Research Article

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Teaching the Hidden Curriculum of Group Work for Students with Autism Spectrum Disorder

Abstract: Autism spectrum disorder (ASD) is associated with marked abnormal impairments in social interactions. This study used a multiple baseline design (A-B-A) to understand how four fifth grade students with ASD verbally interacted with five teacher-nominated peers during cooperative group work. The purpose of this study was to examine how students with ASD participated in the hidden curriculum of socialization that group work has associated with it. Video-recorded observations were transcribed and coded based on the nature of each conversational attempt: prompted reciprocal communication, unprompted reciprocal communication, self-centric conversations, directives, clarification questions/statements, and off-topic remarks. Data was taken at baseline, during a time period where a structured protocol was used in reciprocal peer tutoring during literature circles, and when the literature class returned to business-as-usual. Results from this study indicate that when the four participants with ASD used a structured protocol that guided communication attempts (through explicit tasks) during cooperative academic group work their overall interaction attempts increased, as did their (prompted and unprompted) reciprocal exchanges. Generalization happened for one student, but a limitation may explain why it did not happen for all four students.

Keywords: autism; inclusion; social skills; cooperative learning; special education.

1 Introduction

The hidden curriculum of schooling has specific requirements and behaviors that an individual is implicitly supposed to know for each of the different environments and grouping structures they encounter. The hidden social curriculum of schooling includes skills to effectively communicate in these different environments (particular classrooms, recess settings, the library, lunchroom, and auditorium) and different grouping structures (whole-class instruction, cooperative group work, independent work and peer-to-peer instruction) (Heerey, Capps, Keltner & Kring, 2005). In essence, it socializes students to the values acceptable in specific work environments, but does so without explicit instruction and formal teaching; it just happens (Ryan & Cooper, 2013). The understanding of this hidden curriculum, however, does not just implicitly develop for students with marked social impairments, like those seen in autism.

Autism spectrum disorder (ASD) is the fastest-growing developmental disability in the United States. The Center for Disease Control (2019) reports that one out of every 59 individuals will be diagnosed on the autism spectrum. This disability is characterized by "persistent deficits in social communication and social interactions across multiple contexts" (American Psychiatric Association, 2013, p. 50). Marked abnormal impairments of social interactions and communication are seen in both verbal and nonverbal skills. Individuals with ASD often exhibit verbal communication that is one-sided, through making requests, labeling items, or having self-centric conversations (American Psychiatric Association, 2013). These pragmatic difficulties can include topic management (or the ability to make comments pertinent to the topic being discussed and the ability to introduce topics that are relevant and of interest to others), information management (providing the appropriate amount of information to aid the listener) and reciprocity (having a balanced back-and-forth conversational exchange) (Parsons, Cordier, Munro, Joosten, & Speyer, 2017; Paul, Orlovski, Marinko, & Volkmar, 2009). Nonverbal communication in individuals with ASD also showcases breakdowns in communication attempts. These breakdowns happen because of difficulties in taking another person's perspective, inflexibility in activities and interests, and a lack of understanding in how tone, kinesics and proxemics play a part in the content of a verbal exchange (American Psychiatric Association, 2013).

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Individuals with ASD often fail to relate to others and do not independently look to others as models to learn and practice social skills or imitative play (Carpenter, Pennington & Rogers, 2002; Escalona, Field, Nadel, & Lundy, 2002). Even though social skills deficits are the central defining feature of ASD, very few students are receiving adequate explicit instruction to develop appropriate social skills (Hume, Bellini, & Pratt, 2005; Locke, Ishijima, Kasari, & London, 2010).

In fact, the majority of social skills interventions have been developed and tested in clinical settings, and therefore use peer networks that are not seen on a daily basis by the individual with ASD (Bellini, Peters, Benner, & Hopf, 2007; Kasari & Patterson, 2012; Rao, Beidel, & Murray, 2008; Reichow & Volkmar, 2010; Williams-White, Keonig & Scah, 2007; Wolstencroft, Robinson, Srinivasan, Kerry, Mandy, & Skuse, 2018). Since the six reviews of the literature cited here on peer-to-peer social skills instruction have been published, studies have been moving this instruction into naturalistic settings by looking at after-school club activities, play dates, and 'play' times during the school day. Some studies on peer-to-peer social instruction taught prompted initiations and then measured the child's ability to carry out these prompts (Banda & Hart, 2010; Koegel, Kuriakose, Singh, & Koegel 2012). One study, conducted by Koegel, Fredeen, Kim, Danial, Rubinstein, and Koegel (2012), however, made a conceptual improvement in how conversational attempts were coded by aggregating findings into spontaneous versus prompted social initiations. This intervention led to increases in spontaneous initiations and in overall social engagement during this structured intervention. To continue developing social skills, interventions focus should move towards teaching social skills in conjunction with academic instruction; doing so would begin to address the hidden social curriculum of schooling.

It is important to address the hidden curriculum associated with social interactions that happen during cooperative group work. In many of our schools, students with ASD are often asked to enter into group work (or cooperative learning), without scaffolds or supports to aid their interactions (Gal et al., 2009). Therefore, in cooperative group settings, students with ASD, often, either do not contribute to the conversation or try to take control of the group as a coping strategy (Attwood, 2007).

It is only when groups are structured so that students understand how they are expected to work together that cooperation and learning can reach their potential (Slavin, 1995). In order to successfully aid group work

and develop effective interactions related to the hidden curriculum of schools, students with ASD need to be made aware of the specific role and expectations that they have in a group (Bain, 2013). Students with ASD are oftentimes not aware of the implicit rules associated with this hidden curriculum, and working with peers can present a special challenge (Bieber, 1994; Carter, 2018). This challenge can lead to neurotypical peers responding through isolation and/or rejection (Bottema-Beutel, Turiel, Dewitt, & Wolfberg, 2016). The opposite, social acceptance, occurs more often when students with ASD are explicitly told the social norms and then exhibit these appropriate behaviors in the environment they are working within (Chamberlain, Kasari, & Rothman-Fuller, 2007; Kapp, 2018).

