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Communication Dyad Training for Individuals with Brain Injury and Everyday Communication Partners

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Communication Dyad Training for Individuals with Brain Injury and Everyday Communication Partners

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Abstract

Communication Dyad Training for Individuals with Brain Injury and Everyday Communication Partners

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Individuals with brain injury are in need of speech and language therapy to improve impaired cognitive-communicative skills. Including significant communication partners (e.g., caregivers, spouses or parents) in intervention encourages carryover of skills practiced in therapy to natural communication contexts. Additionally, unimpaired partners benefit from training on how to communicate more effectively and and support the partner's use of compensatory strategies for impaired cognitive skills. The objective of this multiple single case study was to evaluate the outcomes of a training program delivered to two dyads (Dyad B. and Dyad W.) composed of an adult with brain injury and an everyday communication partner. Participant dyads were recruited from a local brain injury support group. Training consisted of a four-week program during which participants received brain injury education, developed and monitored progress on goals, received instruction on communication strategies, and engaged in self-evaluation and role-play activities. Dependent variables were progress on individual goals, analysis of discourse variables, and the LaTrobe Communication Questionnaire. Treatment effects included a decrease in the amount of overlapping speech and an increase in the proportion of obliges and responses relative to comments for Dyad B., and increased deficit awareness and decreased conversation dominance on the part of the participant with brain injury for Dyad W. Results of the study showed that communication dyads affected by brain injury benefit from short-term training provided to both partners.

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Introduction

Management of the long-term effects of brain injury is a critical skill for speech-language pathologists. According to the Center for Disease Control and Prevention (2004), 1.4 million Americans sustain a traumatic brain injury (TBI) each year. The CDC estimates that 80,000 to 90,000 brain injuries each year result in lifelong disability for the survivor (Langlois, Rutland-Brown & Thomas, 2004). Advances in medical care for individuals with brain injury such as monitoring and treatment of raised intracranial pressure and cerebral hypoperfusion have led to an increase in the survival rate in the last 25 years (Ghajar, 2000).

Persistent problems for individuals with brain injury include psychological symptoms such as anxiety, hostility and depression, difficulty finding and maintaining employment and social isolation (Hoofein, Gilboa, Vakil & Dominick, 2001). Poor functional outcomes can be traced to underlying deficits in cognitive functions including attention (Barwood & Murdoch, 2013; O'Flaherty & Douglas, 1997), memory (Draper & Ponsford, 2008; Hoofein et al., 2001; O'Flaherty & Douglas, 1997), processing speed (Draper & Ponsford, 2008; Hoofein et al., 2001), verbal learning (Hoofein et al., 2001), and executive functions including self-monitoring/insight and initiative (Barwood & Murdoch, 2013; Lippert-Gruner et al., 2006). Social and vocational outcomes also can be limited by emotional processing deficits such as decreased recognition of emotion from facial expression and prosody, as well as poor emotional control (McDonald & Flanagan, 2004).

Deficits in cognition, executive function and emotional processing may affect the ability to communicate effectively and appropriately. As a result of cognitive and executive function deficits, individuals with brain injury have particular difficulty with pragmatic language, meaning language used for functional and social purposes. Specific pragmatic language deficits include topic perseveration, difficulty varying communication style according to context, problems understanding and using paralinguistic cues such as facial expression and tone of voice and problems understanding nonstandard communication acts such as irony and deceit (Angeleiri et al., 2008). Douglas (2010) found that brain injured individuals' performance on executive function tasks predicted approximately 1/3 of the variation in scores on the LaTrobe Communication Questionnaire, a pragmatic language rating scale designed for individuals with brain injury, indicating that pragmatic language deficits are based in part on impaired cognitive functions.

