Systematic Instruction for Social-Pragmatic Language Skills in Lunchroom Settings

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Abstract: This study involved the extension and adaptation of systematic instructional procedures suggested by Light and Binger (1998) to increase the social-pragmatic language skills of five high school students with moderate cognitive disabilities. Within a single-subject multiple probe research design, we also assessed intervention effects on two skills targeted by classroom teachers. The three primary target behaviors were taking obligatory turns, taking nonobligatory turns, and asking partner-focused questions. The two secondary target behaviors were conversing with appropriate eye contact and using appropriate tone of voice in conversational speech. Overall, results showed positive effects of the intervention on participants’ skills with some variability in student performance in generalization (lunchroom) settings. Further research on the effects of various systematic instructional strategies on the social-pragmatic skills of individuals with various disabilities in multiple settings is recommended.

Students with disabilities, particularly those requiring augmentative and alternative communication (AAC) systems, often have difficulty participating in social communication exchanges (Furick, 2003; Hatton, 1998). Successful communication exchanges in social environments involve competent use of language, or pragmatic language skills. Pragmatic language skills have been described as the use of communication to carry out communication interactions in a social environment (Levinson, 1983). Pragmatics has been defined as “rules for using language contextually for social purposes” (Beukelman & Mirenda, 1998, p. 332). Knowledge and skills related to interpreting and sending appropriate nonverbal messages (i.e., eye contact, facial expressions, and body language) are also required for competent use of pragmatic language. Development and use of appropriate social and pragmatic language skills is important to maximizing the quality of life of students with intellectual disabilities. Appropriate communication interactions among peers with and without disabilities are important for developing meaningful relationships.

Unfortunately, students with intellectual disabilities often experience difficulties in interacting successfully with peers (DeGeorge, 1998). According to the National Joint Committee on Learning Disabilities (1998), people with intellectual disabilities often demonstrate problems in self-regulatory behaviors, social perceptions, and social and pragmatic interactions. The development of appropriate sociorelational skills plays a key role in the development of communicative competence (Light, Binger, Agate, & Ramsay, 1999). This may be a particularly important skill for school-age children, as behavior and communication patterns developed during the school years may impact students’ ability to form and maintain relationships and friendships for a lifetime.

Making friends is a natural result of human interaction that involves many complex verbal and nonverbal transactions (DeGeorge, 1998). Impaired development of social and pragmatic language skills may negatively affect the forging of friendships between students with and without disabilities. Typical interactions between peers with and without disabilities have been reported as ‘asymmetrical’ with more of the communication responsibil-
ity being on the communication partner without disabilities (Ratcliff & Cress, 1998). Individuals with disabilities have also been reported to experience more frequent communication breakdowns and greater difficulty in using communication repair strategies than peers without disabilities (Fishman, Timler, & Yoder, 1985; Kraat, 1985). These social and pragmatic language difficulties can be detrimental to the social success of students with communication impairments.

During school days, a greater number of opportunities for naturalistic social interactions often occur during traditionally nonacademic times such as recess and lunch. School lunchtimes are typically social times, when students typically interact while consuming their meals. Unstructured, naturalistic communication times may pose a greater challenge for students with impaired social and pragmatic language skills than more structured academic settings (Beukelman, & Mirenda, 1998). Yet, these naturalistic social times may also provide wonderful opportunities for learning and generalizing social and pragmatic language skills.

Often, students with impaired social and pragmatic skills require additional support to develop these important language skills. Interaction patterns between students with disabilities and their peers in inclusive settings have been well-researched (e.g., Chadsey-Rusch, 1990; Evans, Salisbury, Palombaro, Berryman, & Hollowood; 1992; Hanline, 1993; Hughes, 1999; Mu, Siegel, & Allinder, 2000). Collectively, the research has demonstrated that although students with disabilities and their peers may be in physical proximity to one another, limited social interaction occurs between them without direct programming or supports by interventionists.

Many students with disabilities exhibit inappropriate pragmatic behaviors that may prevent social interaction. There is evidence that social interaction between students with disabilities and their peers benefit from structured facilitation techniques that enhance communication interactions and relationships. In addition to promoting social gains, the research suggests that intervention strategies can also have academic benefits for students with disabilities (e.g., Brown & Holvoet, 1982; Haring, Breen, Pitts-Conway, Lee, & Gaylord-Ross, 1987; Kamps, Locke, Delquadri, & Hall, 1989; McDonnell, Mathot-Buckner, & Thorson, 2001; Strain, Kerr, & Ragland, 1979). McGee, Almeida, Sulzer-Azaroff, and Feldman (1992) evaluated the effects of peer incidental teaching as a strategy for increasing reciprocal peer interactions in students with disabilities that adversely affected their pragmatic communication skills. While gains were made in number and quality of communication interactions in an academic setting in this study, these gains did not generalize to school mealtimes.

