Running head: PARAPROFESSIONAL PROXIMITY AND SOCIAL INTERACTION

Does Distance Make A Difference?

The Effects of Adult Proximity on the Social Interaction of Children With and Without Disabilities

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Since the passing of Public Law 94-142 or the Education for All Handicapped Children Act in 1975 (Office of Special Education Programs. n.d.), students in special education have had the right to an education in the least restrictive environment (L.R.E.). The L.R.E. according to the Individuals with Disabilities Education Act Amendments of 2004 states that children in special education should be educated as much as possible with children who are not labeled with a disability (612(a)(5)A). This means that more students with special needs are taught alongside their general education peers (Young, Simpson, Myles, & Kamps (1997).

Because some students require special assistance to acquire skills, paraprofessionals may be assigned to help the student in the general setting. According to the U.S Department of Education (2005), 27.5 percent of special education students in elementary and middle school received support such as teacher aides, instructional assistants, or personal aides in the general education setting and 53.9 percent of the this total population received this support in the special education setting. According to the same census, 96 percent of students

with disabilities were educated in the regular school building with their general education peers and almost half of these students (48.2 percent) were educated for most of their day in the general education classroom. Because of the increase of students in special education and the increase of paraprofessionals being used (U.S. Department of Education, 2005), issues regarding paraprofessional training and student interaction in inclusive settings become important to address.

One of the goals of including students with disabilities with their peers is to foster positive social interaction and appropriate behavior modeling (Odom, Chandler, Ostrosky, McConnell, & Reaney, 1992). Emphasis for promoting peer socialization can be seen in the hierarchy for promoting peer interactions developed by Brown, Odom and Conroy (2001). This hierarchy includes interventions to influence attitudes of peers and teachers, incidental teaching of social behaviors, and friendship activities, with the ultimate goal of positive peer interactions between children with and without disabilities (Brown et al., 2001).

However, Hundert and Mahoney (1993) used momentary time sampling to record the behaviors of peers with and without disabilities and the general and special education teacher during indoor playtime. They found that direct interaction of the general education teachers with children with disabilities

during play time was associated with diminished levels of peer interaction between children with and without special needs. The results also indicated that when the special education teacher focused her attention to the general group versus the individual with special needs, peer interaction increased. Because variables were not systematically manipulated such as proximity of teachers, it was hard to determine what variables affected the data. Another limitation was the fact that the results represented a correlation rather than causation by using stepwise regression statistics.

In another study regarding paraprofessional proximity and peer interaction, Giangreco, Edelman, Luiselli, and MacFarland (1997) reported that excessive paraprofessional proximity interfered with peer relationships. This was based on observations and interviews over a two year period of paraprofessionals and staff working with students with multiple disabilities. Using categorical coding, common themes were noted. One of the themes indicated that there was an impact on peer interaction. Giangreco et al. (1997) reported that sometimes the paraprofessional interfered with peer interaction and that as the paraprofessional moved away, the general education peers would take over and model the instruction with the special education peer. These results also indicated that paraprofessionals assigned to children with disabilities were

commonly seen in close proximity to the student, often sat in a chair close to the student, and had physical contact with the student. The main limitations of this study involved variables that were not controlled, and it was only based on observations and interviews.

Young et al. (1997) observed three elementary students with autism and mental retardation to record the effects of a paraprofessional's proximity to on-task, in-seat, self-stimulatory behaviors, inappropriate vocalizations, and interactions with adults and students in the classroom. The results indicated that paraprofessionals were within two feet of the child with disabilities for 73 percent of the intervals for one subject. When the paraprofessional initiated interaction with the student, it was mostly verbal. However, this study did not control for intervals when the paraprofessional was proximal or distal nor did it measure the type of interaction.

Werts, Zigmond, and Leeper (2001) extended the research of Giangreco et al. (1997) and Young et al. (1997) to study the effects of the proximity of a paraprofessional on the academic engagement of students with disabilities in inclusive settings. Using an alternating treatment experimental design, they controlled for proximity by telling the paraprofessional to be either less than two feet (proximal) or greater than five feet (distal) away from the student. They also informed the

paraprofessional to act as they typically do with the student and gave no other instructions. The results indicated that when the paraprofessional was in the proximal location, students were engaged more academically then when in the distal location and those students with disabilities and the paraprofessional had increased verbal interaction. One subjects' results indicated that the general education teacher called on him more when the paraprofessional moved to the distal location. Although this study focused on a more specific variable such as academic engagement and controlled for distance, the type of interaction between the paraprofessional and the student was not recorded nor was specific information regarding social interaction between peers with and without disabilities.

Because the paraprofessional often is the primary adult with whom students in inclusive settings interact (Giangreco & Broer, 2005), it is vital that they receive proper training. Two major literature reviews by Giangreco and Doyle (2002) and Giangreco, Edelman, Broer, and Doyle (2001) examined the last decade of research regarding supports in inclusive settings and summarized that not enough training programs exist to help paraprofessionals utilize their time in inclusive settings to benefit the students with disabilities. Whether this benefit is to increase social interaction or academic engagement, the needs of the student in inclusive settings should be addressed.

In order to further evaluate specific variables affected by the proximity of a paraprofessional, the current study chose to focus on social interactions of peers with and without disabilities. The results of this study could help develop training programs for paraprofessionals working in inclusive school environments. This study extended the research of Giangreco et al. (1997), Young et al. (1997), and Werts et al. (2001) by taking into consideration that all three studies noted that peer interaction was affected by the paraprofessional but only one controlled the distance and neither concentrated primarily on social interaction of peers with and without disabilities. More specifically the current study focused on the initiations and responses of paraprofessionals, students with and without disabilities, and the general education teacher in inclusive settings. These behaviors were all recorded based on controlled distances (distal and proximal) of a paraprofessional.