Discourse, which refers to conversation and individual narrative, may be affected by brain injury. Jorgensen and Togher (2009) reported that, compared to uninjured individuals, the stories of individuals with brain injury were less coherent, contained fewer story grammar elements (e.g., setting, initiating event and actions) and contained more repetition and redundancy. Coelho (2003) reported conflicting results in that participants with brain injury did not differ from uninjured controls on story generation measures; however, the two groups did differ on measures of conversation. Commenting and adequate-plus responses (responses that contain more information than required by

the oblige) were found to be the best discriminators between individuals with brain injury and those without; however, the author did not report whether individuals with brain injury commented or gave adequate-plus responses more or less frequently than uninjured individuals. Individuals with brain injury are a markedly heterogenous population with respect to particular discourse deficits. Investigators who used discourse analysis measures to evaluate treatment outcomes for individuals with TBI noted that their analysis revealed "a spectrum of impoverished to excessive discourse profiles" (Sim, Power & Togher, 2013, p. 734). Given the range of cognitive-communicative deficits that may result from brain injury, treatment should be individualized to address each patient's unique deficits.

Pragmatic and cognitive-communicative deficits are not unique to traumatic brain injury. TBI shares many characteristics with right hemisphere stroke and dementia, among other disorders. Like individuals with TBI, individuals with right hemisphere brain damage caused by stroke are less adept than uninjured individuals at interpreting non-literal language, such as jokes and lies (Winner et al, 1998), and do not use nonverbal communication to convey emotion as efficiently as individuals with left hemisphere stroke (Buck & Duffy, 1980). Individuals with Alzheimer's dementia may have working memory deficits that result in word finding deficits and use of vague, indefinite language (Almour et al., 1999). Although this work focuses on brain injury, the methods described in this work may apply to individuals with a variety of disorders that have a similar effect on communication.

Research regarding the experience of family members and caregivers of individuals with brain injury indicates that these individuals are in need of information and support to cope with the effects of brain injury. O'Flaherty and Douglas (1997) interviewed dyads composed of an individual with brain injury and an uninjured close other (a spouse or parent) regarding specific post-injury life changes. Dyads reported alterations in relationship dynamics, a reduction in shared recreational activities, and a need for long-term support for the entire family. Spouses of individuals with brain injury reported added stress associated with taking charge of financial decisions and legal matters, as well as assuming the role of primary earner for the family.

The lifestyle and relationship changes experienced by family and caregivers of individuals with brain injury can have adverse effects on psychological/emotional functioning. A study in which psychological assessments were administered to 226 caregivers of individuals with TBI revealed that 18% to 24% of caregivers exceeded clinical cutoffs in the areas of depression, somatization and anxiety (Kreutzer et al., 2009). Furthermore, caregiver distress and family dysfunction in families affected by brain injury have been shown to increase over time, particularly in the absence of perceived caregiver support (Ergh et al., 2002).

RATIONALE FOR COMMUNICATION PARTNER TRAINING

Individuals with pragmatic language disorders and/or cognitive communicative disorders resulting from brain injury are in need of speech and language therapy to improve impaired communication skills. Communication partners of these individuals are also in need of education and support to cope with permanent relationship and

lifestyle changes. Including communication partners in speech and language therapy has three potential advantages. First, communication partners can benefit from education regarding the deficits of the individual with pragmatic language deficits and/or cognitive-communicative deficits and the lifestyle and relationship changes that may be expected. Second, communication partners can learn to support use of compensatory strategies for impaired cognitive functions. Finally, the communication partner can learn techniques that maximize communicative efficiency and success.

Education:

Families of individuals with brain injury frequently report being unprepared for the abrupt transition from a hospital rehabilitation unit into the home (O'Flaherty & Douglas, 1997). This finding indicates that families may not be receiving the education they need regarding the individual with brain injury's deficits and how they will affect readjustment to home and community life. Moreover, education has been shown to be powerful component of intervention for individuals with brain injury. Carnevale (1996) examined the outcomes of a training program for caregivers of individuals with severe behavioral issues related to TBI. The intervention included an education component during which caregivers were provided with information about the effects of brain injury on cognition and behavior, and how the neurobehavioral effects of brain injury were related to specific problem behaviors exhibited by the participants, as well as basic training on behavior management and data collection. The investigators found that the frequency of problem behaviors began to decrease during the caregiver education phase of the study, before the individual treatment plans had been implemented. Caregivers

indicated that they had learned that behaviors that they had thought to be inevitable were in reality amenable to modification.