Use of systematic instruction has been shown to be effective in facilitating skills acquisition for students with disabilities. One such program (Light & Binger, 1998) was designed specifically to enhance communicative competence for youths with disabilities across multiple pragmatic-social communication areas. This program describes systematic instructional procedures for teaching students who use AAC systems how to use introduction strategies, improve communication turn-taking, and increase their use of partner-focused questions. The program also includes a description of how instructional procedures can be adapted to specifically teach specific communication skills.

Light’s and Binger’s (1998) program has been used effectively with multiple groups of individuals who use AAC systems (e.g., Light, Binger, Agate, et al., 1999; Light, Binger, Dilg, et al., 1996). This program has been used successfully across several academic settings. However, generalization of classroom-based systematic instructional programs in specific pragmatic language and social skills development have not been evaluated in less structured school social settings such as school lunchrooms.

The purpose of this investigation was to evaluate the application of a classroom-based systematic instructional program on five identified social and pragmatic language skills in a high school lunchroom environment. Specifically, we adapted Light’s and Binger’s (1998) classroom-based systematic instruction program to increase our participants’ use of partner-focused questions, obligatory turn-taking, non-obligatory turn-taking, appropriate eye contact, and appropriate tone of voice.
Method

Participants

Five high school students, all from the same special education program, participated in this study. These students were between 15 and 19 years of age. Each had been identified with moderate cognitive disabilities. Categories of cognitive disability were established in compliance with the criteria stated in the Individuals with Disabilities Education Act (P.L. 105–117). Licensed psychologists and students’ eligibility teams had determined the students’ classification via appropriate measures of general intellectual functioning and adaptive behavior. Each participant primarily used oral speech as his or her primary communication mode, but all participants also consistently used AAC systems to augment speech and language use at school. These AAC supports included consistent use of personal and classroom visual strategies or aids such as visual schedules, visual behavior programs, social stories, communication boards, sentence completion aids, and classroom rules and instructions (Downing, 1999; Gray & Garand, 1993; Hodgdon, 1995). Special education teachers and/or general education classroom personnel identified participants as having difficulty using appropriate pragmatic-social communication skills in social education settings. All participants had at least one Individualized Education Program (IEP) goal that suggested deficits in social and pragmatic language skills. See Table 1 for participant demographic characteristics.

Bob. Bob was a 17-year-old male diagnosed with Fragile-X syndrome. His primary mode of communication with peers and teaching staff was oral speech. His verbal communication was augmented with pictorial representations of items or ideas (i.e., visual strategies) in the classroom as needed. Bob appeared to have adequate functional vocabulary and sentence structure in structured classroom routines. He initiated and responded to communication, although approximately 80% of his communication consisted of responses. Bob participated in structured academic activities and frequently took his communication turns in these structured educational settings.

Occasionally, breakdowns in communication exchanges were observed when Bob was in group/classroom situations. For example, when he verbally responded to questions from teaching staff, he often did not make eye contact, turned his body away from his communication partner, and used an inappropriately high pitch and sarcastic tone of voice. During these times, his sentence length also became notably reduced. Bob’s Speech-Language Pathologist (SLP) had instituted a visual prompting AAC system that consisted of pictorial prompts with printed words for each academic lesson that functioned as a sentence completion strip. The purpose of this system was to facilitate longer verbal utterances, but Bob did not use it without verbal reminders from teaching staff. Therefore, Bob’s spontaneous communication interactions were often limited to one- or two-word phrases and two

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>Primary Diagnosis</th>
<th>Primary Mode of Communication</th>
<th>Primary AAC Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bob</td>
<td>17</td>
<td>Male</td>
<td>Fragile-X</td>
<td>Verbal</td>
<td>Visual strategies and supports</td>
</tr>
<tr>
<td>TJ</td>
<td>18</td>
<td>Male</td>
<td>Mental and Cognitive Impairment</td>
<td>Verbal</td>
<td>Visual strategies and supports</td>
</tr>
<tr>
<td>Devin</td>
<td>19</td>
<td>Male</td>
<td>TBI-Cognitive Impairment</td>
<td>Verbal</td>
<td>Communication boards/pages Visual supports</td>
</tr>
<tr>
<td>Eric</td>
<td>15</td>
<td>Male</td>
<td>Down syndrome</td>
<td>Verbal</td>
<td>Visual strategies and supports</td>
</tr>
<tr>
<td>Jen</td>
<td>19</td>
<td>Female</td>
<td>Cognitive Impairment</td>
<td>Verbal</td>
<td>Visual strategies and supports</td>
</tr>
</tbody>
</table>

* Names have been changed to protect confidentiality
communication turns (i.e., initiation and response). Bob did not use socially appropriate gestures other than greetings (i.e., saying “excuse me”) in appropriate situations and he appeared to have extreme difficulty reading others’ nonverbal or gestural communication. His tone of voice was judged as typically inappropriate and characterized by teaching staff and graduate student observers as sarcastic or negative in most interactions.

