sound out the word and not just be told what it is. She indicated she would have responded the same way when first working with her student.

Effectiveness

The paraprofessional shared ways in which she felt that she is effective in helping her student learn. One way is that she works with classroom teachers to help create an

effective learning environment within the regular education classroom for the student. She also works with specialists to be able to reinforce skills the student has learned. One aspect of the classroom she feels is important is being able to develop relationships with peers. With that in mind, she feels she encourages socialization between the student and his peers. She is also aware of the small characteristic nuances of the student and is able to switch activities to keep the student interested in learning. Overall, the paraprofessional maintains an upbeat approach to learning in order to motivate the student.

One area she acknowledges that she needs to work on to become more effective is to allow the student to struggle at times. She noted, "It's easier to help someone who is struggling than to let them figure it out." At one point, she would let the student struggle with putting papers in his backpack and then she would help him. The student learned this pattern so he knew she would eventually help him out so he never really succeeded in doing this task independently. So now she never helps him with his backpack and "he knows that he's just got to do it". Another area she is constantly working to improve is to allow the student the independence to use what he has learned. "Sometimes you get into a routine that you get used to doing things a certain way. There comes a time when it's not necessary." So the key for her is to recognize when that moment arrives and then to pull back.

The paraprofessional's ability to be effective in helping the student learn has changed over time. She has received training specific to visual impairment. However, much of what she has learned to make her effective has come through experience both

with the student with the visual impairment and through her many previous years of working with students with disabilities.

Case Study 4

Student Demographics

The seven year old student attended an elementary school and was in first grade. She was diagnosed with Retinopathy of Prematurity with no light perception in the right eye and light perception in the left eye. The visual impairment was present at birth and the student had no other disabilities as identified in her IEP. She was assigned a one-on-one paraprofessional as per the IEP and participated in the regular education classroom approximately 70% of the time.

Paraprofessional Demographics

The paraprofessional was a Caucasian female 24 years of age. Her education level consisted of an Associate's degree with many extra college credits. She is currently pursuing a degree in special education. She indicated that she had training specific to children with visual impairments in human guide, braille, adaptive technology (including assistive communication devices), and tactile graphics. In addition, training has been received in child development, working with a team, understanding IEPs, and CPR/first aid. The paraprofessional indicated that her training was obtained through employer in-service, one-on-one training with the TVI, and general special education classes at the university. She has had three years of experience as a paraprofessional, all of them working with students with visual impairments.

Classroom Observations

Table 13 presents the percentages for each of the five areas of interest in terms of total interactions as well as the percentages of when the paraprofessional is in close proximity to the student or at a distance.

The type of classroom activity that occurred most often during the observations was semi-structured time (66.40%). Interactions between the student and the paraprofessional (47.43%) and the interactions between the student and the teacher (27.91%) occurred more frequently than the interactions between the student and her peers (17.62%) and the “other” category (7.05%). The “other” category included interactions that were not directed at anyone specific. The student initiated 29.81% of the interactions, with peers initiating 10.57% of the interactions and the teacher initiating 21.14% of the interactions. Most of the interactions that occurred were directives/comments (63.14%). The paraprofessional was distant to the student more than half the time (58.54%).

The chi-square statistic was applied to determine if relationships exist between the variables classroom activity setting, interaction participants, interaction initiator, type of interaction, and proximity of the paraprofessional. All the chi-square tables that were statistically significant are shown in Appendix I. Two of the statistically significant chi-square tables are being discussed in the text due to larger effect sizes for the relationships between variables. A third contingency table that will be discussed shows percentages relative to interaction participants by interaction initiators, however, because of the large

number of structural zeros (cells not expected to contain data) a chi-square statistic was meaningless.

The relationship between the proximity of the paraprofessional and with whom the student was interacting was statistically significant, $\chi^2 (3, N = 369) = 204.3404, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .7442. As shown in Table 14 (Appendix I, Table I1), the student/teacher interactions comprised 45.37% of the total and with student/peer interactions comprising 26.85% of the total when the paraprofessional was distant. When the paraprofessional was near, the student/teacher interactions comprised 3.27% of the total and with student/peer interactions comprised 4.58% of the total. Also of note is when the teacher and the peers did interact with the student it was most often when the paraprofessional was at a distance (teacher, 95.15%; peers 89.23%). The rest of the interactions were with the paraprofessional or visitors such as parent helpers.

The relationship between the proximity of the paraprofessional and the initiator of the interaction was statistically significant, $\chi^2 (4, N = 369) = 160.3077, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .6591. As shown in Table 15 (Appendix I, Table I2) the student initiated the interaction 37.04% of the time, the teacher initiated the interaction 33.80%, and peers initiated the interaction 15.74% when the paraprofessional was distant. When the paraprofessional was near, the student initiated the interaction 19.61% , the teacher initiated the interaction 3.27%, and peers initiated the interaction 3.27% of the time. The student (72.73%), the teacher (93.59%),

Table 13

Interaction Totals and Paraprofessional Proximity Percentages for Case Study 4

	Total Interactions (369)	Proximity: Near	Proximity: Distant
Setting			
Structured	10.03 (37)	51.35 (19)	48.65 (18)
Semistructured	66.40 (245)	42.86 (105)	57.14 (140)
Unstructured	23.58 (87)	33.33 (29)	26.85 (58)
Interaction Participant			
Teacher	27.91 (103)	4.85 (5)	95.15 (98)
Peer	17.62 (65)	10.77 (7)	89.23 (58)
Paraprofessional	47.43 (175)	80.00 (140)	20.00 (35)
Other	7.05 (26)	3.85 (1)	96.15 (25)
Interaction Initiator			
Student	29.81 (110)	27.27 (30)	72.73 (80)
Teacher	21.14 (78)	6.41 (5)	93.59 (73)
Peer	10.57 (39)	12.82 (5)	87.18 (34)
Paraprofessional	37.13 (137)	82.48 (113)	17.52 (24)
Other	1.36 (5)	—	100.00 (5)

Table 13 (Continued)

	Total Interactions (369)	Proximity: Near	Proximity: Distant
Type			
Question	30.35 (112)	53.57 (60)	46.43 (52)
Comment/Directive	63.14 (233)	37.77 (88)	62.23 (145)
Request for Help	0.027 (1)	—	100 (1)
Redirection	1.63 (6)	83.33 (5)	16.67 (1)
Social	4.61 (17)	—	100 (17)
Proximity			
Near	41.46 (153)		
Distant	58.54 (216)		

Note. Dashes indicate no observed data. Blank cells indicate no expected data.

Table 14 (Table I1)

Proximity by Interaction Participant 2x4 Chi Square Table for Case Study 4

	Interaction Participants				Total
	Teacher (n=103)	Peer (n=65)	Paraprofessional (n=175)	Other (n=26)	
<hr/>					
Near (n=153)					
Row	3.27%	4.58%	91.50%	.65%	100%
Column	4.85%	10.77%	80.00%	3.85%	
<hr/>					
Distant (n=216)					
Row	45.37%	26.85%	16.20%	11.57%	100%
Column	95.15%	89.23%	20.00%	96.15%	
Total	100%	100%	100%	100%	

Note. $\chi^2 (3, N = 369) = 204.3404, p < .0001, V = .7442.$

Table 15 (Table I2)

Proximity by Interaction Initiator 2x4 Chi Square Table for Case Study 4

	Interaction Initiator					Total
	Student (n=110)	Teacher (n=78)	Peer (n=39)	Paraprofessional (n=137)	Other (n=5)	
Near (n=153)						
Row	19.61%	3.27%	3.27%	73.86%	—	100%
Column	27.27%	6.41%	12.82%	82.48%	—	
Distant (n=216)						
Row	37.04%	33.80%	15.74%	11.11%	2.31%	100%
Column	72.73%	93.59%	87.18%	17.52%	100%	
Total	100%	100%	100%	100%	100%	

Note. $\chi^2 (4, N = 369) = 160.3077, p < .0001, V = .6591$. Dashes indicate no observed data.

Note. Blank cells indicate no expected data.

and the peers (87.18%) were more likely to initiate interactions when the paraprofessional was at a distance.

A chi-square statistic was inappropriate for use in determining a relationship between who initiated the interaction and who participated in the interaction due to the number of cells with structural zeros, however, the computed contingency table provides useful data for exploring what might be occurring in the classroom. As shown in Table 16 the student initiated the interaction with the teacher 24.27% and with peers 41.54% of the time. The teacher initiated the interaction with the student 75.73 % and peers initiated interactions with the student 58.46% of the time.

Job Responsibilities

The paraprofessional was asked to describe what activities are performed as part of the job. The paraprofessional indicated that she modifies and adapts materials including the production of braille. She communicates with the regular education teacher and TVI to keep up on what is going on in the classroom and what things need to be modified or adapted. She also communicates with the specialists in order to be able to reinforce skills consistently throughout the school day. The paraprofessional indicated she provides one-to-one assistance and instruction to the student in the classroom, however, she also provides assistance to other students in the classroom if needed. As part of her school duties she supervises the lunchroom and recess. By doing this she is available for the student with the visual impairment if needed. The paraprofessional also

mentioned that she has attended IEP meetings and been asked to write a summary of her observations of the student.

Decision Making

The results from the questions asked about the videotaped scenarios indicate the paraprofessional had a firm belief in the need for student independence and self-advocacy. For each set of scenarios the paraprofessional indicated she would behave more like the paraprofessional in the video that showed less paraprofessional involvement and more student independence.

Abacus. The paraprofessional indicated she would handle the situation more like the paraprofessional in the second video, who is encouraging the student to ask his peer to return the abacus. She preferred this method because the student is doing the communicating with his peer. When first working with her student she believes she would talk to the peer herself.

Getting braille paper. The paraprofessional chose the video that showed student independence in getting the braille paper, because the student was capable of getting the paper himself. When first working with her student, she would have been concerned but still would have allowed the student to get the paper herself.

Orientation and mobility. The paraprofessional chose the video in which the paraprofessional stops and discusses with the student that people are standing in the hallway and what the student should do. The paraprofessional would assist the student so that “he doesn’t do something rude”. When first working with her student she would have

handled it differently, probably by holding the student's hand and going around the obstacle.