Behavior Supports:

Communication partners may be trained to support the use of compensatory strategies for impaired cognitive functions. Training communication partners on compensatory strategies is advantageous because of the nature of the deficits typically associated with brain injury. Cognitive and executive function deficits interfere with the individual's ability to learn new skills, inhibit undesirable behaviors and generalize behaviors learned in a controlled environment to functional situations (Ylvisaker, Turkstra & Coelho, 2005). Ylvisaker and colleagues recommend focusing therapy efforts on modifying contextual and environmental factors that encourage use of desirable behaviors, rather than focusing solely on teaching discrete skills to the individual with brain injury. Caregivers and significant communication partners can be instrumental in implementing environmental supports. In addition to the caregiver education component of their intervention, Carnevale et al. (1996) trained communication partners to implement environmental modifications (e.g., development of a structured daily activity schedule and use of relaxation techniques) to support adaptive behaviors. The caregiver-implemented intervention resulted in an 82% reduction in the occurrence of targeted problem behaviors.

Communication Techniques:

Uninjured individuals communicate differently when speaking with individuals with brain injury compared to uninjured individuals (Togher, Hand & Code, 1997). In

this study, uninjured communication partners (mothers, therapists, police officers and customer service staff) gave less information to individuals with TBI compared to uninjured controls. Uninjured partners also used more 'teaching moves,' meaning that they asked the individual with brain injury questions to which the answer was already known for the purpose of testing their partner's knowledge. Findings from this study indicate that communication partners are in need of training to avoid communication that is potentially disempowering to the individual with brain injury and increase the participation of the individual with brain injury in conversation.

EMPIRICAL SUPPORT FOR COMMUNICATION PARTNER TRAINING

Communication partner training programs for individuals with aphasia have existed since the 1990's. Supported Communication for Adults with Aphasia (SCA) was described by Kagan (1998) as a way of reducing the psychosocial consequences of aphasia by training communication partners to use communication strategies that enhance the ability of the individual with aphasia to participate in conversation. Within the SCA theoretical framework, the communication partner functions as a 'communication ramp' that increases the access of the individual with aphasia to social and functional communication. SCA consists of training communication partners to use techniques that acknowledge and reveal the communication competence of the individual with aphasia; for example, using multiple modalities (e.g., speech, writing and gesture) in order to convey meaning and maintaining a natural conversational flow. SCA training has been shown to be effective at facilitating communication partners' use of trained strategies in conversations with individuals with aphasia (Kagan et al., 2001). However, SCA is less

appropriate for use with individuals with brain injury. The population of individuals with brain injury differs significantly from individuals with aphasia in that individuals with brain injury are generally younger and have a different deficit profile. Many of the techniques used in SCA are aimed at increasing the comprehension of the partner with aphasia, whereas language comprehension is generally not a primary concern for individuals with brain injury. In addition, SCA may not adequately address some of the pragmatic language deficits typically demonstrated by individuals with brain injury. For example, SCA emphasizes increasing the participation of the individual with aphasia, whereas many individuals with brain injury produce excessive speech output and need to curtail participation in conversation.

In the last decade, communication partner training programs have begun to be developed specifically for communication partners of individuals with brain injury. One of the first such studies was a randomized controlled trial that evaluated the outcomes of training police officers to maximize the efficiency of information exchange during service calls with individuals with TBI (Togher, McDonald, Code & Grant, 2004). The training focused on analyzing the structure of service calls into component parts (e.g., greeting, service request and closing remarks) and maintaining the genre of the conversation; for example, avoiding shifting to a social genre in response to an irrelevant comment. Discourse analysis measures indicated that fewer utterances were necessary to complete service calls and that fewer irrelevant comments were made post-treatment.

Furthermore, calls were completed in less time and a larger proportion of total call time was spent identifying and responding to the problem.

Paid caregivers of individuals with brain injury may also benefit from communication partner training. Five paid caregivers of individuals with severe TBI were provided with 17 hours of training focusing on using collaborative and elaborative communication strategies, including asking open-ended questions, encouraging the partner with brain injury to make comments and introducing topics of interest to the partner with brain injury (Behn, Togher, Power & Heard, 2012). Conversations between trained carers and individuals with TBI were rated as more interesting, rewarding and appropriate than conversations with untrained carers, and results were maintained six months post-training. Caregivers' perception of burden did not change as a result of treatment, which is not surprising as training focused only on improving the quality of conversations and not on improving functional independence or behavioral issues.