Explicit attention and instruction to group work norms and expectations should be personalized and developed in ways to address each student's individual needs (Moyse & Porter, 2015). This means that social skills training needs to be individualized and the development of specific social skills happens across all environments, including cooperative group work in the general education setting. Ogilvie (2011) suggested one way to do this was through peer mentoring during assigned cooperative learning. This direct interaction amongst students can provide the individual with ASD the knowledge and tools to succeed in the social world, including practicing such skills as: knowing when to talk, listen, remain silent, and give a response. Successful use of these social skills can, in turn, promote social relationships, enhance cooperative group work, and allows for individual social, emotional, and cognitive development to occur (Bellini, 2005; Tobin, Drager, & Richardson, 2014).

Students' success in academia and in the job-force often relates to their ability to use appropriate social skills in natural environments, like cooperative group work, with their peers (Ke, Whalon, Yun, 2018; Meyer, 2001). Inclusive programming should couple social skills competencies with academic achievement in the general education setting, a naturalistic environment (Bock, Borders, & Probst, 2016; Rogers, 2000; Whalon, 2004). By moving social skills programming into the general education classroom, hidden social curricula can be addressed while working in cooperative groups and in partnering activities (Heerey et al., 2005; Ingersoll & Schreibman, 2006; Wang, Parrila & Cui, 2013; Williams, Johnson, & Sukhodolosky, 2005).

This study looks at four fifth-grade students diagnosed with ASD and how they respond to cooperative peer group structures with and without explicit guided instruction. The research questions driving this study are:

Table 1: Student performance on the fourth edition Wechsler Intelligence Scale for Children (WISC-IV)

WISC-IV	Verbal Comprehension	Perceptual Reasoning	Working Memory	Processing Speed	FSIQ
Victoria	95 (Avg.)	112 (H. Avg.)	102 (Avg.)	85 (L. Avg.)	99 (Avg.)
Ben	75 (Borderline)	92 (Avg.)	64 (Ext. Limited)	97 (Avg.)	82 (L. Avg)
Craig	87 (L. Avg.)	94 (Low)	74 (Low)	80 (L. Avg.)	84 (L. Avg)
David	93 (Avg.)	96 (Avg.)	88 (Low Avg.)	68 (Low)	84 (Low Avg.)

1. In what ways are these four students with ASD participating in verbal communication when placed in cooperative peer groups (when explicit guided instruction is and is not present)?

2. What are the effects on socializations taking place when cooperative group work is aided with a structured protocol that calls for reciprocal communication?

2 Methodology

A multiple baseline (where each student served as their own baseline) case study design was used to understand how four fifth-grade students with ASD verbally interacted with peers during cooperative group work. Each individual student served as a case, and these particular students were bound by a specific district, time, grade level, classroom, and particular peer students (Yin, 2008). Throughout this study the verbal social interactions that each individual student with ASD exhibited during cooperative group work were examined to gain an understanding of the nature of this communication. This research took place in a naturalistic school environment, a kindergarten through fifth grade elementary school in an urban district in the Northeast United States.

2.1 Participants

All participants in this study were fifth-grade students, due to the school site having multiple individuals diagnosed with ASD as this grade level; it was a convenient sample. Four of the students (Victoria, Ben, Craig, and David) included in this study had an autism diagnosis as defined by the DSM-V. Inclusion criteria for this study required the student with autism to be in the general education setting for at least 45 minutes of academic instruction during the school day, according to their individualized education program (IEP) service delivery page. All of the students had current IEPs, from which some information is highlighted below in order to provide a more in-depth picture of the

participants' current social performance Table 1 provides a summary of each student's performance on Weschler Intelligence Scale for Children, fourth edition (WISC-IV).

Victoria. Victoria's chronological age when the study began was 10 years 7 months. Victoria's IEP indicated she was in a full inclusion program. A major concern noted in Victoria's IEP was her inability to relate to her peers in age appropriate ways. It was noted in her IEP that currently her peers do not include her in conversations.

Ben. Ben's chronological age at the start of this study was 11 years 5 months. His current IEP indicated he had trouble staying on task, listening to peers in conversational exchanges, and not understanding appropriate proxemics, as he was invading his peers' personal space through touching them. His IEP also indicated he would often whine and complain when given academic work. Ben was in a partial inclusion program.

David. David's chronological age at the start of this study was 10 years 7 months. In the IEP, David's mother recognized his desire for friendship, but noted he had difficulty understanding age-appropriate interactions, including silliness. His IEP indicated he struggled with approaching and initiating interactions with peers. David was in a partial inclusion program.

Craig. Craig's chronological age at the beginning of this study was 10 years 9 months. According to Craig's placement consent form, his educational placement was a substantially separate classroom. Craig's IEP indicated he often shut down when he was asked to do academic work. The IEP noted Craig's social goal was to work on conversational openers, turn taking, eye contact, greetings, closing, and maintaining one topic of conversation with his typical peers, noting he did not perform any of these skills on a consistent basis.

2.2 General Education Peers

Five general education grade five peers also participated in this study. These five peers (Robby, Kyle, Abby, Laura, and Sydney) were recommended by teachers because of

Table 2: Videotaped data collection by phase

	Baseline	Intervention	Maintenance	Return to Baseline
Number of Videos in Inclusion Setting	19	30	13	12

their strengths in social skills. When these typical peers were approached, all expressed an interest in being part of a cooperative reading group. Consent was obtained for all participants at this point.

2.3 Data Collection

Video-recorded observations with transcription were used in this study. Data collection took place in the inclusion classroom environments and all video recordings were 30 minutes in length. The study had a time-series multiple baseline design that employed baseline, intervention, maintenance, and return to baseline phases. Participants had a staggered start when introduced to the intervention to rule out maturation as the cause for social changes that occurred. Table 2 indicates how many 30-minute videos were taken during group work during each phase of this study.

2.4 Procedure

Each student was observed (via video recording) at least three times (and upwards of seven times, to account for the staggered start) in the inclusion setting working in a cooperative group before intervention began. During intervention, each student with ASD was partnered up with two grade-level peers to work on comprehension monitoring (using the fiction text that was being read in this particular inclusion class) and making personal connections with a text. The procedure used during intervention can be seen in Table 3.

Each student in a triad read a page of text aloud. After each page of text, one peer would ask the reader a remember question (seen in Table 3). Once the reader responded, then the other peer would ask the reader an understanding question (seen in Table 3). The reader would then respond and wait for the first peer to ask a text-to-self (application) question (seen in Table 3). When the reader responded to this question, then the two peers would try to connect with what the reader shared by relating a similar experience to that which was just shared ("Me too" section of Table 3). After going through

Table 3: Structured group work intervention reference sheet

Read one page
Ask a remember question:
    Who are the main characters?
    Where are the main characters?
    What is the main character doing?