Snack time. The paraprofessional chose the video in which no assistance was offered to the student for opening up a snack because of the student's need to develop independence. When first working with her student she would have provided more assistance but "not to the extent" of doing everything for the student. "I would hope not." The paraprofessional commented that the behavior of the paraprofessional in the overly helpful video was "really bad".

Spelling a word. The paraprofessional preferred the video that showed the student asking a peer for help reading a word, because the student was taking care of it on his own. At first, with her student, she would have probably interceded instead of allowing a peer to help.

Effectiveness

The paraprofessional shared several ways in which she is effective in helping her student learn. She makes sure that the student has all the materials needed to participate fully in the regular education classroom, which allows the student to learn at the same pace as her peers as well as to promote the development of peer relationships. The paraprofessional tries very hard to avoid a "weird symbiotic relationship" with the student that would isolate her from her classmates and the teacher. She also believes that to be effective in helping the student learn she needs to promote independence. She uses the "19 ways to step back" poster from AFB especially number eight which says "Pat

yourself on the back every time you help with seeing, not thinking. Your job is to give information”.

In as much as the paraprofessional feels that she is effective in helping the student learn, she continues to work every day to be more effective. Each day is a challenge because she recognizes places where she does step in and questions if she made the appropriate decision so as not to interfere with the student’s learning. To improve her abilities she often discusses situations with the TVI to get feedback on her decisions.

Since first starting with the student, the paraprofessional feels the way she interacts with the student has changed. She has become more aware of the student’s abilities. Her background was working with an eighth grader who required less hands-on so when she first started working with the first grade student she was less hands on. With experience of working with the student, she now provides more hands-on support. The experience of working with a TVI who is visually impaired has also helped her understand the needs and expectations for students with visual impairments. She stated “learning from the TVI and watching what she is able to do and that no one is following her around” has helped the paraprofessional in her own understanding. In addition to experience, she is currently taking education classes. These classes have provided her with an understanding of child development that she is able to apply to support of the student.

Cross Case Analysis

The format for the cross case analysis will be guided by the research questions. Classroom observations provide the data used to answer research questions 1-4.

Demographic information, scenario questions, and interviews provided the data necessary to answer question 5.

Question 1: What are the types of interactions that occur between a student with a visual impairment and the paraprofessional?

To answer this question, data from classroom observations was obtained specifically looking at types of interactions that occurred between students with a visual impairment, peers, teachers, and paraprofessionals. The total number of interactions between students with visual impairments and paraprofessionals were 558 which, is 52.30% of the total number of interactions as seen in Table 17. In Table 18, the categories of types of interactions by interaction participant, initiated by either partner, show that the majority of the type of interaction that took place between students and paraprofessionals were directives/comments (64.87%). Questions made up 29.93% of the interactions, followed by redirection (4.66%), and social (.54%). No requests for help occurred between students and paraprofessionals. As seen in Table J6 in Appendix J, students initiated 31.56% of the total directive/comment interactions and paraprofessionals initiated 42.51% of the interactions. Students initiated 33.33% of the question interactions and paraprofessionals initiated 39.93% of the interactions. Students initiated no redirection interactions and paraprofessionals initiated 92.86% redirection interactions. Of the total number of social interactions, students initiated 43.9% while paraprofessionals initiated 7.32%.

Question 2: What percentage of interactions between paraprofessionals and students with visual impairments are student initiated?

As seen from Question 1 and Table 17, the total number of interactions between students with visual impairments and paraprofessionals were 558, which is 52.30% of the total number of interactions. A chi-square statistic was inappropriate for use in determining a relationship between who initiated the interaction and who participated in the interaction due to the number of cells with structural zeros, however, the computed contingency table provides useful data for exploring what might be occurring in the classroom. According to Table 19, the percentage of interactions with paraprofessionals that students initiated was 20.07%. Paraprofessionals initiated the interactions 79.75% of the time. Also of note is that teachers were more likely to initiate interactions with students (71.91%) than students were to initiate with teachers (28.09%).

Question 3: Do paraprofessionals maintain different distances from students with visual impairments across three different observation settings?

To answer this question a chi-square test was applied to the data for the variables proximity and classroom activity setting. The data in Table 20 shows that paraprofessionals were more often near to students during both structured activities (67.52%) and semi-structured activities (64.21%) than distant. Paraprofessionals were more likely to be distant from students during unstructured activities (52.27%). This chi-square test of the data from the four case studies showed no significance between proximity and classroom activity setting (therefore it is not included in Appendix J) even though three of the four case studies did show significance (see Appendices F-I).

Table 17

Interaction Totals and Paraprofessional Proximity Percentages Across Cases

	Total Interactions (1067)	Proximity: Near	Proximity: Distant
Setting			
Structured	10.97 (117)	67.52 (79)	32.48 (38)
Semistructured	72.54 (774)	64.21 (497)	35.79 (277)
Unstructured	16.49 (176)	47.73 (84)	52.27 (92)
Interaction Participant			
Teacher	22.02 (235)	19.15 (45)	80.85 (190)
Peer	20.34 (217)	42.86 (93)	57.14 (124)
Paraprofessional	52.30 (558)	90.86 (507)	9.14 (51)
Other	5.34 (57)	26.32 (15)	73.68 (42)
Interaction Initiator			
Student	31.68 (338)	49.41 (167)	50.59 (171)
Teacher	15.84 (169)	21.30 (36)	78.70 (133)
Peer	10.31 (110)	41.82 (46)	58.18 (64)
Paraprofessional	41.71 (445)	92.36 (411)	7.64 (34)
Other	0.47 (5)	—	100.00 (5)

Table 17 (Continued)

	Total Interactions (1067)	Proximity: Near	Proximity: Distant
Type			
Question	28.04 (303)	63.04 (191)	36.96 (112)
Comment/Directive	65.04 (694)	62.25 (432)	37.75 (262)
Request for Help	0.09 (1)	—	100.00 (1)
Redirection	2.62 (28)	92.86 (26)	7.14 (2)
Social	3.84 (41)	26.83 (11)	73.17 (30)
Proximity			
Near	61.86 (660)		
Distant	38.14 (407)		

Note. Dashes indicate no observed data. Blank cells indicate no expected data.

Table 18

Percentage of Types of Interactions by Interaction Participants Across Cases

Interaction Participant	Type of Interaction					Total
	Question	Directive/ Comment	Request for Help	Redirection	Social	
Teacher	33.62	60.85	—	.85	4.68	22.02
Peer	21.66	69.12	.46	—	8.76	20.34
Paraprofessional	29.93	64.87	—	4.66	.54	52.30
Other	17.54	68.42	—	—	14.04	5.34

Note. Dashes indicate no observed data.

Note. Blank cells indicate no expected data.

Table 20

Proximity by Classroom Activity Setting Chi-square Table Across Cases

	Classroom Activity Setting			Total
	Structured (n=117)	Semi-structured (n=774)	Unstructured (n=176)	
Proximity				
Near (n=660)				
Row	11.97%	75.30%	12.73%	100%
Column	67.52%	64.21%	47.73%	
Distant (n=407)				
Row	9.34%	68.06%	22.60%	100%
Column	32.48%	35.79%	52.27%	
Total	100%	100%	100%	

Note. χ^2 (2, N = 1067) = 18.3028, $p < .0001$, $V = .1310$.

Question 4: When the paraprofessional is closer, is there less interaction between the student and a) the classroom teacher and/or b) other students?

The classroom observation data included determining the proximity of the paraprofessionals during each interaction. To help determine if the proximity of paraprofessionals had any relationship to student interactions with peers and teachers within the classroom, a chi-square test was applied. Table 21 (Appendix J, Table J1) shows the result of the chi-square test for the relationship between proximity and participant interactions. The relationship between proximity and interaction participants was statistically significant, $\chi^2 (3, N = 1067) = 444.3226, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .6453, which indicates a strong relationship between proximity and who participated in an interaction. When paraprofessionals were near to students, teachers interacted with students 19.15% of the time, however, they were more likely to interact with students when paraprofessionals were at a distance (80.85%). The data for peer interactions showed a similar trend, with peers more likely to interact with students when paraprofessionals were distant (57.14%) than when paraprofessionals were near to students (42.86%).

In addition to a relationship between proximity and interaction participants, a significant relationship also exists between proximity and who initiated the interaction. Table 22 (Appendix J, Table J2) shows the relationship between proximity and interaction initiators was statistically significant, $\chi^2 (4, N = 1067) = 342.3145, p < .0001$. As indexed by Cramer's statistic, the strength of the relationship was .5664. When

Table 21 (Table J1)

Proximity by Interaction Participants Chi-square Table Across Cases

		Interaction Participants				
		Teacher	Peer	Paraprofessional	Other	
Proximity		(n=235)	(n=217)	(n=558)	(n=57)	Total
Near						
(n=660)						
Row		6.82%	14.09%	76.82%	2.27%	100%
Column		19.15%	42.86%	90.86%	26.32%	
Distant						
(n=407)						
Row		46.68%	30.47%	12.53%	10.32%	100%
Column		80.85%	57.14%	9.14%	73.68%	
Total		100%	100%	100%	100%	

Note. $\chi^2 (3, N = 1067) = 444.3226, p < .0001, V = .6453.$

Table 22 (Table J2)

Proximity by Interaction Initiator Chi-square Table Across Cases

		Interaction Initiator					Total
		Student (n=338)	Teacher (n=169)	Peer (n=110)	Paraprofessional (n=445)	Other (n=5)	
Near (n=660)							
Row		25.30%	5.45 %	6.97%	62.27%	—	100%
Column		49.41%	21.30%	41.82%	92.36%	—	
Distant (n=407)							
Row		42.01%	32.68%	15.72%	8.35%	1.23%	100%
Column		50.59%	78.70%	58.18%	7.64%	100.00%	
Total		100%	100%	100%	100%	100%	

Note. $\chi^2 (4, N = 1067) = 342.3145, p < .0001, V = .5664$. Dashes indicate no observed data.

paraprofessionals were at a distance, students (50.59%), teachers (78.70%), and peers (58.18%) were more likely to initiate an interaction.