Two studies have evaluated the outcomes of providing communication training to individuals with TBI and everyday communication partners (e.g., spouses, family members and friends) simultaneously. In the first of these studies, individuals with TBI were assigned to one of three groups: a 'joint' group, where treatment was provided to the individual with TBI plus a communication partner, a 'solo' group, where treatment was provided to the individual with TBI only, or a no-treatment control group (Togher, Power, Rietdijk, McDonald & Tate, 2012). Treatment was conducted in a group setting, but each participant or participant pair set individual goals. Outcomes were evaluated via

semi-structured interviews. Individuals in the 'joint' group reported a better relationship with the conversation partner who participated with them; however, a greater number of individuals in the 'solo' group reported having achieved one or more of their goals. A possible explanation for the result related to goal achievement could be that members of the TBI solo group overestimated their progress. This explanation is likely, given that reduced insight into task performance is a common symptom of brain injury. The lack of an objective outcome measure in this study is unfortunate, as it is difficult to determine whether perceived improvements reflect actual gains in communication skills.

A second study of communication training provided to dyads composed of an individual with TBI and a communication partner used a discourse analysis measure to evaluate training outcomes (Sim, Power & Togher, 2013). Exchange Structure Analysis (ESA) was used to evaluate discourse between dyads pre- and post- treatment compared to a control group of dyads who received no training. ESA divides a conversation into 'moves' which can be classified as synoptic (used to give or request information) or dynamic (used to negotiate meaning and check for understanding). The investigators posited that analysis of the proportion of 'information giving' and 'information receiving' moves may provide insight into which communication partner has the more dominant role in the conversation. Of particular interest was a type of dynamic move called a 'teaching move,' in which a partner asks a question to which the answer is known. Teaching moves are often perceived as condescending and disempowering by the individual with brain injury. Discourse analysis indicated that the treatment group used

fewer teaching exchanges compared to the control group, but did not find significant between-group differences in the change in proportion of information-giving and information-receiving moves. The lack of change on this measure could be due to an averaging effect. Since participants in the study varied widely with respect to communication profiles, changes occurred in both directions which may have masked individual results. In general, discourse analysis measures may not be appropriate for a group analysis, since interpreting discourse outcomes from a highly heterogeneous population is difficult. Furthermore, Exchange Structure Analysis may not be an ideal discourse analysis measure, as the measure does not take into account the content, appropriateness or coherence of each partner's input.

Findings related to communication partner training for individuals with aphasia and brain injury indicate that communication partners are able to learn and implement strategies that increase the participation of the partner with communication impairment as well as the efficiency of information exchange. Weaknesses in current knowledge include a lack of objective, informative outcome measures, as well as a focus on group setting training, which may be less appropriate for brain injury communication partner training. The present study improves on past research by including objective outcome measures, providing individualized therapy, and training communication partners to implement behavior supports. Predicted outcomes include progress on individual goals, changes in discourse variables, and improved ratings of communication abilities by the communication partner and the individual with brain injury.

Method

PARTICIPANTS

Two dyads composed of one individual with past history of brain injury and an uninjured communication partner participated in the study. Both dyads were recruited from a local brain injury support group. An initial telephone interview was conducted to screen potential participants for eligibility and obtain case history. Participants with brain injury were determined eligible to participate in the study if they had a history of brain injury confirmed by a report from a certified physician, neurologist or speech-language pathologist and if they were able to identify a communication partner (a spouse, family member, caregiver, close friend or significant other) who was willing to attend all sessions with them. Communication partners were considered eligible if they had no history of brain injury and had known the partner with brain injury for at least five years and engaged in daily interactions with the partner. Participants with disparate injury types and deficit profiles were selected to demonstrate the universality of the treatment approach.