Pragmatic and social communication goals found in Bob’s IEP included (a) improving the ability to read 10 specific nonverbal body gestures and explain what they mean, (b) saying “excuse me” and using other socially appropriate phrases in a variety of social situations, (c) increasing successful use of the visual sentence completion system to create longer utterances, and (d) using correct body orientation when conversing.

**TJ.** TJ was an 18-year-old male with a moderate cognitive disability of unknown origin. His primary mode of communication was oral speech. His verbal communication was augmented with pictorial representations of items or ideas (i.e., visual strategies) in the classroom as needed as well as the use of a laminated page depicting his behavior management program. This laminated page was used across school settings. TJ had functional oral communication skills in structured academic contexts. When his speech was intelligible, he was able to carry on a conversation and convey and receive basic messages successfully. Unfortunately, his articulation was consistently poor, which decreased his intelligibility in most situations. TJ did not maintain appropriate eye contact when communicating with peers and teaching staff. He habitually spoke with low intensity and his tone of voice was often judged sarcastic in nature by the teaching staff. TJ’s pragmatic and social communication goals listed in his IEP included (a) identifying visual cues given by a listener that indicated a lack of intelligibility and self-correcting those errors, (b) using appropriate social phrases and greetings depending on the situation, and (c) identifying appropriate responses for given situations.

**Devin.** Devin was a 19-year-old male diagnosed with Down syndrome. Initial classroom and mealtime observations yielded the following summary of findings: Devin’s primary mode of communication was oral speech. Devin typically communicated with staff and peers using single and multi-word utterances. He was moderately intelligible in familiar contexts. To augment his communication, Devin utilized communication boards that appeared to also function as a tool for learning new vocabulary and sentence structure. He spontaneously used several pre-made communication boards in classroom activities. Devin required prompting from teaching staff to use a visual communication system that was intended to cue him to use longer utterances. In less structured social settings, Devin consistently produced loud speech. During interactions, he repeated multiple times any words or phrases that he appeared to find funny. He often laughed out loud after producing loud, repetitious speech. He also consistently chose to leave classroom group activities and return to his desk without warning and consistently required a verbal or visual cue to remind him to ask permission to leave a group activity. Devin did not maintain appropriate eye contact during communication interactions with peers or school personnel. Although no visual deficits were noted in his case history, Devin typically oriented his face toward his communication partner but his eyes appeared to look toward the floor. His tone of voice was observed to be appropriate during the majority of classroom time, but occasionally he used a loud vocal tone which appeared to function as a way to entertain his peers. Devin’s tone of voice was characterized as sounding angry when he was asked to rejoin group activities after he had moved away from them. Devin’s IEP goals related to social and pragmatic language included (a) attempting to correctly re-pronounce words when listeners appeared to misunderstand, (b) using a communication board to create longer sentences, (c) asking “May I...” to leave his chair to get materials or leave work space, and (d) reducing the number of repetitions of silly phrases and jokes in spontaneous conversations.

**Eric.** Eric was a 15-year-old male diagnosed with Down syndrome. Initial classroom and mealtime observations yielded the following summary of findings: Eric’s primary mode of communication was oral speech, augmented with communication books and visual strategies in the classroom. He had moderate difficulty making his wants and needs understood
verbally due to largely unintelligible speech. He was judged unintelligible by unfamiliar listeners and by familiar listeners in unfamiliar contexts. Eric’s eye contact was limited during initial observations. When he spoke about a topic that he initiated, he tended to maintain appropriate eye contact. Eye contact was inconsistent when communication interactions were initiated by others. Eric’s tone of voice tended to sound monotonous with limited inflection. His IEP communication goals related to social and pragmatic language included (a) maintaining appropriate eye contact with communication partners, (b) using a communication book as needed to clarify or expand his utterances when misunderstood by communication partners, and (c) making requests to unfamiliar individuals following a verbal plus visual model in community-based activities.