Answer the remember question
Ask an understanding question:
    What happened in the story?
    What is the main idea?

Answer the understanding question
Ask a text-to-self question:
    What does this remind you of?
    Have you ever?

Answer the text-to-self question
Relate to your peer, "Me too…"
Next person reads one page and repeat

this protocol once, group members would switch roles so that each group member had a turn to be the reader and questioner. This protocol would be repeated for the entire 30 minutes of observation.

The intervention phase of this study lasted for one month, after which a maintenance fading of the intervention occurred. This structured group work intervention was faded from taking place from twice a week to once a week. During the maintenance phase of this study, no scripted reference sheets (like the one seen in Table 3) were used. At least three video observations took place for each student in this phase of data collection.

After maintenance, a return to baseline phase occurred, and each student was observed three additional times as they worked in cooperative groups in the inclusion setting.

2.5 Data Analysis

Social interactions that took place in the academic setting were examined to see the content of communication attempts, and if students were included in conversations

Table 4: Coding Sheet Containing Definitions and Examples of Each Communication Type

Prompted Reciprocal Communication	A student asks or answers questions from the structured reading protocol. Examples of these questions can include: Who are the main characters? What happened in the story?
Unprompted Reciprocal Communication Exchanges	A student asks or answers a novel question, statement or comment from a peer. These are questions that are not on the reading protocol.
Self-centric Conversations	Conversation is of interest solely to the student having it. Student is talking at rather than with their peers. This lasts more than three sentences (e.g. student starts to tell another student all they know about dinosaurs.)
Directives	Commands telling another student what to do (e.g. "Read." "Ask me a question." "Answer me.")
Clarification Questions/Statements	Questions that check on a routine or statements that reiterate what a student just said (e.g. "Are we on page 32?" "Do I ask a question now?" "What did you say?")
Off-topic Remarks	Statements made that do not fit the contextual conversation currently taking place (e.g.: All students are discussing the main character in a novel and the student with ASD states, "Bananas remind me of demon claws.")
Total Conversational Attempts	The sum total of all of the above categories, including: prompted reciprocal communication, unprompted reciprocal communication, self-centric conversations, directives, clarification questions/statements, and off-topic remarks.

their typical peers were engaged in. The frequency of successful verbal communication attempts was recorded, as was the nature of each attempt: prompted reciprocal communication, unprompted reciprocal communication, self-centric conversations, directives, clarification questions/statements, and off-topic remarks. Table 4 provides a definition of each dependent variable (communication attempt categories), and an example of each type of communication attempt.

These verbal conversations were coded using NVivo 10 software. Inter-rater reliability was checked by a university graduate student; when disagreement on coding use arose, the student and researcher discussed it until they reached an agreement. The researcher and graduate student watched 20% of the videos together and coded the nature of social interactions in these videos.

3 Results

Results from this study indicate that when the four students were prompted, through using structured questions about academic content, the interactions that took place in cooperative peer groupings increase. Figures 1-4 (see Appendix) show that there were increases seen in the frequency count of conversational exchanges, prompted reciprocal exchanges, unprompted reciprocal exchanges, clarification statement/questions, directives, and off-topic remarks when comparing intervention and maintenance data phases to each individual student's baseline phase. During the return to baseline phase, after

intervention had been removed for a month, only one student remained above baseline levels, in terms of the frequency of conversational exchanges.

3.1 Baseline academic inclusion setting

During baseline, in the 570 minutes of video data, 16 total attempts at communication were made by the students with autism, and only one conversational attempt was made towards a student with autism. Five of these comments were directives towards another student with autism. Three conversational attempts were made by a student with autism checking on a classroom routine (clarification); these yielded no response from their typical peers. Six other attempts were off-topic remarks, again with no reciprocation in conversation. In the entire 570 minutes of baseline data collection only once did a peer initiate a social conversation with a student with autism by simply saying, "Hi." David responded with, "Hi," and then walked away ending the conversation.

Victoria. In baseline, Victoria had no prompted or unprompted reciprocal communication exchanges. She did make eight off-topic remarks to peers, but only one of these yielded any acknowledgment from a peer, who responded "no" when asked if she wanted to smell Victoria's hair. Victoria asked for clarification on the class schedule once, as well. This, however, also yielded no response from a peer.

Ben. In the time spent in baseline, Ben only made two communication attempts with peers. Both were directives

telling peers to "Look" and "Find somewhere else to sit." No verbal response was given back to either of these comments.

Craig. Seven conversational attempts were made by Craig in this phase. Five of these were off-topic remarks, and included: "I can see small houses. I can see the moon," "Does she dissect a shark?", and "I can do magic." None of these yielded a peer response, and none jived with the context of the conversation taking place in the peer group. One of the other conversational attempts was a directive, telling another peer to answer a question, and the last conversational attempt asked for clarification, "Is this how you do it?"

David. David made two conversational attempts during baseline. He responded back to a peer's initiation, "Hi" and he asked a peer, "What about me?" when all the group members were putting their names on a paper to hand in.

3.2 Intervention

Thirty video-taped sessions occurred during the intervention phase. During this phase the students worked on comprehension development through asking reciprocal questions after reading a page of text. Students were prompted (via a reference sheet) to ask three questions per page of text. Fidelity of implementation for this protocol ranged from 80-100% accuracy with 100% inter-rater reliability for the 30% of data checked. The number of prompted reciprocal communication exchanges during intervention ranged from 6-17 exchanges, with a mean of 11.03 prompted reciprocal exchanges per intervention session. Unprompted reciprocal communication exchanges during this intervention ranged from 0-14 exchanges, with a mean of 5.06. Self-centric conversational exchanged ranged from 0-2 with an average of .125. The number of directives given by the four students with ASD during an intervention session ranged from 0-9, with a mean of 2.33. Clarification questions or statements ranged from 0-12, with an average of 4.23 clarification statements made by the student with ASD during each session. Off-topic remarks made during the intervention phase, by the four students with ASD, ranged from 0-6, with an average of 1.38 off-topic remarks per session. Overall communication exchanges during the intervention phase ranged from 11-41, with an average of 24.6 conversational exchanges made by the students with ASD each session. Visual inspection shows that for all four students the percentage of non-overlapping data for reciprocal conversational exchanges and total

communication attempts was 100%, indicating that this intervention (based on the degree of effect size) is very promising.