METHOD

Participants and Setting

Participants for the current study were two students in 4th grade with autism or mental retardation whose placement was in a self-contained special education setting for more than 60% of their public school day. They both had delays in communication and received speech therapy. The first participant, Mark, could

speak in three to five word sentences and follow two-step related directions, but mainly communicated his requests. Mark rarely initiated social interaction unless he wanted something. He would answer questions related to his day and simple "yes/no" questions. The second participant, Larry, was capable of making requests, answering questions, and making comments. However, some of his communication was off topic and sometimes was not directed at anyone in particular. Both received at least two hours of inclusion with their general education peers with the assistance of a paraprofessional. The general education placement for the students was with two different classes. The participants' normal schedule remained unchanged.

The students from the general education setting consisted of the same general education class that was assigned to the participants for the 2006-2007 school year. For the purpose of this study, the term 'peer' refers to the students in general education and 'participant' refers to the students in special education.

The paraprofessionals involved in the study were employees of the school district and were already assigned to the above-mentioned students. The paraprofessionals had been working with students with disabilities for a range of four months to two years.

The study occurred in two different locations in the participants' elementary school. One participant was observed in the lunchroom, and the second participant was observed in the general education homeroom. Locations and times of day were chosen based on settings in which social interaction would be appropriate and allowable.

Response Measurement

Social interactions were defined as any non-aggressive gesture, verbal exchange, or physical contact, such as a 'high-five' between two or more people. Social interaction was divided into initiations and responses (Chandler, Fowler, & Lubeck, 1992; Krantz & McClannahan, 1993).

Initiation was defined as any non-aggressive gesture, verbal statement, question, or physical contact directed toward another person by using his or her name or by facing him or her. Examples of these could be a tap on the shoulder, a comment such as, "John, look at that!" a greeting such as, "Hi", or a question such as, "What are you eating?" If the person initiated communication and immediately repeated the same thing before a response had occurred, this initiation was only scored once.

Response was defined as responding to the initiation of a person within five seconds with a non-aggressive gesture, verbal exchange, or physical contact toward the person making the

initiation by using his/her name or by facing him/her. Examples of these could be, "Yes", a person turning around after their name is called, a person making a statement relevant to the initiation, or a person following a direction.

Fourteen different dependent variables were tracked in the study: **1**: Interaction initiated by the general education peer to the special education peer. **2**: Interaction initiated by the special education peer to the general education peer. **3**: Interaction initiated by the general education peer to the paraprofessional. **4**: Interaction initiated by the special education peer to the paraprofessional. **5**. Response of general education peers to special education peer **6**. Response of special education peer to general education peer **7**. Responses of general education peer to paraprofessional **8**. Responses of special education peer to paraprofessional, **9**. Interaction initiated by the paraprofessional to the special education peer, **10**. Interaction initiated by the paraprofessional to the general education peer, **11**. Response of paraprofessional to the special education peer, **12**. Response of paraprofessional to the general education peer, **13**. Initiation of general education teacher to the special education peer, and **14**. Response of special education peers to the general education teacher.

Interobserver Agreement

Interobserver agreement (IOA) was collected by trained graduate students in behavior analysis. A second observer scored at least 25% of the observations simultaneously with the main investigator. The agreement was calculated across conditions and settings. The IOA was calculated by the number of agreements divided by the number of agreements plus disagreements x 100%. Reliability was calculated for each dependent variable code.

Results of Mark's IOA ranged from 85.2% to 98.4% and averaged 93.05% for the four codes of peer/participant interaction. The range and average IOA for the eight codes resulting in paraprofessional/peer/participant interaction were 65.6% to 98.4% and 91.08% respectively.

Results of Larry's IOA ranged from 54% to 92.3% and averaged 74% for the four codes of peer/participant interaction. The range and average IOA for the eight codes resulting in paraprofessional/peer/participant interaction were 98.4% to 100% and 98.4% respectively.

Experimental Design

An alternating treatment design was used to evaluate the effects of proximity on social interaction (Barlow & Hayes, 1979). The proximal and distal locations were alternated with each session. If it was possible, two sessions were conducted

within an hour. Otherwise, the sessions alternated daily between the proximal and distal locations.

Procedures

The main investigator was the primary data collector, and trained observers collected data on initiation and response behavior using handheld computers during all sessions. The observers collected data on the frequency of initiations and responses between the participants, their peers, the general education teacher, and the paraprofessional.

Session length was 10 minutes in each position (proximal and distal). This position alternated with each session. The paraprofessional who assisted the participant in general education was instructed to stand in the distal or proximal position. Because the demands of the students changed for each location, the paraprofessionals were given instructions based on the need of the student.

In the homeroom setting, the paraprofessional was told to take the student to the general education homeroom where the student had work to complete in the desk. The paraprofessional was instructed not to engage in any lengthy conversations or to deliver reinforcement to the peers or participants if social interaction occurred. They were instructed not to prompt the peer or participant to engage in social interactions. If they were asked a question or asked for help, they could have

responded. If a problem behavior occurred in either location, they were told to address as usual. They were then told when to go to the distal or proximal locations as defined below.

In the lunchroom setting, the paraprofessional was instructed in the same manner as the homeroom setting except that the participant did not have any work to finish.

If five seconds occurred between two identical initiations, they were each scored separately.

The independent variables consisted of the effects of two distances on peer interaction. Proximal distance was defined as an arm's length between the paraprofessional and the participant. Distal distance was defined as the paraprofessional remaining in the room with at least 10 feet between the participant and the paraprofessional. If at any time the paraprofessional did not remain in the distal or proximal position, they were prompted to return to the original location. The observers also scored the duration during which the paraprofessional was not in the specified position.

Termination of sessions occurred if the participant no longer remained in the location, if the participant exhibited problem behavior such as aggression, or if the lesson conducted by the general education teacher or lunch monitor prohibited social interaction among students.

RESULTS

Interaction Between Peer and Paraprofessional

Figures 1 and 4 display the number of initiation and responses exhibited by the peers and the paraprofessionals for Mark and Larry. Figure 1 shows when the paraprofessional was with Mark. The peers initiated social interaction only twice in the proximal location in session 3 and responded only once in the proximal location in session 3. The peers never initiated or responded to the paraprofessionals in the distal location. The paraprofessional initiated and responded twice in the proximal location during session 3 and never initiated or responded to peers in the distal location.