Jen. Jen was a 19-year-old female diagnosed with moderate cognitive impairment of unknown origin. Jen’s primary mode of communication was oral speech. Her verbal communication was augmented with pictorial representations of items or ideas (i.e., visual strategies) in the classroom as needed. She spoke in sentences with mostly well-formed grammatical structures and had a large functional vocabulary. She appeared to understand most social conversation rules in role-playing situations, but had difficulty following these rules in typical conversations. During communication interactions she tended to talk quietly and keep her head down without making appropriate eye contact with communication partners. Jen often made comments about events or others’ actions that could be characterized as inappropriate or rude. These comments appeared to interfere with communication maintenance. Jen did not maintain appropriate eye contact with peers or teaching staff during initial observations. Her tone of voice was described by a member of the teaching staff as “negative and sarcastic.” Jen’s laughing at inappropriate times was also consistently noted in initial observations. Her IEP goals related to social and pragmatic language included (a) using correct volume during classroom activities, (b) lifting her head up to look at the person talking to her, and (c) controlling her excitement by reducing the frequency of exaggerated arm motions and inappropriate laughing episodes.

Research Design and Procedure

We employed a single-subject multiple probe design across three target social and pragmatic language skills and replicated across five students. Within the multiple probe design, we also assessed effects of the intervention (a systematic teaching strategy) on two skills that the classroom teachers asked the research team to address. The three primary target behaviors were taking obligatory turns, taking nonobligatory turns, and asking partner-focused questions. The two secondary target behaviors were conversing with appropriate eye contact and using appropriate tone of voice in conversational speech. According to subjective information provided by teaching staff and recorded baseline data, these were deficient skill areas for all participants.

Prior to initiation of the project, graduate students in a Department of Speech Pathology and Audiology in a midwestern university were trained in data collection, systematic instruction methods, and role-playing strategies by members of the research team. Graduate students were instructed to initiate a total of 15 scripted interaction opportunities and discretely document participant responses and interactions related to the five targeted social and pragmatic communication skills. Graduate students were asked to participate as communication partners and respond as naturally as possible to any communication attempts made by study participants. They were further instructed in two levels of structured cues to facilitate participants’ use of target skills. They were instructed to refrain from providing additional verbal or nonverbal communication facilitation cues. Observation of role-playing scenarios between graduate students by members of the research team was used to determine training efficacy prior to initiating the project. Training activities continued until all graduate students demonstrated accuracy in project procedures, data collection, and systematic instruction methods.
Definitions of Target Behaviors and Responses

Obligatory turns were defined as turns that follow a partner’s direct questions. We defined nonobligatory turns as turns that follow a partner’s comment or statement or turns that start a conversation. Taking turns frequently during interactions, including those that are obligatory and those that are not obligatory, is one way for individuals to let partners know that they are interested and involved in the conversation and that they are competent communicators. Partner-focused questions are questions that individuals ask their communication partners about their thoughts, feelings, and experiences (Light & Binger, 1998). Appropriate eye contact was defined as SLP graduate student judgment that a participant’s eye contact was adequate to assist the participant in conveying his/her message. Similarly, appropriate tone of voice was defined as graduate SLP student judgment that a participant’s tone of voice was appropriate for the response, comment, or question that was made. Use of an appropriate tone of voice was scored as correct when tone of voice was appropriate, whether or not obligatory turns, nonobligatory responses, and partner-focused questions were used correctly. No response was scored as inappropriate tone of voice. Graduate students used the same probes during each lunchtime data collection session. (See Figure 1 for probe statements or questions). Slight variations in stimulus cues were listed to allow graduate students to modify stimulus cues for participants’ unique situations and in an attempt to keep conversations as naturalistic as possible.

Baseline condition (A). During the baseline condition (A) within the context of the multiple probe design, graduate SLP students observed, documented, and graphically displayed baseline student performance data for five specific pragmatic-social communication behaviors across a minimum of three lunch-time sessions per participant. During baseline observations, graduate students sat next to or across from high school student participants.

Intervention condition (B). During the intervention condition (B), participants engaged in two consecutive 20-minute systematic group instructional sessions (one instructional session per week) for each of the three identified target social and pragmatic language skills (use of obligatory responses, use of non-obligatory responses, and asking partner-focused questions). These sessions were led by the third author, a graduate SLP student. Instruction targeting use of appropriate eye contact and tone of voice was introduced and reinforced as a part of every instructional session. Group instruction was followed by 20-25 minutes of structured individualized role-play sessions provided by individual graduate students, each assigned to work with a single high school participant for the duration of the project. In order to promote generalization of the skill to more naturalistic communication environments, role-playing sessions were structured to target the social and language skill taught during the group instructional session.