Victoria. Victoria's conversational attempts during intervention ranged from 13-38, with the average being 24.6 conversational attempts each day of intervention. Her prompted reciprocal conversational communication ranged from 7-17, with an average of 11.25 prompted reciprocal exchanges occurring each day. All of the prompted reciprocal exchanges were derived from the reference sheet the cooperative groups were given, and were therefore related to comprehending and connecting with the text. Her unprompted reciprocal conversational exchanges ranged from 1-11, with a mean of 4.625 unprompted reciprocal communication happening each day. Unprompted reciprocal communication occurred on topics including: attending church, going shopping, going to the library, school, hobbies or interests, family make-up, pets, vacations, and favorite foods. One example of an unprompted reciprocal communication that took place in Victoria's group went as follows:

> Abby: Do you go to church?
>
> Victoria: Yeah. I sing there. Do you go to church at all?
>
> Laura: Sometimes.
>
> Abby: I don't go to church at all.
>
> Victoria: Wow! You don't go to church? Where do you pray for Jesus?
>
> Abby: Oh, I pray for Jesus at my house. Me and my mom sometimes pray together. Like, I don't go to church every day.
>
> Laura: I forget to pray.

Victoria did not have any self-centric conversations during the intervention phase. She did give directives to others in her group an average of .625 times a session, with a range of 0-2 directives given each session. This consisted of Victoria telling her peers who should read first, and to "ask a question".

She asked clarification questions of her group members an average of 6.5 times a session (range of 2-12). Clarification for Victoria focused on listening to her peers, asking them to repeat their answer to a particular question, and the structure of the session, wondering who should ask a question, what question she should ask, and where in the text she should begin reading from. Victoria made off-topic unaided remarks in four of the eight intervention sessions; the range for off-topic remarks was 0-6, with a daily average of 0.125. The off-topic remarks included: "Do you have reading glasses?", "Is this lava (pointing to a section of the floor)?", "Well, maybe I should get better

grades next time," and, "It's something, and it involves your feet." These statements, and others like them, were not related to the text or anything the other students in the group were discussing.

Ben. Ben's conversational attempts during intervention ranged from 20-38, with a mean of 29.25 conversational attempts per day of intervention. His prompted reciprocal conversational communication ranged from 6-20, with an average 11.63 reciprocated exchanges occurring each day focused on comprehending and personally relating to the text. His unprompted reciprocal conversational exchanges ranged from 1-8, with a mean of 5.75 unprompted reciprocal communication exchanges happening each day. Topics covered included: eating at restaurants, going to museums, summer camps, playing games, spending money, family make-up, special family moments, the location of their houses, school routines and rules, and jobs they desire. An example of this unprompted conversation, stemming from a text-to-self connection is seen here:

> Robby: What does this remind you of?
>
> Ben: It reminds me of going to the Museum of Fine Arts and I got lost, but then my friends found me.
>
> Sydney: How did you get lost?
>
> Ben: Uh... I was looking at a statue and they went to the next area. Did you two do the same?
>
> Sydney: Well, I got lost one time I was supposed to be with my dad and I just wandered off. I was in a store not a museum.

Ben had no self-centric conversations during the entire intervention. Ben gave directives to others in his group during every session, averaging 5.25 directives per session, with a range of 1-9 directives given each session. He was very focused on routine and would often tell his peers when it was their turn to read, ask, or answer questions. He asked clarification questions to his group members an average of 4.88 times a session (range of 2-9), checking that the routine structure of the protocol was being followed, as well repeating back his peer's comments on occasion. Ben made off-topic unaided remarks in seven of the eight intervention sessions; the range for off-topic remarks was 0-5, with a daily average of 2. His off-topic remarks were often centered on bathroom humor and were followed by him pretending to pass gas; his peers ignored these comments and actions.

David. The range of David's conversational attempts during intervention was 12-24, with 18.28 conversational attempts averaged per day of intervention. His prompted reciprocal conversational communication ranged from 8-17,

with an average of 11.71 prompted reciprocated exchanges, focused on comprehending and personally relating to the text, occurring each day. His unprompted reciprocal conversational exchanges ranged from 0-16, with a mean of 4.57 unprompted reciprocal communication exchanges happening each day. These unprompted reciprocal conversational exchanges encompassed varying topics such as: using the subway, going to different museums, amusement parks, family structure, vacations, the weather, current events, birthday gifts, playing games, the movies, favorite snack foods, favorite subjects in school, and stress caused by school. One of the interactions that took place in this particular group went as follows:

> Abby: David, have you ever been on a plane?
>
> David: Yes!
>
> Abby: Where?
>
> David: El Salvador.
>
> Abby: Who did you visit?
>
> David: Oh, my relatives.
>
> Abby: Do you know a lot of Spanish?
>
> David: Yeah... like casa means house and libro means book. Papel means paper.
>
> Laura: Do you talk to your mom in Spanish?
>
> David: Yes.
>
> Abby: I was born in China. I was found on sidewalk. I don't remember being there. I came here when I was a baby. I don't know my parents.
>
> Laura: Were you adopted then?
>
> Abby: Yeah.

David had no self-centric conversations during the entire intervention. He did give directives to others in his group in one of the seven intervention sessions, noting for the other two students it was their turn to ask a question of him. He asked clarification questions to his group members (checking on the structured routine) in seven of the eight sessions, with a range of 0-4, and an average of 1.71 times a session. David made no off-topic unaided remarks during intervention.

Craig. Craig's conversational attempts range was 11-34, with an average of 25.57 conversational attempts occurring each day of intervention. His prompted reciprocal conversational communication ranged from 7-12, with an average of 9.42 prompted reciprocated exchanges occurring each day. Unprompted reciprocal conversational exchanges occurred in six out of the seven intervention sessions and ranged from 0-14, with a mean

of 6.71 unprompted reciprocal communication exchanges happening each day. These conversations took place on a few topics, including: food, toys, sports, bathroom humor, school, interests in girls, disagreements that happened at home, and trying to outdo each other by telling exaggerated tales. One such tale is captured here:

> Robby: What does this remind you of?
>
> Craig: Making a sandwich.
>
> Kyle: When?
>
> Craig: Maybe a month ago. I don't eat sandwiches. I only eat cheeseburgers… It's kind of like a sandwich.
>
> Kyle: Well, you told me something about a sandwich… I made a sandwich.. I made a big sandwich… It was this tall (shows with his hand)… Well, technically it was this big. It was an everything sandwich.
>
> Craig: I made an everything sandwich once with chips in it.