Figure 4 shows that when the paraprofessional was with Larry, she initiated to the peers once in session 1 and 3 times in session 5 in the proximal location. She also responded twice in the proximal location in session 3. The paraprofessional never initiated or responded to the peer in the distal location. The peers initiated 3 times to the paraprofessional in the proximal location in session 3 and responded once in session 1 and once in session 5. The peers never initiated or responded to the paraprofessional in the distal location.

Interaction Between Peer and Participant

Figures 2 and 5 display the number of initiations and responses between the peers and participants for Mark and Larry. When the paraprofessional was with Mark (Figure 2), peers initiated more in the distal location than in proximal location and responded very little in each location. The participant never initiated or responded in the proximal location but had more responses than initiations in the distal location.

When the paraprofessional was with Larry (Figure 5), the participant initiated more and had an increasing trend in the distal location with a range of 20 to 50 incidences of initiations. The number of initiations in the proximal location was below 10. Response rates averaged to about 6 in the distal location and 1 in the proximal. The peer initiated more in the distal location than in the proximal. The number of initiations and responses in the proximal location averaged about 2 incidences. In the distal location, the number of responses from the peer to the participant was increasingly higher than the initiations.

Interaction Between Participant and Paraprofessional

Figures 3 and 6 show the number of initiations and responses collected between the paraprofessional and the participants, Mark and Larry. When the paraprofessional was with Mark (Figure 3), the number of initiations by the

paraprofessional to the participant averaged 14 in the proximal location and zero in the distal condition. The number of responses to the participant averaged zero in the distal condition and about 2 in the proximal. The participant never initiated or responded to the paraprofessional in the distal condition. However, his responding rate to the paraprofessional was greater in the proximal condition versus the distal location.

When the paraprofessional was with Larry (Figure 6), the participant initiated more with the paraprofessional in the proximal condition ranging from 5 to 15 times. Larry responded to the paraprofessional an average of 4.3 times. However, Larry never initiated or responded to the paraprofessional in the distal condition.

The paraprofessional initiated to Larry in the proximal location ranging from 8 to 14 times each session and responded to the participant 2 to 12 times. In the distal condition, the paraprofessional never initiated or responded to the participant.

Interaction Between General Education Teacher and Participant

Figure 7 displays the amount of initiations of the general education teacher to the participant (Larry). In the proximal location, the general education teacher made only 1 initiation

to Larry, but made 5 in the distal location. Only 3 sessions were conducted where data were collected for this response. Data were not collected for Mark regarding this response.

Total Social Interaction of Peer and Participant

Figures 8 and 9 show the total interaction of peers and participants by adding the points of both of their initiations and responses for each session. For Mark and Larry, the amount of social interactions was less in the proximal condition than in the distal condition. The highest rate of social interaction for Mark in the distal condition was 31, and the highest in the proximal condition was 4. The highest rate for Larry in the distal condition was 84, and the highest rate in the proximal was 10. The rate of interaction was more for Larry than Mark in the proximal condition even though they both had separation between the two conditions.

Overall, the results indicate an increase of paraprofessional interaction to the participant in the proximal condition, an increase in interaction between the peers and the participant in the distal condition, and a general increase in the distal condition for the general education teacher's initiations (for Larry). During two of Mark's sessions, the general education teacher told the class to be quiet for the rest of the day, so the session was terminated. In one of Larry's sessions, the cafeteria monitor told the class to remain

quiet and again, the session ended. This data was not used in the study. During the course of the study, the paraprofessionals stayed in their recommended positions during each session. Although during Larry's session 2 of the distal location, the paraprofessional left the location one time for 10 seconds to attend to student and then quickly returned to distal location.