To conduct generalization probes during the intervention condition (B), graduate students sat with participants during two lunch periods per week. Graduate students and high school participants remained paired throughout the study to ensure procedural reliability and consistency across all conditions. During each lunchtime session, the graduate SLP students initiated 15 scripted communication opportunities specifically designed to assess individual participants’ demonstration of target social and pragmatic language skills taught during the previous instructional session(s) (see Figure 1). Use of appropriate eye contact and tone of voice were evaluated in each of the 15 interaction opportunities. Graduate students verbally reinforced appropriate use of social and pragmatic language skills targeted during the previous instructional session as they documented high school participants’ responses to all 15 stimulus communication opportunities. If a participant did not accurately respond to an initial opportunity (natural cue), the graduate student provided one or two additional predetermined levels of prompts designed to elicit the correct response. This leveled prompting system was a simplified version of Light’s and Binger’s (1998) original four-level prompting system. The first prompt consisted of an expectant look along with a repeated stimulus statement or question. If this prompt elicited an appropriate response, the graduate student verbally reinforced the high school student for emitting a correct re-
Initial Baseline/Generalization/Maintenance Data

Student “Name”: ________________ Observer: ________________ Day/Date: ____________

Situation: Lunchtime conversation

Record the student’s performance every time s/he has the opportunity to take an obligatory or nonobligatory turn or ask a partner-focused question. Circle Y (yes) when the student must spontaneously take an appropriate nonobligatory or obligatory turn or ask a partner-focused question when s/he has the opportunity to do so. Circle N (no) if the student has the opportunity but does not respond OR takes an inappropriate turn. [An opportunity for a nonobligatory/obligatory turn or partner-focused question occurs every time the partner makes a comment and pauses.] Mark + in the EC column if the student demonstrates appropriate Eye Contact and a + in the TOV column if the student demonstrates appropriate tone of voice.

<table>
<thead>
<tr>
<th>Obligatory Turns</th>
<th>Circle</th>
<th>EC</th>
<th>TOV</th>
<th>Student’s Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you like to eat?</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What did you have for breakfast this morning?</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What did you do this morning?</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where is your mom/dad/sister/brother/teacher today?</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What did you do last night?</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Y = ______ Total Y % = ______

<table>
<thead>
<tr>
<th>Nonobligatory Turns</th>
<th>Circle</th>
<th>EC</th>
<th>TOV</th>
<th>Student’s Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I had fun this morning.</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I had a good/bad/sad morning</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hope I get my favorite dessert/food/drink tonight</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I watched a great TV show/movie yesterday</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My mom was so mad/happy/sad/worried/last night</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Y = ______ Total Y % = ______

<table>
<thead>
<tr>
<th>Partner-Focused Questions/Comments</th>
<th>Circle</th>
<th>EC</th>
<th>TOV</th>
<th>Student’s Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi. How’s it going?</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What’s up today?</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ha ha! That’s funny/silly!</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I’m so mad/scared/happy/worried/excited</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hope I see Bob/familiar name today</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Y = ______ Total Y % = ______

Figure 1. Probe statements or questions.
student gave the participant positive verbal reinforcement but recorded the initial response as incorrect. Correct responses were recorded only when participants responded accurately with a natural stimulus cue.

A slightly different prompting system was used to facilitate appropriate eye contact and tone of voice. The first level prompt remained the same, consisting of an expectant look and the repetition of the stimulus cue. The second level prompt consisted of pointing to a pictorial prompt. The first pictorial prompt depicted a pair of open eyes to prompt the participant to make eye contact with the communication partner. The graduate student pointed to the picture and repeated the original stimulus cue, indicating that the participant should respond again, but with appropriate eye contact. The pictorial prompt depicting use of appropriate voice was a picture of a face, with an arrow pointing toward the mouth and throat to facilitate use of appropriate tone of voice. Participants’ instruction during each group instructional and individual role-playing session included the use of these prompting systems, so they were familiar with the meaning both pictorial prompts.

When a participant reached his/her predetermined performance criterion for one target pragmatic-social communication skill, instruction for the subsequent target skill was taught during the next individual portion of the instructional session, following the role-playing activity. The research team made an a priori decision to discontinue target skill instruction if a participant did not reach the predetermined performance criterion within four probe sessions. In this case, the team began instruction for the student’s next identified target skill.

Generalization condition (A’). During the maintenance (A’) condition, graduate students continued to initiate the 15 pragmatic and social language communication opportunities, delivered without the leveled prompting system or verbal positive reinforcement. When the (A) condition was initiated for a previously targeted social and pragmatic language skill, a new social and pragmatic language skill was systematically taught during the instructional sessions. Data on student responses for all five target areas were collected during each session of the (A’) condition.