Question 5: How do paraprofessionals decide to interact with a student with a visual impairment?

Various sources of information were obtained to try to determine what might influence a paraprofessional's decision to interact with a student. Factors considered that might influence decision making were student's age, grade level, degree of visual impairment, paraprofessional experience and education level, what paraprofessionals viewed as job responsibilities, paraprofessionals' beliefs about their effectiveness in helping a student learn. To explore these factors, the researcher used data from student and paraprofessional demographics, as well as paraprofessional responses to job responsibilities, reactions to situational scenarios, and beliefs about their effectiveness in helping students learn.

Student demographics. One set of factors that might influence when paraprofessionals interact with students is student characteristics. Table 23 displays the demographic information obtained for each student. Only one paraprofessional specifically discussed the age of the student as a factor in how and why she interacted with the student. She had previously worked with an eighth grade student who was more independent than the first grade student with whom she currently worked. When initially working with the first grader, she interacted very little, however, she increased the amount and type of interaction with the student as she became aware of the need for more support for the first grader compared to the eighth grader. She was also the

Table 23

Student Demographics

Grade	Age	Diagnosis	Visual Impairment	Age of Onset	% Time in Regular Classroom		Additional Disabilities
					Onset	Classroom	
1	7	Retinopathy of Prematurity	R eye: NIL L eye: LP	Birth	70%		None
3	10	Optic Nerve Hypoplasia	R eye: NIL L eye: NIL	Birth	53%		Agenesis of the corpus callosum; Receiving Speech and Language services
5	12	Optic Nerve Hypoplasia	R eye: HM L eye: LP	Birth	63%		None
7	13	sclerocornea, glaucoma, aphakia, keratoplasty, tarsorrhaphy	R eye: NIL L eye: LP	Birth	Attends 2 spec. ed. classes. 40-70% in regular class.		None

Table 24

Paraprofessional Demographics

	Case 1	Case 2	Case 3	Case 4
Age	60+	59	54	24
Gender	f	f	f	f
Ethnicity	w	w	w	w
Level of Education	BS + graduate courses	Some college	2 years college	AA +20
VI Specific Skills Training				
Human Guide	x	x	x	x
Braille	x	x	x	x
Adaptive Technology	x	x	x	x
O&M	x		x	
Eye Conditions	x	x	x	
Communication Skills	x		x	
Social Skills			x	
Low Vision Training	x		x	
Tactile Graphics	x		x	
Optical Devices	x	x		

Table 24 (Continued)

	Case 1	Case 2	Case 3	Case 4
Additional Areas of Training				
Child Development	x			x
Working with a team			x	x
Understanding IEPs	x	x	x	x
Computer skills	x			
Sexual Harassment		x		
CPR/First Aid		x	x	x
CIT Training - lifting			x	
HANDLE - Holistic Approach to				
Neurological Developmental			x	
Learning Efficiency				
How Training Received				
Employer In-Service	x	x	x	x
One-on-one Training from a professional	x	x	x	x
Workshops	x	x	x	
Correspondence Courses			x	
University Courses	x			x

Table 24 (Continued)

	Case 1	Case 2	Case 3	Case 4
Amount of Training Specific to VI	VI cert.	5-10 hrs. at least	3 1/2 yrs on job	3 yrs on job
Years Experience as Parapro	6 yrs	8 yrs	19.5 yrs	3 yrs
Years Experience as VI Parapro	6 yrs	3 yrs	3.5 yrs	3 yrs

paraprofessional who had less than three years experience with her current student. All the paraprofessionals viewed their students as individuals, and only one indicated that student demographics influenced their decision for interacting with the students.

Paraprofessional demographics. During the interviews with the paraprofessionals, demographic as well as training information was obtained. Table 24 displays the information obtained. All the paraprofessionals were white females. Three of the four were over fifty and one was in her twenties. The level of education ranged from some college to two graduate courses short of a Master's degree. Each paraprofessional specified different types of training, however, all had had training specific to visual impairment in the areas of human guide, braille, and tactile graphics. They indicated that training was most often obtained through university training (n = 2), employer in-service (n = 4), or one-on-one with the teacher of the visually impaired (n = 4). The years of experience working with students with visual impairments ranged from three to six years. However, one paraprofessional had 19.5 years of experience working as a paraprofessional in a multihandicapped classroom that included students with behavioral disabilities. She believed that experience has helped her in working with her current student. "I think that was a world of experience. Made me understand [about] the variety, not necessarily of disabilities, but the variety of approaches." That experience helped her deal with the following situation.

I have been with him for almost 3 years so that's why it's exciting for me to remember when I started with him and emotionally he couldn't even handle [it]. And he would have times where he would take his spacer (eye spacer) out. He

was testing, he was just testing clear across the board. Your first experience, he's sitting on the floor, story time, and there's a lot of games in the classroom. So he's sitting crossed legged and he hands me something and I put my hand out and I'm looking at this and it looked like a game piece and I really wasn't quite sure what I was looking at and then I realized that he had pulled it [eye spacer] out and [I] never had this experience before, new experience, you learn as you go. So we went up to the nurse, she didn't know what to do either. Called the parents. Said to put it in a bag and send it home with him. It wasn't that big a deal but again it was not an experience I had had. Because he had gotten a reaction, he'd start doing that again. Pretty soon, I just stick it [eye spacer] in a baggy, he didn't get to go to the nurse so "okay I'm not getting anywhere with this" so he moved on to other things. It was learning the student, learning how to react, when to react, when not to.

Job Responsibilities

The input received from the paraprofessionals about their job responsibilities showed many similarities but also some variations, which could influence their interactions with students. No paraprofessional directly associated her job responsibility with her interaction with the student. All the paraprofessionals indicated that a large portion of their job was to modify, adapt, and braille material necessary for the student's educational program. All the paraprofessionals also indicated that they provide student support, however, they differed on what was considered student support. Two of the paraprofessionals indicated specific activities during which they provided student

support, such as providing technology assistance or going to PE. The other two paraprofessionals considered student support to be more general, such as anything the student might need help with at any time. Those two paraprofessionals also indicated they had school supervisory responsibilities, such as playground duty, lunch duty, and bus duty. Intuitively, the two paraprofessionals who defined student support more broadly, would also interact more often with the student, however, even though the data showed they do interact at a high level (54.47% and 47.43% from Tables 1 and 13 respectively), one paraprofessional who defined student support more narrowly had an even higher level of interaction (64.33% from Table 9). The three paraprofessionals with the highest percentage of interactions also indicated that part of their job was to reinforce skills. The paraprofessional (Case Study 2) with the lowest percentage of interaction (43.68% from Table 5) with the student did not indicate she reinforced skills or had supervisory responsibilities and was very specific about when she provided student support.

Responses to Scenarios

The video taped scenarios were used to help identify possible influences on the ways a paraprofessional decided to interact with a student by asking their opinions about the interactions that do or do not take place in the scenarios. The paraprofessionals watched each pair of five different scenarios and were then asked which one of the pair represented how they would handle the situation most closely and why. For all scenarios across all the paraprofessionals, the reasons for their reactions centered around promoting student independence, self-advocacy, and development of peer relationships. Other factors that may have influenced their decision to interact came from past experiences

such as one paraprofessional who was raised in an environment where a child with a disability was enabled. Another paraprofessional discussed the importance of teaching manners in response to the interaction taking place between the student and the paraprofessional in the O&M scenario. Another factor imparted by a paraprofessional was her experience of being blindfolded and having someone take over including pulling her along when walking. She indicated that because of that experience she would never do that to a student. These are just a few of the experiences that the paraprofessionals had that seem to influence their decision to interact or not interact with their students.

Effectiveness

The final source of information about possible influences for deciding to interact with a student came from the paraprofessionals' responses to the interview questions about effectiveness in helping students learn. All the paraprofessionals agreed that their effectiveness with students has changed from when they first started working with their student to the present. The majority indicated that the change has been a result of the experience working with their student. Two paraprofessionals indicated that university courses changed their effectiveness with working with the student and one indicated that past paraprofessional experience helped her to be more effective working with the student. All the paraprofessionals felt they were effective in helping their students learn by promoting independence, whether by stepping back or actively promoting problem solving. One dilemma for paraprofessionals in deciding when to interact with their student seemed to be whether the goal was to let the student be independent or if it was to help the student learn to problem solve as a process toward independence. If the goal was

for the student to be independent, the paraprofessional tended to not interact. If the goal was to promote problem solving, the paraprofessional would be more likely to interact to provide guidance. All the paraprofessionals also indicated that they needed to work on stepping back more. As they approach their students, they may decide not to interact based on the fact that they felt they needed to step back more and let the student be more independent. One paraprofessional indicated that she actively questions her actions to determine if she is helping or interfering with student learning.

Conclusion

The cross case analysis was used to help answer the research questions that guided the study. Through the classroom observations that included 1067 observed interactions, the type of interaction that occurred most frequently between paraprofessionals and students was directive/comment. Students initiated 20.07% of interactions with paraprofessionals, whereas paraprofessionals initiated 79.75% of the interactions. Paraprofessionals tended to be near to students during structured and semi-structured times and more often distant during unstructured times such as transitioning between subjects. The proximity of paraprofessionals did have a relationship to the level of interactions between students, peers, and teachers with more interaction occurring when paraprofessionals were distant.

The process for deciding to interact or not to interact with a student is a complicated process. The data collected by way of demographics and interviews helped to identify some factors that might influence how paraprofessionals decide to interact or not. Some of the factors identified were the amount of experience working with a

particular student, how paraprofessionals identify their roles and responsibilities, past personal experiences such as growing up with a sibling who had a disability, as well as formal education such as child development classes.

The results of the research suggest that a relationship exists between the proximity of paraprofessionals in the regular education classroom and the interactions that occur between students with visual impairments, peers, and teachers. The data also indicated that the decision making process is complicated and will need further exploration in order to provide information that will help in the development of a best model for using paraprofessionals with students with visual impairments.