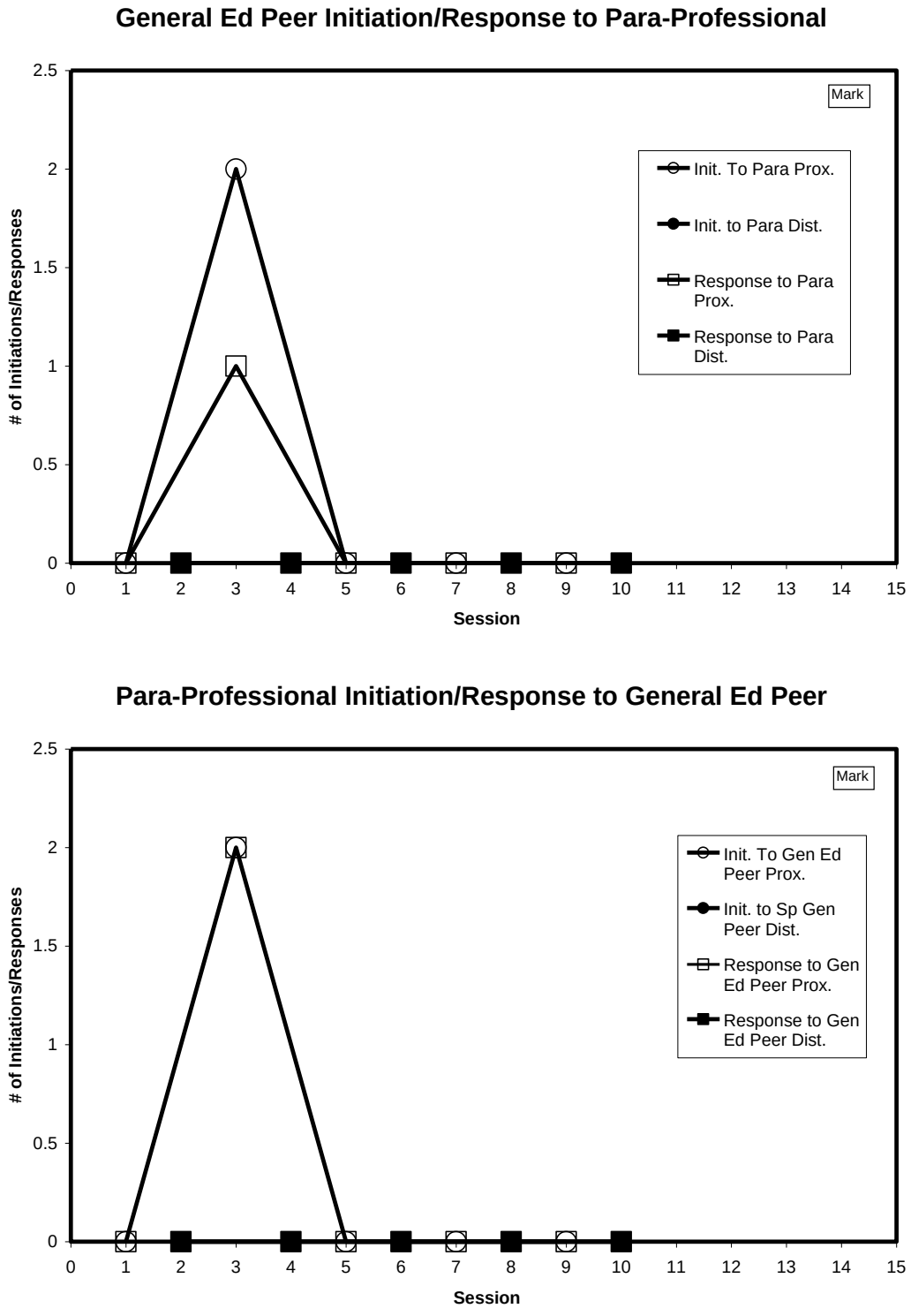

Figure 1. Total initiations and responses in proximal and distal locations between paraprofessional and General Education Peers.

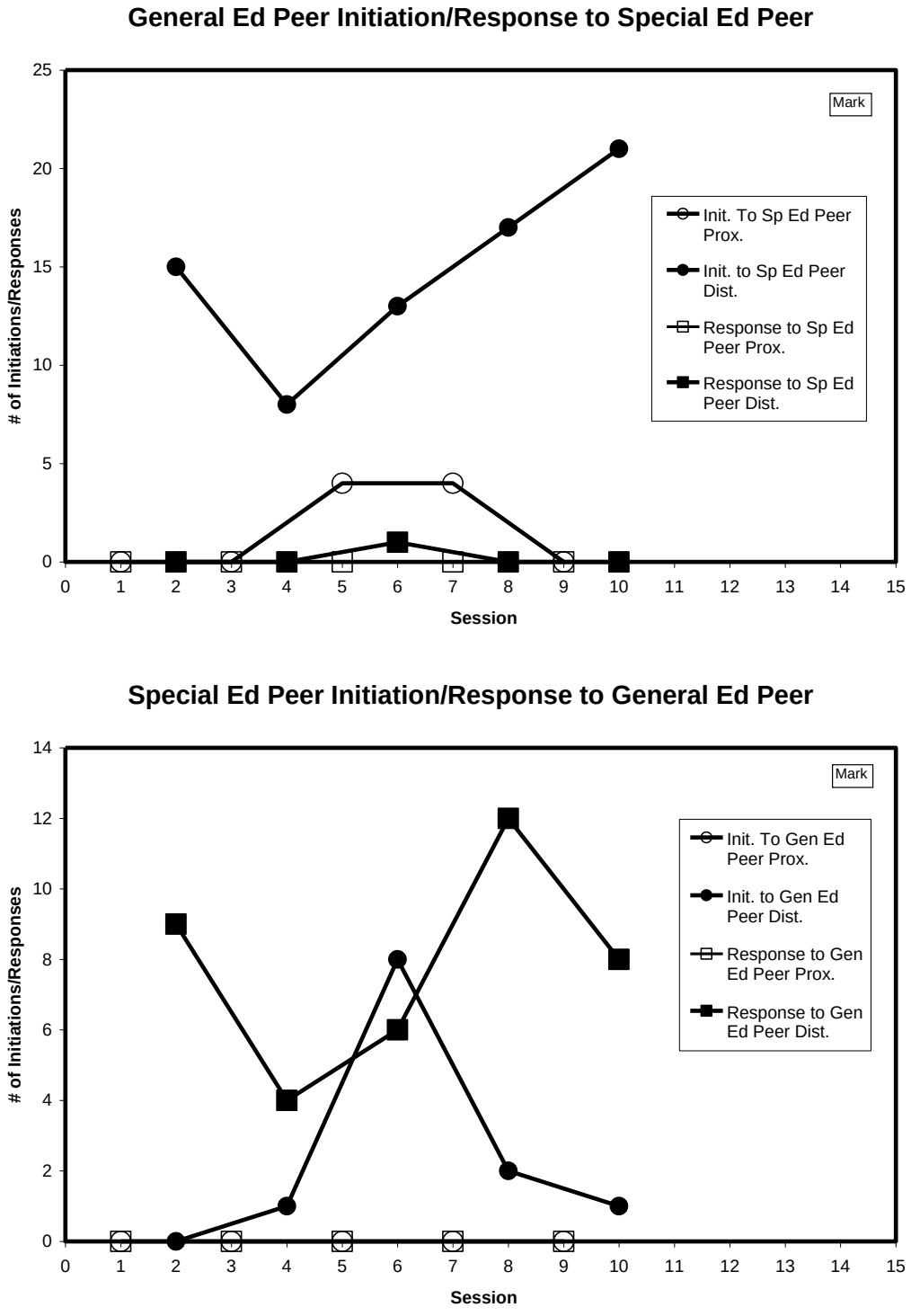

Figure 2. Total initiations and responses in proximal and distal locations between Special Education Peers and General Education Peers.