Initial assessments to determine baseline cognitive and communicative functioning included the Scales of Cognitive Function for Traumatic Brain Injury (SCATBI), the LaTrobe Communication Questionnaire (LCQ) and the American Speech and Hearing Association Functional Assessment of Communication Skills (ASHA-FACS). The SCATBI is a standardized, norm-referenced instrument that is used to assess cognitive and linguistic abilities in adults and adolescents with TBI. Examinees are assessed in the areas of Perception/Discrimination, Orientation, Organization, Recall,

and Reasoning. The LCQ is a 30-item questionnaire that assesses perceived communicative ability following brain injury. The assessment contains a self-report form and a close-other report form that is completed by a frequent communication partner of the individual with brain injury. Each item is rated on a four-point scale, with higher values indicating greater perceived deficit. The ASHA-FACS is a standardized 43-item rating scale that assesses the functional communication skills of adults with speech, language and cognitive-communicative disorders in the areas of social communication, communication of basic needs, daily planning and reading/writing/number concepts. It is completed by an examiner after observing the client and consulting with a caregiver or other significant communication partner.

Participant Case Histories:

Participant Dyad B.: PaBr is a 50-year old male who lives in Austin with his wife, JuBr. He is currently employed as a tutor at by an Austin tutoring company. JuBr, who participated in the study as PaBr's communication partner, is a 48-year-old female who currently works as a teacher.

In August 2002, PaBr fell while working on a landscaping project. He received treatment for minor injuries, but did not immediately suspect brain injury. After returning to work, he began noticing difficulty with word retrieval, over-use of pauses/fillers, and difficulties with memory and judgment. He also reported balance issues (drifting to one side while walking and losing balance when looking up). After moving to Austin in 2007, PaBr accepted a full-time teaching job; however, he resigned after one semester, reporting that he was tired, and that an incident had occurred in which

he had lost his temper with a student. He surrendered his driving license in October, 2007 due to his being involved in three car accidents during the same year. PaBr consulted several specialists for headaches, fatigue, and psychological symptoms including anger, anxiety and depression. He reported that he worked with an SLP on word-retrieval and memorizing scripts that he used in his financial services business. He indicated that this therapy was helpful, but that he had not returned to his prior level of functioning

PaBr obtained a severity score of 17 on the SCATBI, placing him in the 'average normal' severity range. PaBr's standard scores on each subtest were 1-2 SD above the mean. PaBr's mean rating on the LCQ was 2.0. He indicated on the LCQ that he often lost track of conversations in noisy places, continued speaking for too long, had difficulty getting a conversation started, used hesitations/pauses, went over the same ground in conversation repeatedly and used vague or empty words. On the ASHA-FACS, he indicated difficulty with interpreting facial expression and tone of voice, following conversations in crowded situations and adjusting to topic changes by a conversation partner.

PaBr reported that frequent misunderstandings occurred with his wife. He reported that he became frustrated because he frequently misinterpreted what she said due to her word choices. JuBr also reported that since the injury, PaBr has consulted her to an excessive extent regarding decisions.

Participant Dyad W: LaWa is a 50-year old female residing with her mother, LiWa. She is divorced with two adult children and works part-time at a childcare center. LaWa's mother, LiWa, a 67-year-old retired special education teacher, participated in the study as LaWa's communication partner.

LaWa experienced a grand-mal seizure in 1996. Shortly after the seizure, a malignant tumor was discovered in LaWa's right frontal lobe. The tumor was successfully removed with surgery and radiation. LaWa denies that she had any deficits initially, although her mother states that LaWa's deficits were immediately apparent following removal of the tumor. LaWa had been working as a physical education teacher, but following the injury, she began arriving late to work and her job performance declined. Despite seeking assistance from the Department of Assistive and Rehabilitative Services, LaWa retired early. LaWa lived alone from 2007 to 2010. During this time, her mother reported that she engaged in "hoarding" behaviors and demonstrated impaired decision-making. LaWa moved in with her mother in April, 2013.