Craig also had no self-centric conversations during the entire intervention. Craig gave directives to his peers in six out of the seven sessions, encouraging progression in both the novel and the protocol, averaging 3.14 directives per session, with a range of 0-8 directives given each session. He asked clarification questions to a group member, checking on the routine of the protocol and repeating back comments his peers made, an average of 3.42 times a session (range of 0-9). Craig made off-topic unaided remarks in six of the seven intervention sessions; the range for off-topic remarks was 0-5, with a daily average of 2.57 off-topic remarks happening each session. These were comments that did not contextually fit with the conversation that was taking place at the time. For example:

> Kevin: Have you ever done something that is familiar?
>
> Craig: I did not like the picture of your face! (Giggling.)
>
> Kevin: No, do you do something the same every day?

3.3 Maintenance

During maintenance, conversational attempts averaged 23.46 for all four participants; the range was from 14-32 per session. Reciprocal conversational exchanges that followed scripted protocol averaged 13.67, 7, 11.25, and 10.33 for Victoria, Ben, David and Craig, respectively. Unprompted conversational exchanges averaged: 3.67, 5.33, 2, and 4.67, respectively. These reciprocal conversations made up the bulk of conversational exchanges.

Victoria. During maintenance, Victoria's number of conversational attempts was 14, 26, and 31, with a mean of 23.67 conversational attempts happening per day. Reciprocal conversation exchanges that followed the scripted protocol focused on comprehension monitoring and text-to-self connections (despite no reference sheet being used) occurred an average of 13.67 times per session. Unprompted reciprocal conversational exchanges (those that were not questions practiced in the protocol) happened an average of 3.67 times per session. These conversations included discussion of their individual fears, the cost of college, pets, favorite desserts, and enjoying singing.

Victoria did not have any self-centric conversations, and made only two unaided off-topic remarks ("What do you have cotton in your ears?" and "Okay, I know Jackie and I are best friends, well, sort of") during this maintenance phase. She gave directives (telling her peers to read and to ask questions) an average of two times per session, and asked her peers for clarification ("Where are we?", "What kind of question should I ask?", and What next?") an average of 3.67 times per session.

Ben. Ben made an average of 24.67 conversational attempts during each maintenance session of this study. Reciprocal conversation exchanges regarding comprehending and personally relating to the text that followed the scripted protocol (despite no reference sheet being used) occurred an average of seven times per session. Unprompted reciprocal conversational exchanges (those that were not questions practiced in the protocol) happened an average of 5.33 times per session. These conversational exchanges included discussions about field trips, summer camps, staying home from school, and the news.

Ben also had no self-centric conversations, and made an average of 2.33 unaided off-topic remarks during this phase. He gave directives ("You go first," "Read, now," and "Ask me a question.") to his peers an average of 1.33 times per session. Ben asked his peers clarification questions such as, "Is it my turn?" and "What page?", and also made clarification statements that repeated back what his peers had just communicated an average of 7.67 times per session.

David. David's conversational attempts ranged from 11-19, with an average of 16 during the four observations that took place during this maintenance phase. Reciprocal conversation exchanges that followed the scripted protocol, (despite no reference sheet being used) occurred an average of 11.25 times per session. These again centered on comprehending and personally relating to the text. Unprompted reciprocal conversational

exchanges (those that were not questions practiced in the protocol) happened twice per session, on average. Topics included: junk food preferences, playing capture the flag, videogames, new movie releases, and field trips.

David had one self-centric conversation during this data point phase (in which he went on and on about dinosaurs, despite both of his group members not being engaged in this topic), and made zero unaided off-topic remarks. He gave directives to his peers only once during the four days, but asked for clarification from his peers (asking them "What page?" or repeating back a statement one of his peers had just made) an average of 2.25 times per session.

Craig. An average of 32 conversational attempts were made by Craig to his peers during this maintenance phase. Twenty-nine percent of these attempts were unaided off-topic remarks; an average of 9.33 unaided off-topic remarks occurred each day during maintenance. These off-topic remarks were very similar to the ones that had been made in the baseline phase, and included statements such as: "Oh my god, that flames cats," "Did you ever notice that bananas look like demon claws?" "Do I hate raincoats? Yes, I hate raincoats," and "Why do you have five veins popping out of your head? It's so weird." None of these statements, nor any of the other 28 off-topic remarks, yielded a response from a peer.

Approximately 32% of the conversational attempts were reciprocal conversation exchanges that followed the scripted protocol (despite no reference sheet being used); these occurred an average of 10.33 times per session. In these Craig asked or answered questions relating to comprehending or connecting to the text.

Unprompted reciprocal conversational exchanges (those that were not questions practiced in the protocol) happened an average of 4.67 times per session. He talked to his peers about times they played "ding-dong ditch," spoke to strangers, and stole items; these conversations seemed largely fabricated, but all three of the boys seemed to want to out-tell each other with these elaborate stories. Bathroom humor also comprised some of these unprompted reciprocal conversations, as they did during the intervention phase of this study.

Craig, like the other students, had no self-centric conversations during the maintenance phase. He gave directives to his peers (telling them to "Read" or "Ask me a question") an average of 3.67 times per session, and asked his peers for clarification ("What page are we on?" or "What do we do now?") an average of 4 times per session.

3.4 Return to Baseline

In this return to baseline phase, Victoria's conversational attempts ranged from 7-13, with an average of ten conversational attempts happening per day. None of the reciprocal conversation exchanges were prompted, and an average of 7.33 unprompted reciprocal conversational exchanges occurred each day. During return to baseline data collection, Ben's conversational attempts ranged from 0-1, with an average of .67 conversational attempts happening per day. There were no verbal communication attempts for either Craig or David during this return to baseline phase of data collection.

Victoria. Victoria's conversational attempts, in the return to baseline phase, ranged from 7-13, with an average of ten conversational attempts happening per day. None of the reciprocal conversation exchanges were prompted, and an average of 7.33 unprompted reciprocal conversational exchanges occurred each day – making up 73.3% of the total conversational attempts Victoria had during this phase of data collection. Victoria chatted with her peers as they all worked on catching up on assignments. Victoria also talked with her kindergarten buddy; Victoria spoke about her birthday, learning to read, and books she loves. She talked with her grade-level peers about their favorite movies, TV shows, and subjects in school. She also talked to her peers about a science unit they had previously studied on butterflies. Since it was the end of the school year students were collecting signatures in their yearbooks. When Victoria first asked two students to sign her yearbook, she was ignored. Laura (a peer from the intervention), however, then came up to Victoria and said, "I will sign it," at which point two other peers signed Victoria's yearbook as well. Next, Abby approached Victoria and asked to sign her book. Victoria perked up in her seat and with a huge smile on her face exclaimed, "Sure!" She then asked to sign Abby's yearbook so that Abby "will always remember you [her]." After Abby asked Victoria to sign her yearbook, two other peers asked Victoria to do the same.