CHAPTER 5

DISCUSSION

This study was conducted to understand two aspects of the employment of paraprofessionals with students with visual impairments: 1) the effect on classroom interactions between students, peers, and teachers when a student with a visual impairment is assigned a one-on-one paraprofessional, and 2) the factors that influence how and why a paraprofessional decides to interact with a student. The researcher used the case study method, employing various methods of data collection. The results of this study were obtained through classroom observations, interviews, and demographic information and are presented in the form of four case studies and a cross case analysis in the previous chapter. In this chapter, the significance for practice, limitations of the study, and implications for future research are discussed.

Significance for Practice

Paraprofessional Proximity

This study provided data relative to aspects of paraprofessionals working with students with visual impairments that were alluded to in research reported in the literature, but not fully explored. Giangreco, et. al. (1997) observed in classrooms with students who were deaf-blind and found that paraprofessionals were in close proximity to students on a regular basis. From these observations, possible problems with proximity were identified including an impact on interactions between the student and peers, teacher engagement, and increased dependency on adults. The current study explored the relationship between paraprofessional proximity and the interactions of students with

visual impairments with peers and teachers in the regular education classroom. The chi-square statistics used on the data indicated that there was a significant relationship between who interacted with the student and whether the paraprofessional was near or distant as well as who initiated the interaction and the proximity of the paraprofessional. Most often the larger percentage of interactions between students with visual impairments, peers, and teachers occurred when paraprofessionals were distant, and more initiated interactions between all groups occurred when paraprofessionals were distant. Giangreco, et. al. (1997) indicated that one impact of paraprofessional proximity was that teachers were more likely to hand over responsibility for the student to the paraprofessional, thus having less interaction. Results from this study indicated that teachers were more likely to interact with students when paraprofessionals were at a distance, which supports Giangreco, et. al.'s (1997) conjecture that paraprofessional proximity interferes with "ownership and responsibility by general educators" (p.10). Giangreco, et. al. (1997) also surmised that paraprofessional proximity was related to the interaction between students who were deaf-blind and peers in the regular classroom. The results from this study indicated that peers were less likely to interact with students with visual impairments if paraprofessionals were near to students. This also supports Giangreco, et. al.'s (1997) conjecture that paraprofessional proximity does affect interactions between peers and students.

Employing paraprofessionals to work with students with visual impairments requires careful consideration of the needs of the student. Causton-Theoharis and Malmgren (2005) found that, with specialized training, paraprofessionals were able to

promote student/peer interactions among students with severe disabilities. However, in the current study, the paraprofessional in Case Study 2 had received no specialized training and yet the student and peers interacted (36.4%) over twice as often as the students in the other case studies. This suggests that other factors such as student characteristics, learning environment, type of activity, and paraprofessional characteristics could also affect the interactions that occur in the classroom. Werts, Zigmond, and Leeper (2001) found that paraprofessional propinquity improved academic engagement in primary aged students with disabilities, however, quality of student work was not assessed and after the study was completed, one teacher indicated that the quality of the student's work was poor. Times do exist when paraprofessionals may need to be near to students with visual impairments either for safety or to access information within the classroom. A primary reason for employing paraprofessionals is to promote the educational success of a student with a disability and close proximity of a paraprofessional may be necessary to fulfill this goal. However, students with visual impairments also need instruction and support in the expanded core curriculum, which includes skills for social interaction, independence, and self-determination (Huebner, Merk-Adam, Stryker, & Wolffe, 2004) . The results of this study indicate that close proximity of a paraprofessional may decrease interactions that take place between students with visual impairments, teachers, and peers. The decreased interactions may in turn affect the development of social skills as well as the development of skills for independence. Teachers, administrators, and parents, when deciding on the use of paraprofessionals for students with visual impairments, need to clearly define why the

paraprofessional is needed and specifically indicate how the paraprofessional will be used to meet the student's needs instead of using the general term of "student support".

Paraprofessional Decision Making

Previously mentioned studies focused on determining roles, responsibilities, and training needs for paraprofessionals (Griffin-Shirley & Matlock, 2004; McKenzie & Lewis, 2008) as well as highlighting some key concerns that were observed in classrooms of students who were deaf-blind who were supported by paraprofessionals (Giangreco, et al., 1997). No studies identified in the literature review explored how or why a paraprofessional decides to interact with a student.

All the paraprofessionals in this study had received training on the concrete skills specific for working with students with visual impairments. These skills included braille, O&M techniques, assistive technology, and tactile graphics. However, each paraprofessional had varying levels of training that would help them with abstract skills such as deciding when to interact with a student with a visual impairment or what is meant by "promoting independence".

During the interviews, all the paraprofessionals at some point discussed their responsibility to promote student independence, student self-advocacy, peer relations, or student responsibility. The paraprofessionals gained understanding of these abstract concepts either through training in child development classes or learning through experience, but indicated receiving no specific training in relation to students with visual impairments. As most TVIs know, the education of students with visual impairments involves more than academics and they receive the training necessary to promote the

specialized skills that students need to be effective adults. Paraprofessionals spend more time with students than TVIs, yet receive very little training with the abstract concepts, which are not always reflected in their personal values.

Decision making skills are not something that can be learned routinely in the same way as the concrete skills, such as learning the braille code or rules for using the abacus. Decision making skills come with time and experience. Adopting a different model of paraprofessional training might help with developing decision making skills that reflect the goals for students with visual impairments. Paraprofessionals who work with students with visual impairments receive training in the concrete skills through specific classes or one-on-one training with the TVI. Once the skills are learned the training ends. Decision making skill development is an ongoing process. The paraprofessionals in this study indicated an understanding of the value in promoting student independence, student self-advocacy, peer relations, or student responsibility gained from their previous experience but also described the ongoing process of learning to be more effective in promoting those skills. The paraprofessional from Case Study 3 indicated that even after 19.5 years as a paraprofessional she still struggles with allowing her student to be independent. As with teachers, paraprofessionals need continued opportunity to improve their ability to be effective in helping students with visual impairments learn.

Initial training and continued training can be provided in various ways. Paraprofessionals for students with visual impairments need to receive initial training in the basic skills, such as braille reading and writing or use of technology, as well as an

introduction to skills such as how to promote student independence. This training can be provided by the TVI or within workshops. However, the training for developing decision making skills that will help the paraprofessional be effective in helping their student learn needs to be on-going process. One way to provide on-going training to improve decision making is to include opportunities for self-reflection. One paraprofessional in the study indicated that she was constantly reflecting on whether she did the right thing and then getting feedback and suggestions from the TVI. If paraprofessionals were required to meet regularly with the TVI or other appropriate supervisor as part of their employment to discuss how things are going and to serve as a time to reflect, ask questions, and seek advice, they may become more effective in helping their students learn. Another possible training tool is to use a set of scenarios similar to the ones used in this study and provide questions designed to promote thoughtful consideration about ways to effectively help students learn. The paraprofessional in Case Study 4 indicated that being able to talk to the TVI was very helpful especially since the TVI was a person with a visual impairment. As part of their continued training, providing opportunities for the paraprofessionals to meet and talk with competent adults with a visual impairment could help them with more clearly defining their roles as a paraprofessional working with a student with a visual impairment.

When exploring the use of paraprofessionals with students with visual impairments it is important to reflect on the educational goals for the students. If the goal is to have the student succeed academically, then providing training in the concrete skills would be enough. However, for most students with visual impairments, the goal is to

provide the necessary skills for the student to become a productive adult, which includes being educationally successful, independent, responsible, and social. If that is the ultimate goal, everything we do for students with visual impairments should be central to reaching those goals.

Limitations of the Study

Several limitations exist that may have an impact on the study results. One limitation was the limited number of participants affected the ability to generalize the results. Even using collective case study method, results can not be generalized from one case to another because situations are not exact (Creswell, 2007). However, by using multiple case studies it becomes easier to generalize to “theoretical propositions” (Yin, 1989, p. 21).

Another limitation involved the classroom observation data sheet and the recording of the interactions. At times the ability to hear what was being said during an interaction was limited due to the student and paraprofessional having their heads together to talk so as not to disturb the rest of the class. This affected the ability of the researcher and the second observer to determine the type of interaction taking place and who initiated an interaction especially between the paraprofessional and the student. Also, the data recorded was frequency of interactions without duration for each interaction. Some of the interactions occurred over an extended period because of the activity that was occurring. This could affect the frequency of interactions. For example, one student and paraprofessional had few initial interactions during a math lesson

because the student and paraprofessional had an ongoing interaction throughout the entire lesson.

The results of the interview questions were based on the paraprofessionals' beliefs about themselves, which was how the questions were presented. This belief about what they do in the classroom was not verified through data collection and so a difference may exist between belief and practice.

Extraneous variables may also have affected the results of the study. Classroom placement could affect the number and types of interactions of a student. Classroom placement was not included in the data recorded, however, as a general observation, the students with visual impairments were often seated in an outside row either so the paraprofessional could sit next to them or because the technology being used was next to the wall because of the location of the plug. This limited the ability of the student to interact with peers. Interaction may have been influenced by the specific activity more than the structure of the classroom at the time. For instance, more interactions may have occurred during math than reading because the student needed more assistance from the paraprofessional for math. The student's age could also have an effect on the number and type of interactions. Younger students may need more paraprofessional interaction than older students to provide more support with new skills. The level of the disability may also affect the number and type of interaction. For students with additional disabilities, paraprofessional interaction may increase. These are all variables that could effect the interactions, however, across the four case studies with the varying levels of ages the

results still showed that the near proximity of the paraprofessional reduced the interactions between the students, peers, and teachers.

The study could be strengthened by observing a regular education student within the same classroom and recording the interactions that take place between that student with peers and teachers. By determining whether the teacher is interacting more or less with the student with the visual impairment than with the sighted peers, a better comparison of the affect the paraprofessional has on interactions could be determined.

A final limitation was the effect of explaining the purpose of the study completely to the paraprofessional. This may have influenced the paraprofessional's normal routine with the student by knowing that proximity was an issue being explored during the observations.