LaWa obtained an overall SCATBI severity score of 17, placing her in the 'average normal' range. She obtained standard scores of 108 on the Perception and Discrimination subtest, 119 on the Orientation subtest, 133 on the recall subtest and 125 on the Reasoning subtest. Most of the errors on the Perception and Discrimination subtest were on an item that tested word recognition with distraction. LaWa obtained a mean rating of 2.1 on the self-rating form of the LCQ. She gave herself a rating of four on items related to shifting the topic of conversation quickly, speaking too quickly and

putting ideas together in a logical way, indicating that she perceives that she has the most difficulty with these aspects of communication. The ASHA-FACS was filled out jointly by LaWa, LiWa and the principal investigator. The primary deficits identified using this measure involved expressing feelings, likes and dislikes, recognizing and correcting communication errors, requesting help and keeping scheduled appointments.

During the initial interview, time management and self-initiation were the primary concerns reported by both LaWa and LiWa. LaWa is dependent on others to direct her to get up in the morning, have meals, get to scheduled activities on time, and go to bed in the evening. LaWa reported using several memory aids, including a weekly typed schedule and a calendar application on her phone. These strategies were reported to be somewhat successful; however, LaWa required a high level of support to use her memory aids and did not use them consistently. Communication concerns reported by the participants included interrupting others, poor topic maintenance, and occasional inappropriateness (e.g., laughing loudly in church).

PROCEDURE

The present study used a multiple single case study design. Pre-testing occurred over one to two 60-minute sessions during the first week. Following assessment, each participant dyad attended four weekly treatment sessions lasting approximately 60 minutes each. When the intervention phase was complete, post-testing was conducted during one 90-minute session. All assessment and intervention activities were conducted at the University of Texas Speech and Hearing Center (UTSHC) located on the University of Texas campus.

Goals and specific intervention techniques were individualized; however, treatment for both dyads included the following components: brain injury education, goal setting/progress monitoring, discussion of communication strategies, identification of strategies in self and others and role-plays. Goal selection was completed collaboratively by both communication partners, with guidance from the clinician.

Treatment Goals: Dyad B.:

> Long-Term Goal 1: PaBr and JuBr will improve communication skills related to planning and organization.
>
> Short-term goal 1.1: PaBr and JuBr will hold a 30-60 minute meeting for four consecutive Tuesday nights at 7:00 to discuss upcoming social events, appointments, financial decisions, etc. Decisions made during the meeting will be recorded in a notebook and reviewed by both PaBr and JuBr.
>
> Short-term goal 1.2: Before bed, PaBr will create a written to-do list in his notebook, program appointments in his phone, and communicate tasks for JuBr for 5 consecutive days.
>
> Long-Term Goal 2: JuBr and PaBr will improve casual conversation skills.
>
> Short-term goal 2.1: JuBr and PaBr will end their conversational turns when given a single verbal prompt (e.g., "TMI" or "Pause") in 80% of opportunities during five 30-minute dinner conversations.
>
> Short-term goal 2.3: JuBr and PaBr will each use at least one comprehension check (e.g., "What you're saying is X, right?") during five 30-minute dinner conversations.

Treatment Goals: Dyad W.:

> Long-Term Goal I: LaWa will increase her independence with completing daily tasks
>
> Short-Term Goal I.1: LaWa will complete 80% of the tasks on her daily list for three consecutive days.

Short-Term Goal I.2: LaWa will complete her nightly routine and be in bed by 11:30 p.m. for three consecutive days.

Long-Term Goal II: LiWa and LaWa will engage in balanced conversations

Short-Term Goal II.1: LaWa will end her turn when prompted by LiWa with an arm-touch cue in 80% of opportunities during three 30-minute conversations.

LaWa and LiWa requested explicit instruction on how to implement the intervention in the home, so intervention plans were developed and provided in writing. The intervention plan created to address the 'daily task' goal stated that the dyad would hold two 10-15 minute daily meetings (one at 9:00p.m. and one between 8:00 a.m. and 9:00 a.m.) during which LaWa's daily tasks would be discussed. LaWa agreed to be responsible for writing the tasks in the notebook, including the deadlines for when they should be completed, during the evening meeting. LiWa's role was to keep track of the notebook. The intervention plan created to address LaWa's nightly routine goal stated that LaWa would use a visual schedule consisting of index cards with nightly routine activities and times written on them and place each card into a 'finished' basket when it was completed. The intervention plan for the balanced conversation goal stated that when LaWa took an extended turn in conversation, LaWa would first cue her to end her turn by touching her arm. If this cue was not effective, LiWa would tell LaWa to "Wait" with a raised hand.