Setting

All instructional sessions and collection of participants’ performance data and graduate students’ procedural reliability occurred within a single high school. Instructional sessions took place in a single classroom one morning per week and data collection for students’ performance took place in the high school lunchroom two days per week. Graduate students sat with the same assigned participant during all instructional and data collection sessions.

Interrater Performance and Procedural Reliability

Participant performance data and graduate student procedural reliability data were collected by additional graduate SLP students trained as interraters. These interraters were not otherwise involved in the investigation. One research team member trained these students in scoring interventionists’ procedures and participant responses. During lunchtime data collection sessions, interraters sat close enough to the high school participants and graduate SLP communication partners to hear communication exchanges. They did not make eye contact or engage either the graduate student or participant in conversation; however, they were instructed to respond appropriately to communication attempts initiated by participants.

Results

Overall results indicated that the group systematic instructional strategy involving individualized role playing was effective in improving the social-pragmatic skills of the participants. Generalization probes in the high school lunchroom revealed variable results across participants. See Figures 2 to 6 for graphic displays of individual participants’ performance data. These figures show data for three primary target behaviors and secondary behaviors assessed within the single-subject multiple probe design. Experimental control was established as all participants demonstrated a change in their target behaviors only when the intervention was applied to each behavior within the multiple probe design.
Bob’s Performance Data Related to Primary Target Behaviors

As shown in Figure 2, Bob used obligatory turns appropriately with a mean of 44% during the baseline condition (A). During Condition B, Bob’s mean use of obligatory turns was measured at 45%, a mean increase of 1%. With generalization probes (A’), Bob’s use of obligatory turns increased to a mean 71% of opportunities. A total mean increase of 27% in use of obligatory turns was measured from baseline through generalization conditions.

Baseline data for Bob’s use of nonobligatory turns was measured at a mean 38%. During Condition B, Bob’s mean appropriate use of nonobligatory turns was measured at 70%. During the generalization condition (A’), Bob decreased his use of nonobligatory turns at a mean 2%, resulting in a mean use of 62%. A total mean increase of 24% in use of appropriate nonobligatory turns was measured from baseline through generalization conditions.

Bob used appropriate partner-focused questions in a mean 31% of opportunities during the baseline condition (A). This mean increased to 35% during the intervention condition (B). Bob’s mean use of appropriate partner-focused questions increased during the generalization (A’) condition to a mean 40% of opportunities. This resulted in a mean 9% increase from baseline through generalization conditions.

Bob’s Performance Data Related to Eye Contact and Tone of Voice

Bob’s mean percentage gain of appropriate eye contact from the baseline through generalization conditions was 6% with opportunities for taking obligatory turns and 13% with opportunities for taking nonobligatory turns. His percentage of appropriate eye contact decreased 2% with opportunities for asking partner-focused questions from baseline through generalization conditions.

Bob’s use of appropriate tone of voice with opportunities for taking obligatory turns decreased by 9% throughout the program. With opportunities for taking nonobligatory turns, Bob demonstrated no mean increase in his use of appropriate tone of voice from baseline through generalization, although he increased performance on this behavior during the intervention condition. Bob also demonstrated a mean decrease of 15% in his use of appropriate tone of voice from baseline through generalization conditions with opportunities for asking partner-focused questions.

TJ’s Performance Data Related to Primary Target Behavior

During Condition A, TJ exhibited use of appropriate obligatory turns at a mean rate of 84% of opportunities. This mean decreased during Condition B to a rate of 70%. In Condition A’, TJ’s mean use of appropriate obligatory turns occurred at a mean 98% of opportunities. This resulted in a total mean increase of 14% from the baseline through generalization conditions. See Figure 3 for TJ’s performance data.

TJ’s mean use of appropriate nonobligatory turns in the baseline condition (A) occurred at a mean rate of 58% of opportunities. During the instructional condition (B), this mean rate increased to 70%. In the generalization condition (A’) his mean use of appropriate nonobligatory turns occurred at a rate of 86% of opportunities, resulting in a total mean increase of 28%.

In the baseline condition (A), TJ’s use of appropriate partner-focused questions occurred at a mean rate of 22%. This mean increased to 53% during the instructional condition (B). In the generalization condition (A’), TJ’s mean use of appropriate partner-focused questions occurred at a rate of 35% of opportunities with a total mean increase of 13% across all conditions.