Future Research

Continued research with the use of paraprofessionals with students with visual impairments needs to be supported. While the researcher was planning and executing this study, many teachers and principals in the participating schools provided social validity by commenting about the need for research surrounding paraprofessionals. Persons outside the study described situations and questioned whether the current model for providing paraprofessional support was the best model for service.

Many aspects of the model for using paraprofessionals to support students with visual impairments need to be explored. This study focused on observing interactions in the classroom as well as the paraprofessional decision making process. However, because this was self-reported data, there was no verification that what they reported was what

was actually happening in the classroom. Future research should look at their responses and then observe in the classroom to determine if their actions reflect their belief in the value of the abstract concepts such as promoting independence.

Research into the type of interactions that are occurring also needs to be conducted. This study focused on the frequency of interactions and the proximity of the paraprofessional. However, the purpose of the interactions also needs to be explored. The interactions may be a necessary aspect for promoting the educational success of the student.

Research into training for paraprofessionals needs to be explored. Questions to ask include does training increase a paraprofessionals effectiveness when working with students with visual impairments? Also, is training what makes a paraprofessional effective, is it experience, or is it a combination of the two? The decision making process is a complicated and abstract process which is difficult to teach. In prior literature, paraprofessionals indicated they received training by talking to and observing other paraprofessionals that allowed patterns of interactions to continued (Giangreco, et. al., 1997). Whether these patterns of interactions were positive or negative were not discussed, however, is this the best model for training future paraprofessionals? Research needs to be conducted to determine the best models for providing training to paraprofessionals. Activities for training that have been suggested in this study, such as self-reflection, and video tape scenarios, need to be explored to determine if they increase a paraprofessional's ability to work effectively with students.

Conclusion

Learning to work with students with visual impairments takes time. According to the paraprofessionals in this study both general child education and experience help but they all indicated a desire for additional training and feedback to improve their ability to work more effectively. This study showed that the paraprofessionals have the right ideas but did not explore if the paraprofessionals were successful in following through on the ideas. When school districts look at the roles and responsibilities of paraprofessionals are when working with a child with a visual impairment, besides including specifics such as braille, they also need to include promoting independence and promoting social skills. The promotion of independence needs to be further defined so it is clear what independence means for the child. The paraprofessional needs training on how to effectively help students in learning the skills necessary for independence and social . Is there a plan in place for how to promote social skills? Is there training available? Is there training available to help a paraprofessional decide when it is appropriate to interact with the student? In working with the scenario video tapes, I found that the paraprofessionals responded to the situations with thoughtful reasoning. Is this a method for providing some training? One paraprofessional indicated that she conferred with the TVI regularly to get feedback on situations and her response. This may be another approach for training.

The information obtained in this study adds another stone along the path for determining the most efficient way for involving paraprofessionals in the educational programming of students with visual impairments. By exploring what is actually

occurring between paraprofessionals and students in the regular education classroom and the effect it is having on the students, the educational community can develop better training, mentoring, and supervision for the development of a paraprofessional services model that is effective in helping students with visual impairments learn.

APPENDIX A
PARAPROFESSIONAL DEMOGRAPHIC FORM

Paraprofessional Demographics

1. What is your name?
2. What is your age?
3. What is your gender?
4. What is your ethnicity?
5. What is your highest level of education?
6. Have you had training in any of the following VI specific skills? (Can choose all that apply plus add any not listed)
 - Human/Sighted Guide
 - Braille
 - Adaptive Technology
 - Daily Living Skills
 - Orientation and Mobility
 - Eye Conditions
 - Communication Skills
 - Social Skills
 - Low Vision Training
 - Tactile Graphics
 - Optical Devices
7. Have you had training in any additional areas including but not limited to: (Can choose all that apply plus add any not listed)
 - Child Developmental Skills
 - Working within a Team
 - Understanding IEPs
8. How did your receive training? (can chose more than one answer)
 - Employer In-service
 - One-on-one training from a professional
 - Workshops
 - Seminars
 - Correspondence Courses
 - University Course
9. How much training have you received specific to VI?

10. How many years of experience do you have working as a paraprofessional?
11. How many years of experience do you have working as a paraprofessional for students with a visual impairment?
12. Job Responsibilities: Thinking over the last week what have you done as part of your job?

APPENDIX B
STUDENT DEMOGRAPHIC FORM

Student Demographics

Grade: _____ Age: _____

Diagnosis: _____

Degree of Visual Impairment: _____
(e.g., no light perception, object perception, light perception, acuity, field loss)

Age of Onset: _____

Additional Disabilities: _____

Percent of Time in Regular Classroom: _____

APPENDIX C

CLASSROOM OBSERVATION FORM AND OBSERVATION CODES

Observation Codes

Initiated Interaction

- Considered a new interaction if there is a 5 second break between interactions.
- Teacher interaction only if specific to VI student, not to whole class or to group of students.
- New interaction if changes person interacting with.
- Can be non-verbal. Examples include moving students hands to book or braille, or touching student's shoulder to redirect behavior.

Classroom Activity Setting

S - Structured Class Time – Teacher instruction time with no peer interaction expected.

SS – Semistructured Class Time – Instructional time that is not strictly teacher instruction. For example group or partner activity, or silent work time. Any instructional activity that is not strictly teacher instructional time.

US – Unstructured Class Time – No instructional activity taking place. Examples include transition time, clean up, recess, lunch.

Interaction Participant/Interaction Initiator

T – Teacher – Classroom teacher, music teacher, art teacher, etc.

P – Peer – Any classmate

A – Aide – Paraprofessional assigned to student

S – Student – Student with visual impairment who is study participant

O – Other – Directed at no one in particular, but not talking to self (i.e. reading out loud to self). Also includes others who are not a regular part of the classroom such as parent helpers.

Type of Interaction

Q – Question – academic or classroom related question

D – Directive/Statement/Comment –an interaction that is not any of the other specific types. Can be verbal or nonverbal. Does not include silent reading that is being verbalized. Academic or classroom related. Does not include social questions or statements.

RQ – Request for Help – can be in the form of a question (Can you help me?) or statement (I need help. / I don't know how to do this.)

R – Redirection – can be verbal or no-verbal such as placing hand back on braille reading page.

S – Social – any topic that is not specific to academics. Can include a student saying “hi” in greeting.

UK – Unknown – unable to determine what type of interaction occurred.

Proximity

Near Proximity –

- 1) paraprofessional making physical contact with student
- 2) sitting in chair immediately next to student
- 3) standing or kneeling next to student's desk or table.

Distant Proximity – anything other than definitions for Near Proximity. Includes times when paraprofessional may be out of the room.

APPENDIX D
INTERVIEW PROTOCOL

Paraprofessional Interviews

Scenario Questions

1. Would you handle the situation like the paraprofessional in the first video or the second video?
2. Please tell me why you would react that way.
3. Do you think you would have responded differently when you first started working with this student? Why or why not?
4. Is there anything else you want to say about these scenarios?

General Interaction Questions

1. How are you effective in helping your student in learning?
2. In what ways do you need to work to become more effective?
3. Has the way you interact with the student changed with your experience in the paraprofessional role? How has it changed? If it has changed do you feel that it is a result of experience, training, or something else?

APPENDIX E
VIDEOTAPED SCENARIO DESCRIPTIONS

Scenario Descriptions

The scenarios that were shown to each paraprofessional were developed based on personal experience of working with paraprofessionals during my career. Each set of scenarios consists of the same set of circumstances but demonstrating different ways of dealing with the situation. Each paraprofessional was told that the scenarios take place in the middle of the school year in the regular education classroom and that the students are middle school (6th grade) age. I also made sure the paraprofessionals knew who the braille student was and who the regular education peer was. At times the sound was too low to hear what was being said so I would explain what was being said. The same set of questions was asked following each set of scenarios. The paraprofessional was allowed to re-watch the scenarios as much as needed.

Abacus Scenario: The general circumstance for scenario one was a regular education peer picked up the vision student's abacus without asking so that the vision student didn't know where it was when he needed it.

1. The first video depicted the vision student searching for the abacus. The paraprofessional went to the peer and whispered for him to return the abacus. He did so without saying anything to the vision student. The vision student had stopped searching for the abacus and did not realize it had been returned.
2. The second video again depicted the peer picking up the abacus without saying anything and the vision student searching for it. This time the paraprofessional whispered to the vision student that the peer had the abacus. The vision student then asked the peer for his abacus back.

Getting Paper Scenario: The general circumstance for scenario two was the vision student needed to get braille paper for an assignment.

1. In the first video the student independently crosses the room to get braille paper.
2. The second video shows the paraprofessional physically assisting the vision student in getting the braille paper.

Orientation and Mobility Scenario: The general circumstance for scenario three is the vision student is walking in a hallway with his cane and encounters people standing and talking in the hallway.

1. In the first video, the paraprofessional stops the vision student prior to encountering the people in the hallway, to discuss what he needs to do.
2. The second video shows the student walking straight through the people talking in the hallway as the paraprofessional watches.

Snack Time Scenario: The general circumstance for scenario four is set at snack time with the students having a drink and food snack.

1. The first video shows the students having snack. The paraprofessional offers no assistance to the vision student.

2. In the second video the paraprofessional does everything for the vision student including opening the drink and crackers.

Spelling a Word Scenario: The general circumstance for scenario five is the class is reading silently and the vision student needs help with a word.

1. In the first video the vision student asks out loud what the word is. The peer asks how to spell it and as the vision student begins to spell it the paraprofessional steps in and tells him the word.
2. In the second video the vision student asks what a word is. he peer asks how to spell it and then tells the vision student what it is.

APPENDIX F
CHI-SQUARE TABLES CASE STUDY 1

Table F1 (Table 2 In Text)

Proximity by Interaction Participant 2x4 Chi-square Table

		Interaction Participants				
		Teacher	Peer	Paraprofessional	Other	
Proximity		(n=29)	(n=13)	(n=67)	(n=14)	Total
Near						
(n=69)						
Row		4.35%	1.45%	94.20%	—	100%
Column		10.34%	7.69%	97.01%	—	
Distant						
(n=54)						
Row		48.15%	22.22%	3.70%	25.93%	100%
Column		89.66%	92.31%	2.99%	100%	
Total		100%	100%	100%	100%	

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction participants was significant, $\chi^2 (3, N = 123) = 100.4525, p < .0001, V = .9037$.