Victoria did have two days where she had two self-centric conversations. These both occurred while she was supposed to be helping a kindergartener construct sentences, a task to complete an assignment. Instead of helping, Victoria talked about her reading ability compared to the kindergarteners ("I love to read. Wait, oh I have some books I have to return to the library today. It's a sign language book, another book, and a book from East High. You can't read yet. Do you have dyslexia? I think you have dyslexia!"), and later about her birthday being in the summer. She made three unaided off-topic remarks to her

peers during the return to baseline phase. These off-topic remarks occurred while her peers were discussing their favorite movies and TV shows. Victoria chimed in with these three remarks during this time: "I got a new pencil because it's my birthday." "I have a pet, Krystle," and "I want to sing you a song." Victoria, however, did not give any directives, and sought clarification from her peers only once during this phase.

Ben. During return to baseline data collection, Ben's conversational attempts ranged from 0-1, with an average of .67 conversational attempts happening per day. He was seen speaking to his peers only twice during this phase, once with a directive ("Give me that!") and the other with an unprompted reciprocal conversational exchange ("I got this answer. What did you get?"), to which the peer responded nonverbally by showing Ben his paper.

David and Craig. There were also no verbal communication attempts for either Craig or David during this return to baseline phase of data collection. There were opportunities for both of these students to interact with their peers while in the inclusion setting. They, however, did not engage in the conversation their peers around them were having.

4 Discussion

ASD, the fastest-growing developmental disability in the United States, is most notably characterized by "persistent deficits in social communication." (American Psychiatric Association, 2013, p. 50). These deficits result in verbal communication that is often self-centric or reliant on giving directives to others (American Psychiatric Association, 2013). These conversation attempts often lack reciprocity, topic maintenance, and contextual coherence (Paul et al., 2009). The codes in this study accounted for this by categorizing communication attempts made by students with ASD during cooperative group work as: directives, clarification questions/statements, self-centric, off-topic, and reciprocal (prompted or unprompted).

4.1 Lacking a social agenda

During baseline, social skills were not being taught. Students were given tasks to perform and were expected to do these tasks. While other students in the class conversed with each other to complete these tasks, the students with ASD either worked alone or sat at their desk quietly not participating. The typical peers did not

initiate conversations to include the students with ASD in the assignment or discussions. There were a few times that one of the students with ASD, Victoria, attempted to initiate conversation with her peers, but in these interactions the peers did not respond. The baseline data showed a total of 16 communication attempts made by all four students with ASD. Half of these communication attempts were directives or clarification remarks which checked or reinforced the day's schedule. Another six of these attempts were off-topic remarks with no contextual basis. This leaves only two other communication attempts, neither of which, resulted in meaningful reciprocation or extended conversation.

4.2 Explicit Instruction

Students with ASD need explicit guided instruction to develop conversational skills. The intervention employed in this study did this through using a structured protocol that built in reciprocal communication through questioning and answering. All four students with ASD were now included in the academic tasks and actively interacting with their peers. Conversational attempts for all students more than doubled their baseline data. More than half of these attempts were now reciprocal communication attempts, in contrast with baseline data, which showed that 87.5% of the communication attempts were directives, clarification questions, and off-topic conversational attempts.

This structured group work was effective in developing reciprocal communication in all the students within this study. Lord (1995) noted that spontaneous social interaction for students with ASD and their typical peers needs to begin occurring in structured environments. This is what was happening – the structured methodology was leading to more spontaneous interactions. Using structured protocols in cooperative groupings (like this study did) may be the answer to Rogers' (2000) call to effectively combine social skills instruction with academic tasks in the inclusion environment. Teaching academic tasks with a social agenda can start to address the social curriculums that students with ASD are oftentimes missing in their instructional programming.

4.3 Teaching with a social agenda

Peer-to-peer interactions were a part of the structured group work protocol: after one student made a text-to-

self connection, the other two peers then tried to relate to their partner. The intervention was structured so that reciprocity would take place. With this structure, students made connections about universal topics such as, going on outings, family life, school, travel, interests and hobbies, and food. These conversations consisted of the students with ASD and their peers talking to each other about shared experiences.

Slavin's (1995) work states that when peers work together on a task the shared social interactions they have can also promote instructional learning; this was occurring during the intervention phase of this study. These interactions allowed for relationship to form amongst group members as they shared more than surface-level facts about themselves. This relationship building was not witnessed in any of the observations that took place during baseline and occurred for only Victoria during the return to baseline phases of data collection.

Students' success in academia and in the job-force often relates to their ability to use appropriate social skills in natural environments with their peers (Meyer, 2001). By moving social skills programming into the general education classroom, hidden social curricula associated with cooperative groups can be addressed (Heerey, Capps, Keltner & Kring, 2005; Ingersoll & Schreibman, 2006; Williams, Johnson, & Sukhodolosky, 2005). These conversations, in the general population, are part of schooling (Grandin, 2005). For students with ASD these natural occurring conversations need scaffolding because they will not begin organically.

4.4 Overcoming deficits

Humphrey and Symes (2011) found that educating typical peers about conversational exchanges with students with ASD teaches them how to appropriately respond to attempts and interactions. It has also been found that educating typical peers about autism provides them with a more favorable view of the student with autism (Campbell, 2006; Campbell, Ferguson, Herzinger, Jackson & Marion, 2004). Educating typical students on how to interact appropriately with peers with ASD increases the peer-to-peer communication that can occur between the groups. By teaching typical students this skill, through giving them reference sheets and structured protocols, the student with ASD can become more independent, not relying on a paraprofessional or teacher to buffer communication exchanges between them and their typical peers.