TJ’s Performance Data Related to Eye Contact and Tone of Voice

Figure 3 shows TJ’s performance data across conditions for eye contact and tone of voice. With opportunities for taking obligatory turns, TJ demonstrated a total mean increase of 41% in the use of appropriate eye contact. He increased appropriate eye contact by a mean 50% across conditions with opportunities for taking nonobligatory turns. With opportunities for asking partner-focused questions, TJ’s mean use of appropriate eye contact...
Figure 2. Bob’s performance data.
Figure 3. TJ’s performance data.
contact increased 41% from baseline through generalization conditions.

TJ’s use of appropriate tone of voice increased 64% throughout the program with opportunities for taking obligatory turns. With opportunities for taking nonobligatory turns, TJ demonstrated a mean increase of 73% use of appropriate tone of voice across all conditions. TJ’s mean use of appropriate tone of voice increased a mean 53% across conditions as measured within his program related to asking partner-focused questions.

Devin’s Performance Data Related to Primary Target Behaviors

As shown in Figure 4, baseline data revealed Devin’s mean use of obligatory turns at 16% of opportunities. His mean use of appropriate obligatory turns increased to a mean 40% during the instructional condition and his obligatory turn-taking dramatically increased to a mean 80% of opportunities in the generalization condition. An overall 64% increase in Devin’s mean use of obligatory turns was recorded from baseline through generalization conditions.

Baseline (A) data for Devin’s nonobligatory turn-taking showed a mean rate of 49% of opportunities. His mean nonobligatory turn-taking decreased 4% during the intervention condition (B), but increased to a mean 84% of opportunities during the generalization condition (A’). This represents a mean 35% increase from baseline through generalization conditions for Devin’s nonobligatory turn-taking.

Devin’s mean use of partner-focused questions during the baseline condition was measured at 25% of opportunities. During the intervention condition, his use of partner-focused questions increased to a mean 35% of opportunities. However, Devin’s mean use of partner-focused questions decreased to 28% of opportunities during the generalization condition (A’). This represented an overall mean 3% increase for Devin’s use of partner-focused questions.

Devin’s Performance Data Related to Eye Contact and Tone of Voice

Figure 4 also shows Devin’s performance data related to appropriate eye contact and tone of voice within conversations. Given opportunities for taking obligatory turns, Devin demonstrated a total increase of 55% mean use of appropriate eye contact from the baseline condition (A) through the generalization condition (A’). Throughout the program, he also showed a mean increase of 49% in his use of appropriate eye contact during opportunities for taking nonobligatory turns but he demonstrated an overall mean 1% decrease in his use of appropriate eye contact during opportunities for asking partner-focused questions.

Devin’s mean use of appropriate tone of voice increased by 70% from the baseline through generalization conditions within opportunities for taking obligatory turns and increased by 54% within opportunities for taking nonobligatory turns. Within opportunities for asking partner-focused questions, Devin demonstrated an overall increase of 9% for mean use of appropriate tone of voice throughout the program. See Figure 4 for Devin’s tone of voice data.

Eric’s Performance Data Related to Primary Target Behaviors

Baseline data indicate that Eric took obligatory turns during 72% of opportunities provided during lunchtime conversations. During the intervention condition, Eric’s mean use of obligatory turns increased to 95% of opportunities. This mean rate decreased to 82% during the generalization condition, representing a total mean increase of 10% from baseline through generalization conditions, as shown in Figure 5.

Eric’s rate of taking nonobligatory turns was measured at a mean 53% of opportunities during Condition A. During Condition B, his mean use of appropriate nonobligatory turns increased to a rate of 60% of opportunities. Eric’s mean use of appropriate nonobligatory turns was measured at a mean 69% during Condition A’. As seen in Figure 5, Eric increased his use of nonobligatory turns by a mean 16% from Condition A through Condition A’.

During the baseline phase, Eric’s asking of appropriate partner-focused questions during lunchtime conversations was measured at a mean rate of 40% of opportunities he had. During the intervention condition, this mean
Figure 4. Devin's performance data.
Figure 5. Eric's performance data.
decreased to 15%. In the generalization condition, Eric asked appropriate partner-focused questions at a mean rate of 44% of opportunities. This represented a mean increase of 4% from the baseline condition through the generalization condition.

**Eric’s Performance Data Related to Eye Contact and Tone of Voice**

Eric demonstrated a total mean increase of 17% occurred from baseline condition (A) to generalization condition (A’) for mean use of appropriate eye contact with opportunities for taking obligatory turns. With opportunities for taking nonobligatory turns, Eric’s use of appropriate eye contact increased a total mean 11% across the three study conditions. As seen in Figure 5, a total 24% mean increase in Eric’s use of appropriate eye contact occurred from Condition A through Condition A’ with opportunities for asking partner-focused questions.