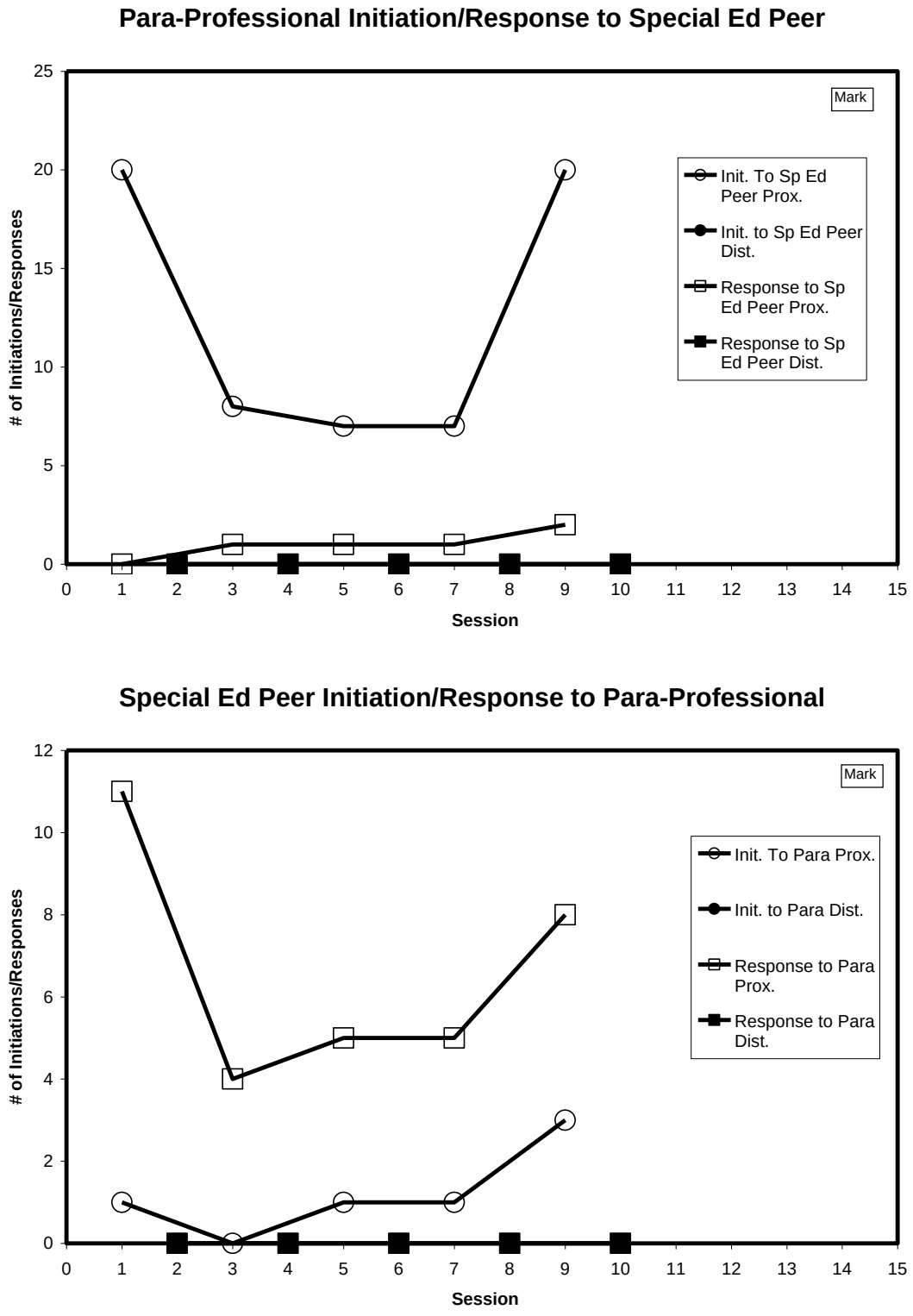

Figure 3. Total initiations and responses in proximal and distal locations between paraprofessional and Special Education Peers.