This structured group work protocol showed typical students effective ways to communicate with their peers with ASD. By having structured conversations in this group work environment, students with ASD and typical students began to relate to each other. They found that they had things in common with each other over which they could bond; consequently, the quality of their interactions, as measured by the amount of unprompted reciprocal communication exchanges, increased. These interactions called into question the communication deficits often seen in students with ASD. This begins to provide a model for what an inclusion environment should look like, a classroom where students cannot be identified as having a disability.

Supportive peer relationships have been found to be the biggest factor in fostering a successful inclusion programming (Overton & Rausch, 2002; Strain & Hoyson, 2000). As general education students become at ease with the student with autism, more social interactions take place for the student with autism (Humphrey & Lewis, 2008). When we teach typical peers how to aid the social development of students with ASD, peers (rather than adults) can help facilitate learning, reinforce social behaviors, and provide the students with ASD with a sense of belonging (Overton & Rausch, 2002). Developing this skill in typical students allows for more direct instruction to take place, and more opportunities for students with ASD to practice communication exchanges.

4.5 Post-structured group work generalization

When the structured group work intervention was completed and students were again observed in their typical academic schedules, Ben, David, and Craig did not talk to their typical peers at all. Victoria, the only student with ASD that was in a full inclusion program, did have brief conversations with her peers that were both academic and social in nature. Without the structure and the same structured group around them, Ben, Craig, and David all seemed to withdraw from social interactions in the classroom setting. No adults or students stepped in to intervene and help these students in these social situations. They also had no protocol to follow, which would aid them in these conversational discourses.

In order for social skills to remain at the center of academic experience, social skills need to be taught consistently as ongoing processes with multiple opportunities for practice (Grandin & Baron, 2005). The structured group work intervention used two peers to help students with autism develop social skills and this

achieved short-term social gains. The intervention used in this study required the students with ASD to participate in conversational exchanges about the texts and about their lives. When this was required of them, they performed the skill (Doyle, 1983).

In both baseline and return to baseline data collection, it appears that these students were not asked to have meaningful conversations with each other, either academic or social in nature. Even though lessons did have group work attached to them, with no supported protocol and modeled scaffolding first provided by an adult and then transferred to typical peers, students with ASD again found themselves "left" behind. Perhaps if these structures had been in place, the skills could have been maintained long-term.

These scripted protocols could be used within the general education classroom. In many script-fading studies, the presence of stimuli once intervention has faded serves to generalize results. During maintenance, when the visual cooperative group protocol (Table 3) was no longer used, all four students remained above baseline levels in terms of overall conversation and reciprocal (prompted and unprompted) exchanges. The students with ASD also looked to their peers to keep the structure of the task and provide clarification when needed. Once intervention had ceased for a month (the return to baseline phase), these results were not generalized for three out of the four students with ASD. In order to generalize these results, students with ASD need continuous exposure to the same stimuli. Victoria was able to generalize her results because she was around the same cooperative peers in the same environment, a full inclusion program. Once intervention ceased, however, Ben, Craig, and David were no longer included in language arts instruction, where the intervention had taken place. With the researcher not present in the school environment, the school did not feel that they could continue to support this inclusion opportunity. Sustainability is important, and future research should look to help school faculty support this inclusion through a transference of skills from the researcher to teachers and instructional support staff. If this limitation did not exist, perhaps generalization results in the return-to-baseline phase would be different.

There were several limitations in this study, including the use of a convenient sample and the small number in the sample not lending itself to large scale generalization. School district's requirements for testing also caused schedule changes which impacted this study and the duration of this study. The use of one scripted protocol for students at different levels, in terms of ability, may also have been seen as a limitation of this study. One scripted protocol was used because it was thought that this would provide the highest fidelity of implementation amongst staff members, but staff members still went back to literacy-as-usual once this research project ended. A major limitation of this study was that each student with ASD only worked with two typical peers, and that only five typical peers were part of this intervention. For more universal generalization effects, more typical peers should have been given the chance to develop connections with each of the students with ASD, and vice versa.

Future studies should explore training staff to use and implement structured protocols with fidelity to confirm or deny if structured protocols allow more socialization to occur for students with ASD when they are asked to do group work. Future studies could also look at changing the duration of a structured group work intervention, involving more grade-level peers in the study, and developing structured protocols useful for different subject areas. With more evidence, which future studies would yield, inclusion programming can start to couple academics and social skills acquisition in meaningful ways for individuals with ASD.

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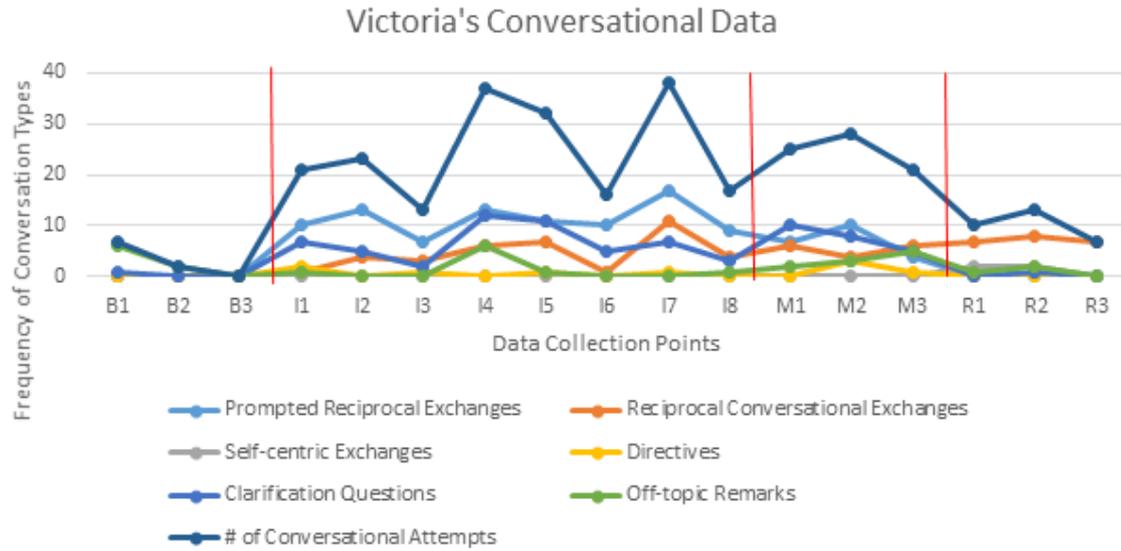
Appendix