Figure 5 also shows a total mean 17% increase in Eric’s use of appropriate tone of voice with opportunities for taking obligatory turns from the baseline condition through the generalization condition. Eric increased his use of appropriate tone of voice by 12% across the three study conditions with opportunities for taking nonobligatory turns. A total mean increase of 20% for Eric’s use of appropriate tone of voice was noted with opportunities for asking partner-focused questions from baseline through generalization conditions.

**Jen’s Performance Data Related to Primary Target Behavior**

As indicated in Figure 6, Jen took appropriate obligatory turns at a mean appropriately 64% during the baseline condition (A). During the intervention condition (B), her mean rate of obligatory turn-taking increased to 80%. During generalization probes, Jen appropriately took obligatory turns during 99% of opportunities provided. Results indicate an accelerating trend in Jen’s appropriate responses when given opportunities for taking obligatory turns.

Baseline data for Jen’s nonobligatory turn-taking revealed a mean usage of 76%. During the intervention condition, her mean appropriate use of nonobligatory turns was measured at 95% of opportunities. Generalization data showed a slight decrease in nonobligatory turn usage, with a mean of 93% appropriate responding during the A’ condition.

Baseline data for Jen’s use of partner-focused questions revealed a mean of 34% of opportunities. A mean of 30% was recorded during the intervention condition for her use of partner-focused questions. Evaluation of generalization of use of partner-focused questions found a decrease in Jen’s use of appropriate partner-focused questions. A mean appropriate use of 12% was recorded in the generalization condition.

**Reliability Data**

Performance reliability data were collected during approximately 20% of all sessions across all conditions. Trained graduate students who were not involved in the investigation previously collected interrater data. Overall interobserver agreement for participant performance data ranged from 94-100% (M = 95.1).

Performance reliability data for Eric were collected during five out of 22 (22.7%) ses-
Figure 6. Jen's performance data.
sessions. The mean interobserver agreement rate for Eric’s performance was 95.2%. Reliability data for Devin were collected for five out of 22 (22.7%) sessions. The mean interobserver reliability rate for Devin’s performance was 95.2%. Performance reliability data for TJ were collected for four out of 18 (22%) sessions and revealed a mean interobserver rate of 97%. Performance reliability data for Jen were gathered for four out of 22 (18%) sessions and mean interobserver agreement was calculated at 94%. Interobserver reliability data for Bob were collected for four out of 22 (18%) sessions and showed a mean interobserver agreement rate of 94%.

Data related to procedural reliability were also collected for approximately 20% of all sessions. Independent raters documented whether or not graduate students used an attentional cue prior to initiating a facilitating comment or question, perceived naturalness of conversations, use of predetermined cueing levels, and use of positive reinforcement during intervention conditions. Results indicated an overall procedural reliability rating of 96% across all graduate students. This percentage indicated an acceptable level of procedural reliability.

Discussion

This study’s results indicate an overall functional relationship between a systematic instructional approach and increased social-pragmatic skills for high school students with moderate cognitive disabilities. Specifically, participants generally increased their skills related to taking obligatory turns, taking non-obligatory turns, asking partner-focused questions, using appropriate eye contact, and using appropriate tone of voice. While some performance variability was indicated, general improvement was documented in multiple areas for all participants. Individual learning and personality characteristics as well as naturally occurring distractions in the generalization setting may have contributed to this variability.

This study also shows that high school lunchroom environments may serve as naturalistic settings for facilitating and assessing students’ generalization of pragmatic-social language skills. Our results extend the findings of McGee and colleagues (1992) who found that peer incidental teaching resulted in gains by students with disabilities in reciprocal peer communicative interactions in an academic setting but that these skills did not generalize to school mealtimes. Strategies for promoting pragmatic-social skills in naturalistic settings need to be further investigated.

We recommend more research investigating the effectiveness of various systematic instructional strategies on the social-pragmatic skills of students of varying ages and ability levels. The current study contributes to the literature base that supports structured facilitation techniques that enhance communication interactions and relationships between students with disabilities and their peers. However, we recommend enhancing the generalizability of the current study’s findings by implementing similar systematic instructional procedures to other populations and settings such as community-based and vocational educational sites. For example, extending the findings of Ingersoll, Dvortcsak, Whalen, and Sikora (2005) on the effectiveness of developmental social-pragmatic language intervention approaches beyond children with autism spectrum disorders may encourage more research-based practice in spontaneous speech and communicative interactions between peers with and without disabilities in naturalistic environments.

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