Table F2

Proximity by Classroom Activity Setting 2x3 Chi-square Table

	Classroom Activity Setting			Total
	Structured (n=44)	Semi-structured (n=73)	Unstructured (n=6)	
<hr/>				
Near (n=69)				
Row	52.17%	40.58%	7.25%	100%
Column	81.82%	38.36%	83.33%	
Distant (n=54)				
Row	14.81%	83.33%	1.85%	100%
Column	18.18%	61.64%	16.67%	
Total	100%	100%	100%	

Note. A 2x3 chi-square test indicated that the relationship between proximity and the classroom activity setting was significant, $\chi^2 (2, N = 123) = 22.9559, p < .0001, V = .4320$.

Table F3 (Table 3 In Text)

Proximity by Interaction Initiator 2x4 Chi-square Table

	Interaction Initiator				Total
	Student (n=48)	Teacher (n=15)	Peer (n=0)	Paraprofessional (n=60)	
<hr/>					
Near (n=69)					
Row	13.04%	2.90%	—	84.06%	100%
Column	18.75%	13.33%	—	96.67%	
<hr/>					
Distant (n=54)					
Row	72.22%	24.07%	—	3.70%	100%
Column	81.25%	86.67%	—	3.33%	
Total	100%	100%	—	100%	

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction initiator was significant, $\chi^2 (2, N = 123) = 78.4203, p < .0001, V = .7985$.

Table F4

Interaction Initiator by Type of Interaction 4x5 Chi-square Table

	Type of Interaction					Total
	Question (n=27)	Directive/ Comment (n=93)	Request for Help (n=0)	Redirection (n=1)	Social (n=2)	
Student (n=48)						
Row	22.92%	75.00%	—	—	2.08%	100%
Column	40.74%	38.71%	—	—	50.00%	
Teacher (n=15)						
Row	73.33%	20.00%	—	—	6.67%	100%
Column	40.74%	3.23%	—	—	50.00%	
Peer (n=0)						
Row	—	—	—	—	—	
Column	—	—	—	—	—	
Paraprofessional (n=60)						
Row	8.33%	90.00%	—	1.67%	—	100%
Column	18.52%	58.06%	—	100%	—	
Total	100%	100%		100%	100%	

Note. A 4x5 chi-square test indicated that the relationship between the interaction initiator and type of interaction was significant, $\chi^2 (6, N = 123) = 35.3420, p < .0001, V = .3790$.

APPENDIX G

CHI-SQUARE TABLES CASE STUDY 2

Table G1 (Table 6 In Text)

Proximity by Interaction Participants 2x4 Chi-square Table

		Interaction Participants				
		Teacher	Peer	Paraprofessional	Other	Total
Proximity		(n=35)	(n=95)	(n=114)	(n=17)	
Near						
(n=179)						
Row		5.59%	30.17%	56.42%	7.82%	100%
Column		28.57%	56.84%	88.60%	82.35%	
Distant						
(n=82)						
Row		30.49%	50.00%	15.85%	3.66%	100%
Column		71.43%	43.16%	11.40%	17.65%	
Total		100%	100%	100%	100%	

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction participants was significant, $\chi^2(3, N = 261) = 54.7701, p < .0001, V = .4581$.

Table G2

Proximity by Classroom Activity Setting 2x3 Chi-square Table

	Classroom Activity Setting			Total
	Structured (n=14)	Semi-structured (n=198)	Unstructured (n=49)	
Near (n=179)				
Row	2.79%	84.92%	12.29%	100%
Column	35.71%	76.77%	44.90%	
Distant (n=82)				
Row	10.98%	56.10%	32.93%	100%
Column	64.29%	23.23%	55.10%	
Total	100%	100%	100%	

Note. A 2x3 chi-square test indicated that the relationship between proximity and the classroom activity setting was significant, $\chi^2(2, N = 261) = 25.9326, p < .0001, V = .3152$.

Table G3 (Table 7 In Text)

Proximity by Interaction Initiator 2x4 Chi-square Table

		Interaction Initiator				
		Student	Teacher	Peer	Paraprofessional	Total
Proximity		(n=148)	(n=10)	(n=37)	(n=66)	
Near						
(n=179)						
Row		55.31%	1.12%	10.61%	32.96%	100%
Column		66.89%	20.00%	51.35%	89.39%	
Distant						
(n=82)						
Row		59.76%	9.76%	21.95%	8.54%	100%
Column		33.11%	80.00%	48.65%	10.61%	
Total		100%	100%	100%	100%	

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction initiator was significant, $\chi^2 (3, N = 261) = 29.5156, p < .0001, V = .3363$.

Table G4

Proximity by Type of Interaction 2x5 Chi-square Table

	Type of Interaction					Total
	Question (n=84)	Directive/ Comment (n=157)	Request for Help (n=0)	Redirection (n=0)	Social (n=20)	
Proximity						
Near (n=179)						
Row	33.52%	61.45%	—	—	5.03%	100%
Column	71.43%	70.06%	—	—	45.00%	
Distant (n=82)						
Row	29.27%	57.32%	—	—	13.41%	100%
Column	28.57%	29.94%	—	—	55.00%	
Total	100%	100%			100%	

Note. A 2x5 chi-square test indicated that the relationship between proximity and the type of initiated interaction was significant, $\chi^2 (2, N = 261) = 5.6377, p < .0597, V = .1470$.

Table G5

Classroom Activity Setting by Interaction Participants 3x4 Chi-square Table

Interaction Participants					
Classroom					
Activity	Teacher	Peer	Paraprofessional	Other	
Setting	(n=35)	(n=95)	(n=114)	(n=17)	Total
Structured (n=44)					
Row	42.86%	14.29%	35.71%	7.14%	100%
Column	17.14%	2.11%	4.39%	5.88%	
Semi- structured (n=73)					
Row	7.07%	39.90%	46.46%	6.57%	100%
Column	40.00%	83.16%	80.70%	76.47%	
Unstructured (n=6)					
Row	30.61%	28.57%	34.69%	6.12%	100%
Column	42.86%	14.74%	14.91%	17.65%	
Total	100%	100%	100%	100%	

Note. A 3x4 chi-square test indicated that the relationship between the classroom activity setting and interaction participants was significant, $\chi^2 (6, N = 261) = 30.6530, p < .0001, V = .2423$.

Table G6

Classroom Activity Setting by Interaction Initiator 3x4 Chi-square Table

Classroom	Interaction Initiator				Total
	Student (n=148)	Teacher (n=10)	Peer (n=37)	Paraprofessional (n=66)	
Structured (n=44)					
Row	50.00%	21.43%	7.14%	21.43%	100%
Column	4.73%	30.00%	2.70%	4.55%	
Semi-structured (n=73)					
Row	56.06%	1.52%	16.67%	25.76%	100%
Column	75.00%	30.00%	89.19%	77.27%	
Unstructured (n=6)					
Row	61.22%	8.16%	6.12%	24.49%	100%
Column	20.27%	40.00%	8.11%	18.18%	
Total	100%	100%	100%	100%	

Note. A 3x4 chi-square test indicated that the relationship between the classroom activity setting and the interaction initiator was significant, $\chi^2 (6, N = 261) = 20.4983, p < .0023, V = .1982.$

Table G7

Interaction Initiator by Type of Interaction 4x5 Chi-square Table

	Type of Interaction					Total
	Question (n=84)	Directive/ Comment (n=157)	Request for Help (n=0)	Redirection (n=0)	Social (n=20)	
Student (n=148)						
Row	35.14%	57.43%	—	—	7.43%	100%
Column	61.90%	54.14%	—	—	55.00%	
Teacher (n=10)						
Row	20.00%	70.00%	—	—	10.00%	100%
Column	2.38%	4.46%	—	—	5.00%	
Peer (n=37)						
Row	16.22%	67.57%	—	—	16.22%	100%
Column	7.14%	15.92%	—	—	30.00%	
Paraprofessional (n=66)						
Row	36.36%	60.61%	—	—	3.03%	100%
Column	28.57%	25.48%	—	—	10.00%	
Total	100%	100%			100%	

Note. A 4x5 chi-square test indicated that the relationship between the interaction initiator and type of interaction was significant, $\chi^2 (6, N = 261) = 10.2974, p < .1127, V = .1405$.

APPENDIX H
CHI-SQUARE TABLES CASE STUDY 3

Table H1 (Table 10 In Text)

Proximity by Interaction Participants 2x4 Chi-square Table

		Interaction Participants				
		Teacher	Peer	Paraprofessional	Other	
Proximity		(n=68)	(n=44)	(n=202)	(n=0)	Total
Near						
(n=259)						
Row		10.42%	11.97%	77.61%	—	100%
Column		39.71%	70.45%	99.50%	—	
Distant						
(n=55)						
Row		74.55%	23.64%	1.82%	—	100%
Column		60.29%	29.55%	.50%	—	
Total		100%	100%	100%		

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction participants was significant, $\chi^2 (2, N = 314) = 131.0416, p < .0001, V = .6460$.

Table H2

Proximity by Classroom Activity Setting 2x3 Chi-square Table

	Classroom Activity Setting			Total
	Structured (n=22)	Semi-structured (n=258)	Unstructured (n=34)	
Near (n=259)				
Row	7.34%	81.85%	10.81%	100%
Column	86.36%	82.17%	82.35%	
Distant (n=55)				
Row	5.45%	83.64%	10.91%	100%
Column	13.64%	17.83%	17.65%	
Total	100%	100%	100%	

Note. A 2x3 chi-square test indicated that the relationship between proximity and the classroom activity setting was significant, $\chi^2(2, N = 314) = .2471, p < .8838, V = .0281$.