Figure 1: Victoria's conversational data during baseline, intervention, maintenance and return to baseline.
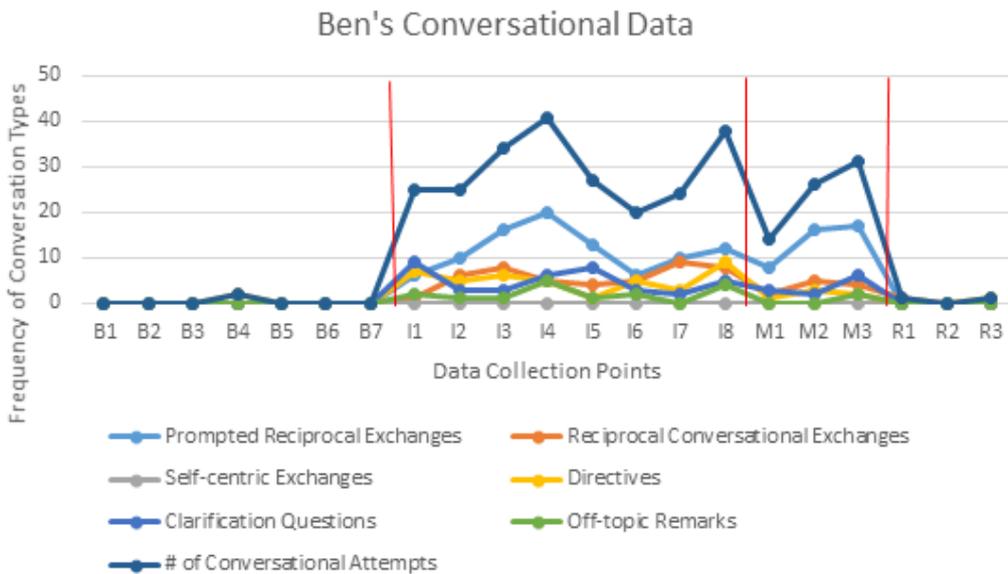

Figure 2: Ben's conversational data during baseline, intervention, maintenance and return to baseline.
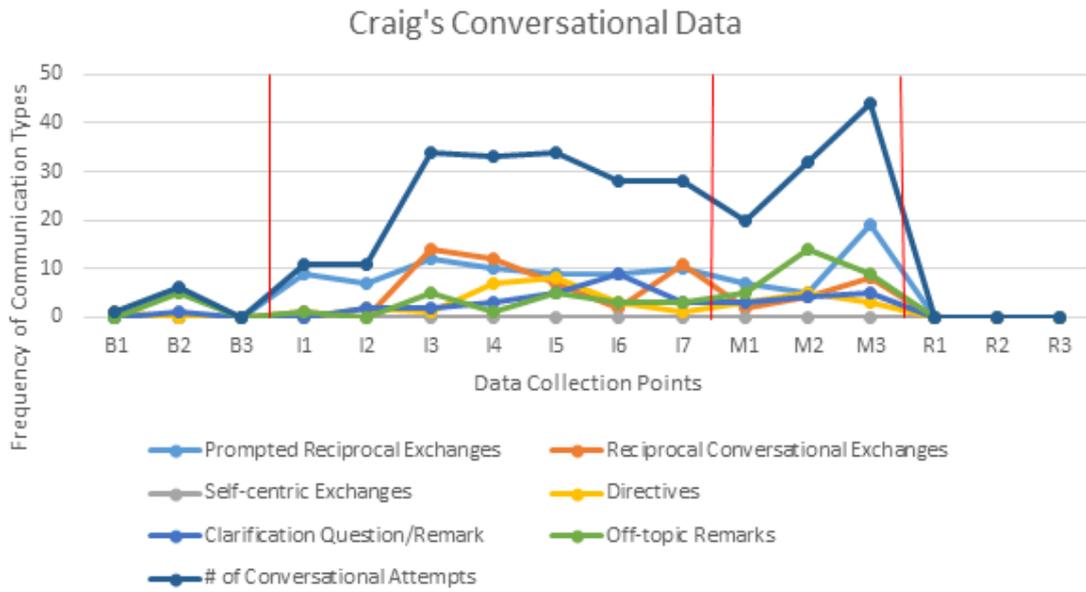
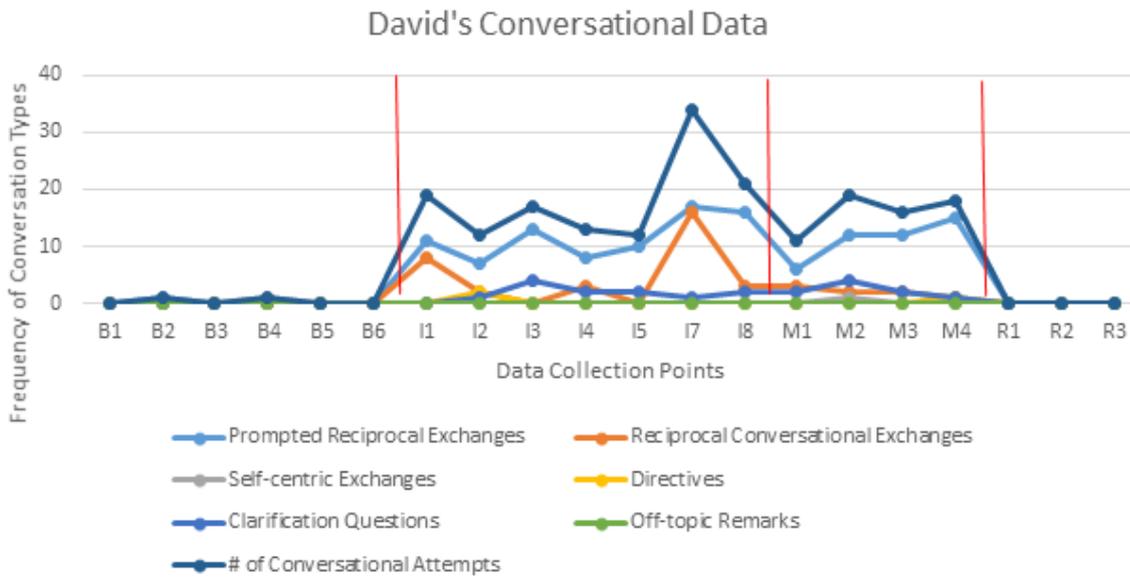**Figure 3:** Craig's conversational data during baseline, intervention, maintenance and return to baseline.

Figure 4: David's conversational data during baseline, intervention, maintenance and return to baseline.