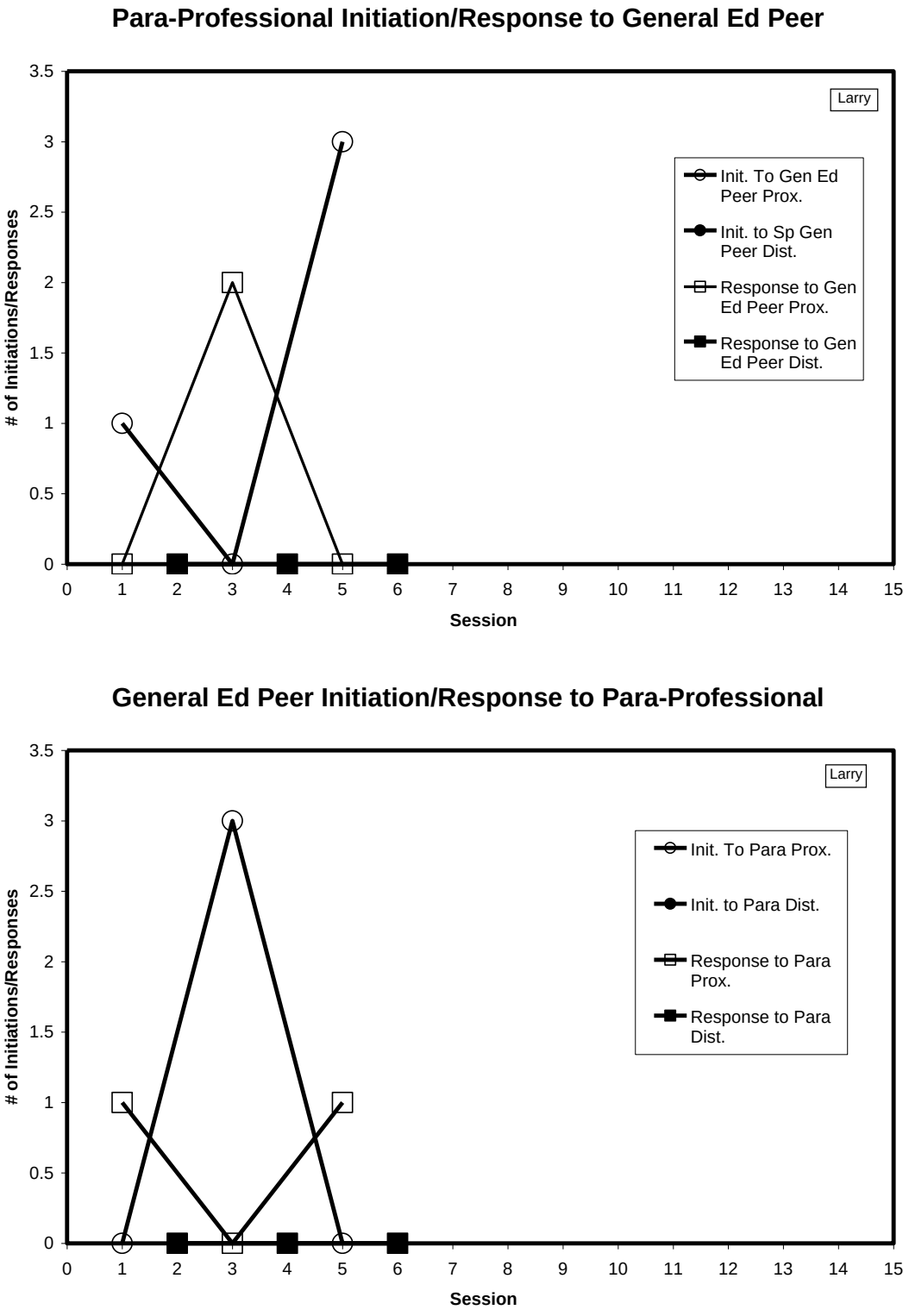

Figure 4. Total initiations and responses in proximal and distal locations between paraprofessional and General Education Peers.

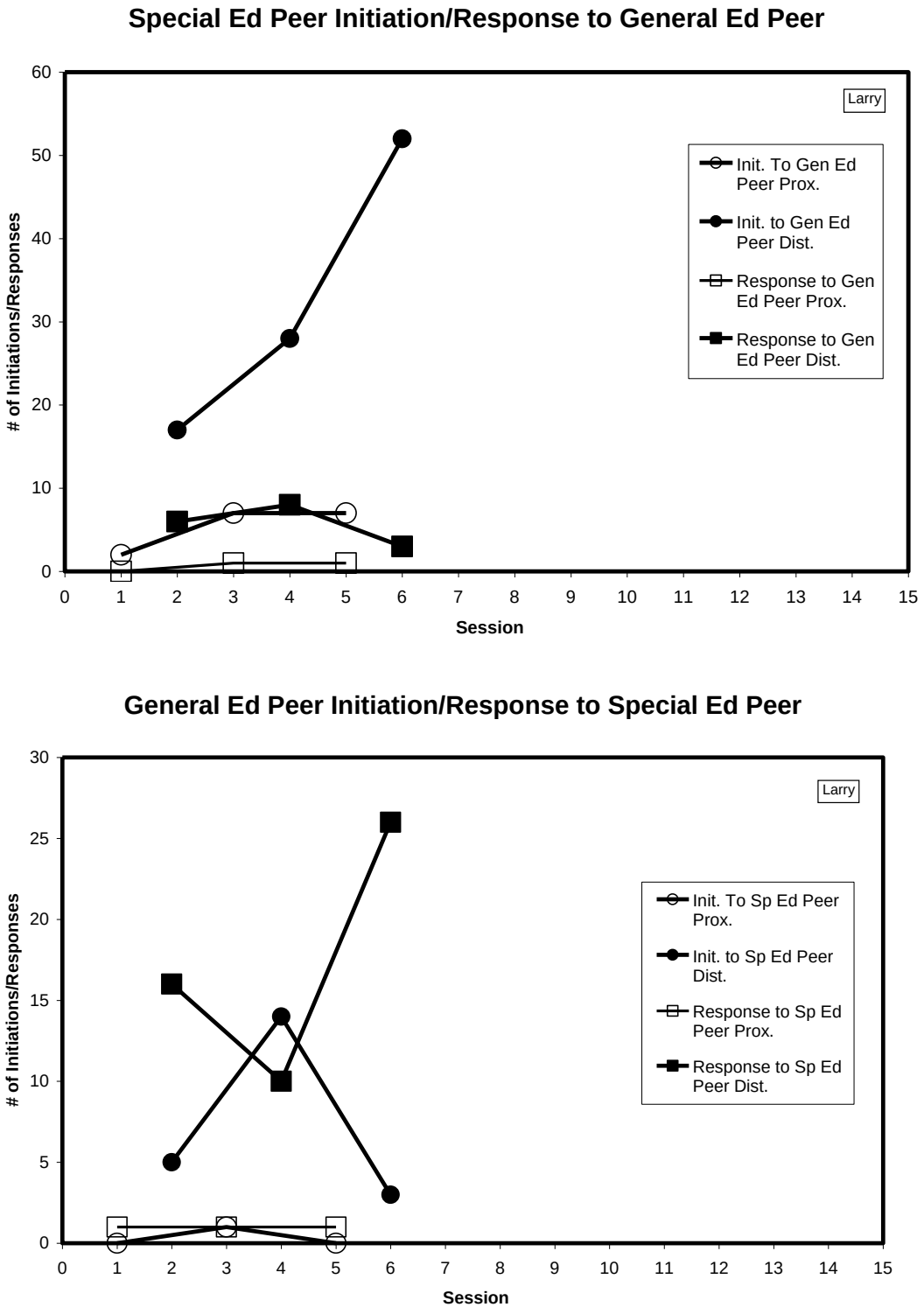

Figure 5. Total initiations and responses in proximal and distal locations between Special Education Peers and General Education Peers.