Table H3 (Table 11 In Text)

Proximity by Interaction Initiator 2x4 Chi-square Table

		Interaction Initiator				
		Student	Teacher	Peer	Paraprofessional	
Proximity		(n=32)	(n=66)	(n=34)	(n=182)	Total
Near						
(n=259)						
Row		11.20%	10.42%	8.49%	69.88%	100%
Column		90.63%	40.91%	64.71%	99.45%	
Distant						
(n=55)						
Row		5.45%	70.91%	21.82%	1.82%	100%
Column		9.38%	59.09%	35.29%	.55%	
Total		100%	100%	100%	100%	

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction initiator was significant, $\chi^2 (3, N = 314) = 124.1274, p < .0001, V = .6287$.

Table H4

Proximity by Type of Interaction 2x5 Chi-square Table

	Type of Interaction					Total
	Question (n=80)	Directive/ Comment (n=211)	Request for Help (n=0)	Redirection (n=21)	Social (n=2)	
Near (n=259)						
Row	22.78%	68.73%	—	7.72%	.77%	100%
Column	73.75%	84.36%	—	95.24%	100%	
Distant (n=55)						
Row	38.18%	60.00%	—	1.82%	—	100%
Column	26.25%	15.64%	—	4.76%	—	
Total	100%	100%		100%	100%	

Note. A 2x5 chi-square test indicated that the relationship between proximity and the type of initiated interaction was significant, $\chi^2 (3, N = 314) = 7.5271, p < .0569, V = .1548$.

Table H5

Interaction Participants by Type of Interaction 4x5 Chi-square Table

	Type of Interaction					Total
	Question (n=80)	Directive/ Comment (n=211)	Request for Help (n=0)	Redirection (n=21)	Social (n=2)	
Teacher (n=68)						
Row	44.12%	54.41%	—	1.47%	—	100%
Column	37.50%	17.54%	—	4.76%	—	
Peer (n=44)						
Row	22.73%	75.00%	—	—	2.27%	100%
Column	12.50%	15.64%	—	—	50.00%	
Paraprofessional (n=202)						
Row	19.80%	69.80%	—	9.90%	.50%	100%
Column	50.00%	66.82%	—	95.24%	50.00%	
Other (n=0)						
Row	—	—	—	—	—	100%
Column	—	—	—	—	—	
Total	100%	100%		100%	100%	

Note. A 4x5 chi-square test indicated that the relationship between the interaction participant and type of interaction was significant, $\chi^2 (6, N = 314) = 25.3889, p < .0003, V = .2011.$

Table H6

Interaction initiator by Type of Interaction 4x5 Chi-square Table

	Type of Interaction					Total
	Question (n=80)	Directive/ Comment (n=211)	Request for Help (n=0)	Redirection (n=21)	Social (n=2)	
Student (n=32)						
Row	21.88%	78.13%	—	—	—	100%
Column	8.75%	11.85%	—	—	—	
Teacher (n=66)						
Row	43.94%	54.55%	—	1.52%	—	100%
Column	36.25%	17.06%	—	4.76%	—	
Peer (n=34)						
Row	26.47%	70.59%	—	—	2.94%	100%
Column	11.25%	11.37%	—	—	50.00%	
Paraprofessional (n=182)						
Row	19.23%	69.23%	—	10.99%	.55%	100%
Column	43.75%	59.72%	—	95.24%	50.00%	
Total	100%	100%		100%	100%	

Note. A 4x5 chi-square test indicated that the relationship between the interaction initiator and type of interaction was significant, $\chi^2 (9, N = 314) = 29.6734, p < .0005, V = .1775$.

APPENDIX I

CHI-SQUARE TABLES CASE STUDY 4

Table II (Table 14 In Text)

Proximity by Interaction Participants 2x4 Chi-square Table

		Interaction Participants				
		Teacher	Peer	Paraprofessional	Other	
Proximity		(n=103)	(n=65)	(n=175)	(n=26)	Total
Near						
(n=153)						
Row		3.27%	4.58%	91.50%	.65%	100%
Column		4.85%	10.77%	80.00%	3.85%	
Distant						
(n=216)						
Row		45.37%	26.85%	16.20%	11.57%	100%
Column		95.15%	89.23%	20.00%	96.15%	
Total		100%	100%	100%	100%	

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction participants was significant, $\chi^2 (3, N = 369) = 204.3404, p < .0001, V = .7442$.

Table I2 (Table 15 In Text)

Proximity by Interaction Initiator 2x5 Chi-square Table

		Interaction Initiator					
		Student	Teacher	Peer	Paraprofessional	Other	
Proximity	(n=110)	(n=78)	(n=39)	(n=137)	(n=5)	Total	
Near							
(n=153)							
Row	19.61%	3.27%	3.27%	73.86%	—	100%	
Column	27.27%	6.41%	12.82%	82.48%	—		
Distant							
(n=216)							
Row	37.04%	33.80%	15.74%	11.11%	2.31%	100%	
Column	72.73%	93.59%	87.18%	17.52%	100.00%		
Total	100%	100%	100%	100%	100%		

Note. A 2x5 chi-square test indicated that the relationship between proximity and interaction initiator was significant, $\chi^2(4, N = 369) = 160.3077, p < .0001, V = .6591$.

Table I3

Proximity by Type of Interaction 2x5 Chi-square Table

	Type of Interaction					Total
	Question (n=112)	Directive/ Comment (n=233)	Request for Help (n=1)	Redirection (n=6)	Social (n=17)	
Near (n=153)						
Row	39.22%	57.52%	—	3.26%	—	100%
Column	53.57%	37.77%	—	83.33%	—	
Distant (n=216)						
Row	24.07%	67.13%	.46%	.46%	7.87%	100%
Column	46.43%	62.23%	100.00%	16.67%	100.00%	
Total	100%	100%	100%	100%	100%	

Note. A 2x5 chi-square test indicated that the relationship between proximity and the type of initiated interaction was significant, $\chi^2 (4, N = 369) = 25.1596, p < .0001, V = .2611$.

Table I4

Classroom Activity Setting by Interaction Participants 3x4 Chi-square Table

Interaction Participants					
Classroom					
Activity	Teacher	Peer	Paraprofessional	Other	
Setting	(n=103)	(n=65)	(n=175)	(n=26)	Total
Structured					
(n=37)					
Row	43.24%	—	48.65%	8.11%	100%
Column	15.53%	—	10.29%	11.54%	
Semi-structured					
(n=245)					
Row	28.16%	19.18%	46.53%	6.12%	100%
Column	66.99%	72.31%	65.14%	57.69%	
Unstructured					
(n=87)					
Row	20.69%	20.69%	49.43%	9.20%	100%
Column	17.48%	27.69%	24.57%	30.77%	
Total	100%	100%	100%	100%	

Note. A 3x4 chi-square test indicated that the relationship between the classroom activity setting and interaction participants was significant, $\chi^2 (6, N = 369) = 13.1263, p < .0411, V = .1334$

Table I5

Classroom Activity Setting by Interaction Participants 3x4 Chi-square Table

Classroom	Interaction Initiator					Total
	Student (n=110)	Teacher (n=78)	Peer (n=39)	Paraprofessional (n=137)	Other (n=5)	
Structured (n=37)						
Row	32.43%	29.73%	—	37.84%	—	100%
Column	10.91%	14.10%	—	10.22%	—	
Semi-structured (n=245)						
Row	29.39%	21.22%	10.61%	37.55%	1.22%	100%
Column	65.45%	66.67%	66.67%	67.15%	60.00%	
Unstructured (n=87)						
Row	29.89%	17.24%	14.94%	35.63%	2.30%	100%
Column	23.64%	19.23%	33.33%	22.63%	40.00%	
Total	100%	100%	100%	100%	100%	

Note. A 5x3 chi-square test indicated that the relationship between the classroom activity setting and the interaction initiator was significant, $\chi^2(8, N = 369) = 8.6769, p < .3703, V = .1084$.

Table I6

Classroom Activity Setting by Type of Interaction 3x5 Chi-square Table

Classroom Activity Setting	Type of Interaction					Total
	Question (n=112)	Directive/ Comment (n=233)	Request for Help (n=1)	Redirection (n=6)	Social (n=17)	
Structured (n=37)						
Row	29.74%	64.86%	—	2.70%	2.70%	100%
Column	9.82%	10.30%	—	16.67%	5.88%	
Semi- structured (n=245)						
Row	33.06%	62.45%	—	1.22%	3.27%	100%
Column	72.325	65.67%	—	50.00%	47.06%	
Unstructured (n=87)						
Row	22.99%	64.37%	1.15%	2.30%	9.20%	100%
Column	17.86%	24.03%	100.00%	33.33%	47.06%	
Total	100%	100%	100%	100%	100%	

Note. A 3x5 chi-square test indicated that the relationship between the classroom activity setting and the type of initiated interaction was significant, $\chi^2 (8, N = 369) = 11.4227, p < .1789, V = .1244$.

Table I7

Interaction Participants by Type of Interaction 4x5 Chi-square Table

	Type of Interaction					Total
	Question (n=112)	Directive/ Comment (n=233)	Request for Help (n=1)	Redirection (n=6)	Social (n=17)	
Teacher (n=103)						
Row	25.24%	69.91%	—	.97%	3.88%	100%
Column	23.21%	30.90%	—	16.67%	23.53%	
Peer (n=65)						
Row	13.85%	72.30%	1.54%	—	12.31%	100%
Column	8.04%	20.17%	100.00%	—	47.06%	
Paraprofessional (n=175)						
Row	41.71%	55.43%	—	2.86%	—	100%
Column	65.18%	41.63%	—	83.33%	—	
Other (n=26)						
Row	15.38%	65.38%	—	—	19.24%	100%
Column	3.57%	7.30%	—	—	29.41%	

Table I7 (Continued)

	Type of Interaction					Total
	Question	Directive/ Comment	Request for Help	Redirection	Social	
Participant	(n=112)	(n=233)	(n=1)	(n=6)	(n=17)	
Total	100%	100%		100%	100%	

Note. A 4x5 chi-square test indicated that the relationship between the interaction participant and type of interaction was significant, $\chi^2 (12, N = 369) = 56.0373, p < .0001, V = .2250$.