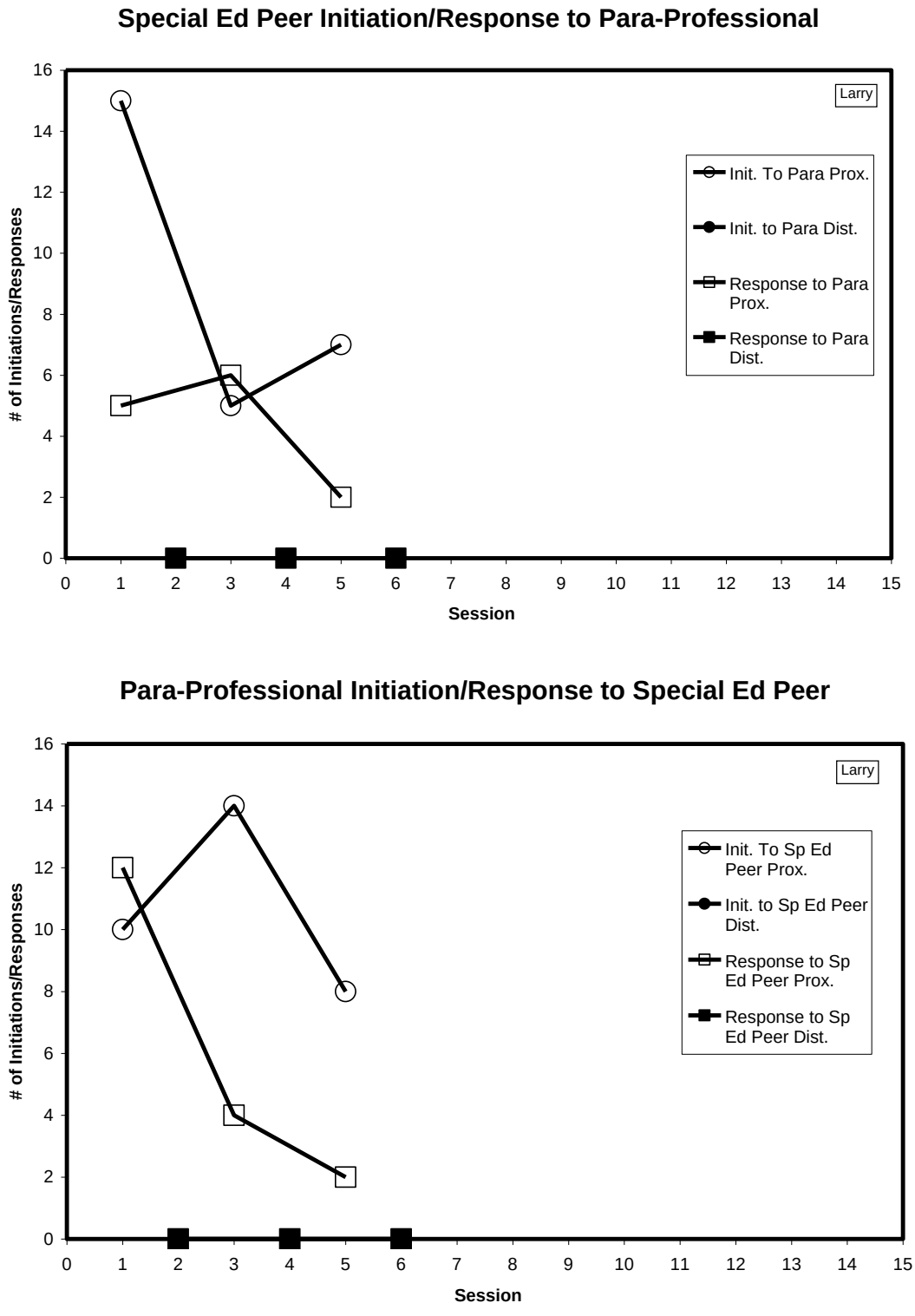

Figure 6. Total initiations and responses of Paraprofessional to/from Special Education Peers in proximal and distal locations.

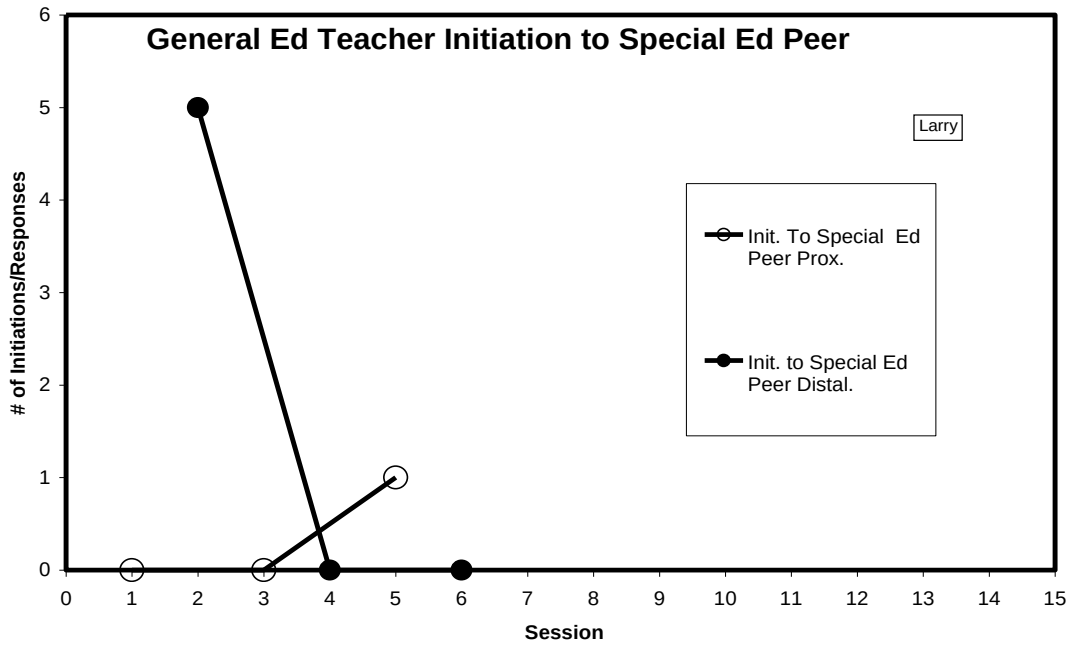

Figure 7. Total initiations of General Education Teacher to Special Education Peer in proximal and distal locations.

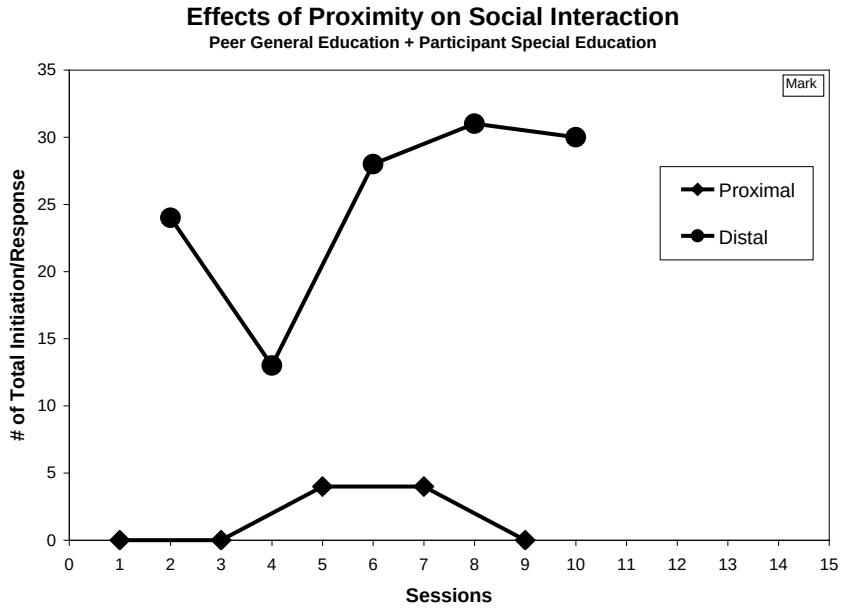

Figure 8. Total initiations and responses in proximal and distal locations between Special Education Peers and General Education Peers.

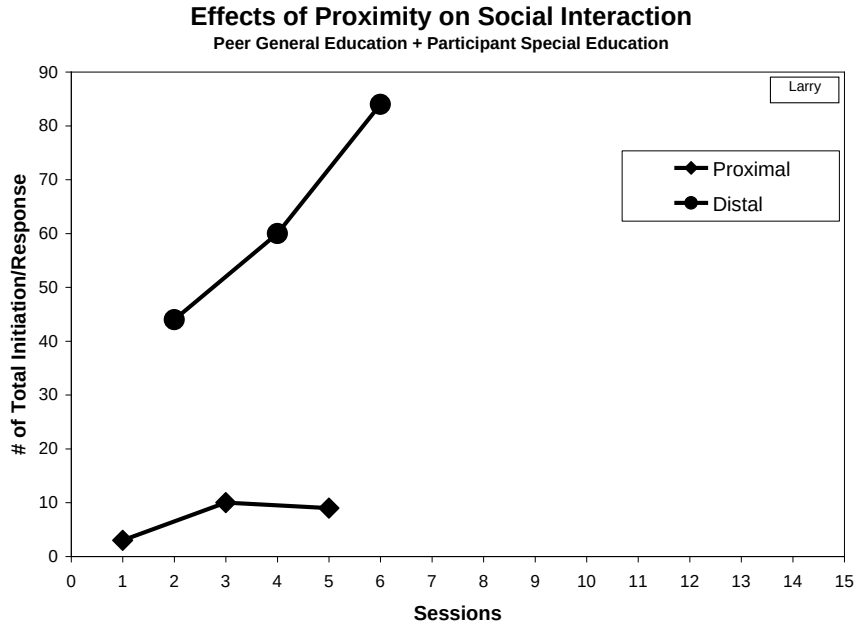

Figure 9. Total initiations and responses in proximal and distal locations between Special Education Peers and General Education Peers.

DISCUSSION

With the increase of children with disabilities in inclusive settings (U.S. Department of Education, 2005), it is important to focus on the needs of these students. One such area affected by inclusion is the social interaction that occurs between peers and students in special education. Some children with autism or other developmental delays may have a hard time initiating or responding to peers (Krantz & McClannahan, 1993). Along with the developmental delay, the paraprofessional that might assist the student in special education could be hindering this social interaction by sitting too close, initiating a lot of verbal interaction with the child in special education, or not allowing the interaction by the general education peer (Giangreco et al., 1997; Werts et al. 2001).

The current study extended Werts et al.(2001) by focusing on social interaction of students with and without disabilities instead of academic engagement. The current study showed that when the paraprofessional moved away from the student in special education, total peer interaction increased. However, in the proximal location, paraprofessional initiation with the participants was more than the participants' initiation with peers or with the paraprofessional. One limitation to this was that the type of interaction was not recorded for either subject. Some interactions could have been instructions or

prompts, while some may have been comments. This may have been due to the locations for each participant. In the lunchroom, it was very noisy and the type of interaction was hard to discern. In homeroom, it would have been easier to manually track or video tape, but this did not occur.

When training paraprofessionals who work with students in inclusive settings, it will be important to inform them that children with disabilities may not need them to be close in proximity all the time. Training could involve teaching them when to engage with the student and when to back away. Ultimately, however, the presence of the paraprofessional should be faded in order for the promotion of independence and generalization skills to develop (Odom et al., 1992).

The current study showed that the general education teacher increased her initiations to the participant when the paraprofessional was in the distal location. These results may help the child with disabilities focus on the instruction of the general educator and not solely the paraprofessional. (Hundert,& Mahoney,1993).

Because there were a lot of response codes to keep track of, it would benefit future research in this field to have the data collectors practice more before entering sessions. It seemed that the homeroom setting was easier to track behaviors and more reliable than the lunchroom setting. It may have also

been easier to track all the response codes if momentary time sampling was used as in Werts et al. (2001). However responses of peers, participants, teachers and paraprofessionals may have been missed.

Because the study showed that a paraprofessional's distance affected social interaction, one could say that the data collector's proximity may have affected responses as well. Because sessions were not recorded, the observers had to be at a close enough distance to observe the social interaction.

Another limitation was that the paraprofessional's interaction was not controlled completely. In future studies, phase II could consist of telling the paraprofessionals to not interact at all in the alternating locations. This would then allow only proximity to be tested.

The current study shows that not only do paraprofessionals need training on how to utilize their time well to help children in inclusive settings, but peer training could be an important component for increasing social interaction as well. The current study and Giangreco et al. (1997) showed that as the paraprofessional moved to a greater distance, the peers seemed to take over with the children in special education and model the paraprofessional's instruction. Because of this behavior, the paraprofessional's training is vital.

Future studies could also focus on the type of interaction that occurs between students with disabilities and paraprofessionals. This would aide in the training of types of prompts and fading prompts. Maybe some of the verbal interaction that occurred could have been done in non-verbal ways so as not to disturb the peer interaction.

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