Table I8

Interaction Initiator by Type of Interaction 4x5 Chi-square Table

	Type of Interaction					Total
	Question (n=112)	Directive/ Comment (n=233)	Request for Help (n=1)	Redirection (n=6)	Social (n=17)	
Student (n=110)						
Row	28.18%	66.36%	—	—	5.45%	100%
Column	27.68%	31.33%	—	—	35.29%	
Teacher (n=78)						
Row	21.79%	71.79%	—	1.28%	5.13%	100%
Column	15.18%	24.03%	—	16.67%	23.53%	
Peer (n=39)						
Row	15.38%	66.67%	2.56%	—	15.38%	100%
Column	5.36%	11.16%	100.00%	—	35.29%	
Paraprofessional (n=137)						
Row	41.61%	54.74%	—	3.65%	—	100%
Column	50.89%	32.19%	—	83.33%	—	
Other (n=5)						

Table I8 (Continued)

Interaction	Type of Interaction					Total
	Question	Directive/ Comment	Request for Help	Redirection	Social	
Initiator	(n=112)	(n=233)	(n=1)	(n=6)	(n=17)	
Row	20.00%	60.00%	—	—	20.00%	100%
Column	.89%	1.29%	—	—	5.88%	
Total	100%	100%			100%	

Note. A 5x5 chi-square test indicated that the relationship between the interaction initiator and type of interaction was significant, $\chi^2 (16, N = 369) = 46.9504, p < .0001, V = .1784$.

APPENDIX J

CHI-SQUARE TABLES CROSS CASE ANALYSIS

Table J1 (Table 21 In Text)

Proximity by Interaction Participants 2x4 Chi-square Table

		Interaction Participants				
		Teacher	Peer	Paraprofessional	Other	
Proximity		(n=235)	(n=217)	(n=558)	(n=57)	Total
Near						
(n=660)						
Row		6.82%	14.09%	76.82%	2.27%	100%
Column		19.15%	42.86%	90.86%	26.32%	
Distant						
(n=407)						
Row		46.68%	30.47%	12.53%	10.32%	100%
Column		80.85%	57.14%	9.14%	73.68%	
Total		100%	100%	100%	100%	

Note. A 2x4 chi-square test indicated that the relationship between proximity and interaction participants was significant, $\chi^2 (3, N = 1067) = 444.3226, p < .0001, V = .6453$.

Table J2 (Table 22 In Text)

Proximity by Interaction Initiator 2x5 Chi-square Table

		Interaction Initiator					
		Student	Teacher	Peer	Paraprofessional	Other	Total
Proximity	(n=338)	(n=169)	(n=110)	(n=445)	(n=5)		
Near							
(n=660)							
Row	25.30%	5.45%	6.97%	62.27%	—		100%
Column	49.41%	21.30%	41.82%	92.36%	—		
Distant							
(n=407)							
Row	42.01%	32.68%	15.72%	8.35%	1.23%		100%
Column	50.59%	78.70%	58.18%	7.64%	100%		
Total	100%	100%	100%	100%	100%		

Note. A 2x5 chi-square test indicated that the relationship between proximity and interaction initiator was significant, $\chi^2 (4, N = 1067) = 342.3145, p < .0001, V = .5664$.

Table J3

Proximity by Type of Interaction 2x5 Chi-square Table

	Type of Interaction					Total
	Question (n=303)	Directive/ Comment (n=694)	Request for Help (n=1)	Redirection (n=28)	Social (n=41)	
Near (n=660)						
Row	28.94%	65.45%	—	3.94%	1.67%	100%
Column	63.04%	62.25%	—	92.86%	26.83%	
Distant (n=407)						
Row	27.52%	64.37%	.25%	.49%	7.37%	100%
Column	36.96%	37.75%	100%	7.14%	73.17%	
Total	100%	100%	100%	100%	100%	

Note. A 2x5 chi-square test indicated that the relationship between proximity and the type of initiated interaction was significant, $\chi^2(4, N = 1067) = 34.5703, p < .0001, V = .1800$.

Table J4

Classroom Activity Setting by Type of Interaction 3x5 Chi-square Table

Classroom Activity Setting	Type of Interaction					Total
	Question (n=303)	Directive/ Comment (n=694)	Request for Help (n=1)	Redirection (n=28)	Social (n=41)	
Structured (n=117)						
Row	21.37%	76.92%	—	.85%	.85%	100%
Column	8.25%	12.97%	—	3.57%	2.44%	
Semi- structured (n=774)						
Row	31.01%	63.18%	—	3.10%	2.71%	100%
Column	79.21%	70.46%	—	85.71%	51.22%	
Unstructured (n=176)						
Row	21.59%	65.34%	.57%	1.70%	10.80%	100%
Column	12.54%	16.57%	100%	10.71%	46.34%	
Total	100%	100%	100%	100%	100%	

Note. A 3x5 chi-square test indicated that the relationship between the classroom activity setting and the type of initiated interaction was significant, $\chi^2 (8, N = 1067) = 44.8451, p < .0001, V = .1450$.

Table J5

Interaction Participant by Type of Interaction 4x5 Chi-square Table

	Type of Interaction					Total
	Question (n=303)	Directive/ Comment (n=694)	Request for Help (n=1)	Redirection (n=28)	Social (n=41)	
Teacher (n=235)						
Row	33.62%	60.85%	—	.85%	4.68%	100%
Column	26.07%	20.61%	—	7.14%	26.83%	
Peer (n=217)						
Row	21.66%	69.12%	.46%	—	8.76%	100%
Column	15.51%	21.61%	100%	—	46.43%	
Paraprofessional (n=558)						
Row	29.93%	64.87%	—	4.66%	.54%	100%
Column	55.12%	52.16%	—	92.86%	7.32%	
Other (n=57)						
Row	17.54%	68.42%	—	—	14.04%	100%
Column	3.30%	5.62%	—	—	19.51%	

Table K5 (Continued)

	Type of Interaction					Total
	Question	Directive/ Comment	Request for Help	Redirection	Social	
Participant	(n=303)	(n=694)	(n=1)	(n=28)	(n=41)	
Total	100%	100%	100%	100%	100%	

Note. A 4x5 chi-square test indicated that the relationship between the interaction participant and type of interaction was significant, $\chi^2 (12, N = 1067) = 77.9077, p < .0001, V = .1560$.

Table J6

Proximity by Type of Interaction 5x5 Chi-square Table

	Type of Interaction					Total
	Question (n=303)	Directive/ Comment (n=694)	Request for Help (n=1)	Redirection (n=28)	Social (n=41)	
Student (n=338)						
Row	29.88%	64.79%	—	—	5.33%	100%
Column	33.33%	31.56%	—	—	43.90%	
Teacher (n=169)						
Row	34.91%	60.36%	—	1.18%	3.55%	100%
Column	19.47%	14.70%	—	7.14%	14.63%	
Peer (n=110)						
Row	19.09%	68.18%	.91%	—	11.82%	100%
Column	6.93%	10.81%	100%	—	31.71%	
Paraprofessional (n=445)						
Row	27.19%	66.29%	—	5.84%	.67%	100%
Column	39.93%	42.51%	—	92.86%	7.32%	

Table K6 (Continued)

		Type of Interaction					
		Question	Directive/ Comment	Request for Help	Redirection	Social	Total
Initiator		(n=303)	(n=694)	(n=1)	(n=28)	(n=41)	
Other							
(n=5)							
Row		20.00%	60.00%	—	—	20.00%	100%
Column		.33%	.43%	—	—	2.44%	
Total		100%	100%	100%	100%	100%	

Note. A 5x5 chi-square test indicated that the relationship between the interaction initiator and type of interaction was significant, $\chi^2 (16, N = 1067) = 82.0565, p < .0001, V = .1387.$

APPENDIX K
HUMAN SUBJECTS APPROVAL



Human Subjects
Protection Program

1235 N. Mountain Ave.
P.O. Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
<http://www.irb.arizona.edu>

October 28, 2008

Amended expiration date

Beth Harris, PhD
SERSP
P.O. Box 210069

RE: **PROJECT NO. 08-0885-02** PARAPROFESSIONAL PROXIMITY AND DECISION MAKING DURING INTERACTIONS OF STUDENTS WITH VISUAL IMPAIRMENTS

Dear Dr. Harris:

We received your research proposal as cited above. The procedures to be followed in this study pose no more than minimal risk to participating subjects and have been reviewed by the Institutional Review Board (IRB) through an Expedited Review procedure as cited in the regulations issued by the U.S. Department of Health and Human Services [45 CFR Part 46.110(b)(1)] based on their inclusion under *research categories 5, 6 and 7*. Although full Committee review is not required, the committee will be informed of the approval of this project. This project is approved with an **expiration date of October 27, 2009**. Please make copies of the attached IRB stamped consent documents to consent your subjects.

The Institutional Review Board (IRB) of the University of Arizona has a current *Federalwide Assurance* of compliance, **FWA00004218**, which is on file with the Department of Health and Human Services and covers this activity.

Clearance from official authorities for sites where proposed research is to be conducted (Site Authorization Letters) must be obtained prior to performance of this study at those sites. Evidence of this must be submitted to the Human Subjects Protection Office.

Approval is granted with the understanding that no further changes or additions will be made either to the procedures followed or the consent form(s) used (copies of which we have on file) without the knowledge and approval of the Institutional Review Board. Any research related physical or psychological harm to any subject must also be reported to the appropriate committee. Approval is also granted with the condition that all site authorization letters will be submitted to the IRB prior to data collection.

A university policy requires that all signed subject consent forms be kept in a permanent file in an area designated for that purpose by the Department Head or comparable authority. This will assure their accessibility in the event that university officials require the information and the principal investigator is unavailable for some reason.

Sincerely yours,

Elaine G. Jones, PhD, RN, FNAP
Chair, Social and Behavioral Sciences Human Subjects Committee

EGJ/rkd
Cc: Departmental/College Review Committee

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