DESCRIPTION OF PROGRAM COMPONENTS:

The communication partner training program used in this study included the following components: brain injury education, goal-setting, progress monitoring,

discussion of communication strategies, evaluation of communication strategies in others, self-evaluation of communication strategies, and role-play activities.

Brain Injury Education

The brain injury education component consisted of a powerpoint presentation delivered by the principle investigator that gave an overview of the deficits that are commonly associated with brain injury. Following the presentation, the participants were asked to relate the information to their own deficits, and encouraged to think about how underlying cognitive, executive function and emotional processing deficits contributed to communication and behavioral problems. Participants were provided with a worksheet containing a list of deficits associated with brain injury organized by cognitive domain (orientation, attention, memory, problem-solving, executive functioning, verbal and nonverbal pragmatics) and asked to work together to list specific deficits under each heading.

Goal-Setting and Progress Monitoring

During the goal-setting session, the clinician provided the participants with basic education regarding goal creation, including operationally defining behaviors, determining how behaviors will be measured, the circumstances under which measurement will occur, the level of cueing to be provided and mastery criteria. Next, the deficits listed on the worksheet provided in the previous session were reviewed, and participants were asked to choose 3-4 deficits to target during therapy. The individual with brain injury and the communication partner were encouraged to collaborate on goal selection. Participants were allowed to include communication goals for both partners as

well as behavioral goals for the individual with brain injury with a specified level of support from the communication partner. The clinician provided guidance with selecting goals that were measurable and achievable within the time frame of the study. The clinician created data collection sheets based on the participants' individual goals and provided these to the participants. Practice with recording data was provided via modeling and role-play activities. First, the clinician and student volunteer modeled a conversation while the participants recorded data, then the participants engaged in a role-play while recording data on their own conversation. Each week, the participants were asked to bring their data sheets back to the session so that progress could be reviewed and goals or data collection methods modified as necessary.

Discussion of Communication Strategies

The "Communication Toolkit," a list of communication strategies for dyads composed of an individual with TBI and uninjured partner developed by Togher (2011a) and available through the University of Sydney website was reviewed with participants. Each item was discussed with the participants, and participants were asked to determine which of the strategies would be most useful and under what specific circumstances the strategies could be employed. The strategies identified during this session were compiled into a list by the clinician and provided to the participants. Participants were encouraged to place the list in a conspicuous location in the home as a reminder to use the techniques in their daily interactions.

Evaluation of Communication Strategies in Self and Others

The participants viewed two training videos by Togher (2011b) available from the University of Sydney website that demonstrated use of the strategies listed in the "Communication Toolkit." Following each video, participants were encouraged to provide comments regarding the actors' conversation, and identify strengths and weaknesses in the conversation. After watching the training video, participants were shown the video recordings of their own casual and problem-solving conversations obtained during the first session, and asked to use the same criteria to evaluate their interactions.

Role-Play Activities

The clinician and student volunteer prepared and presented a series of role-play scenarios based on the specific communication strategies identified as most relevant to the participants. The clinician and volunteer first modeled an example of a conversation where a specific technique was not used, or was used poorly. The participants were asked to identify the problem in the conversation as well as a technique that would have made the interaction more successful. The clinician and volunteer then re-enacted the scenario using the appropriate communication technique. The effect of the technique on the success of the interaction was discussed. Finally, the communication partners were provided with a scenario and asked to use the technique that had been modeled while acting the scenario out. The clinician provided feedback and asked the participants to repeat the dialogue with modifications as necessary.

OUTCOME MEASURES:

Outcome measures included the LaTrobe Communication Questionnaire, two discourse samples, quantitative data collected by participants regarding progress on goals, and a subjective rating of perceived progress on goals.

LaTrobe Communication Questionnaire: The LaTrobe Communication Questionnaire (LCQ) is a 30-item questionnaire that is administered to an individual with brain injury and/or a close other. The LCQ assesses perceived communicative ability within the domains of quantity, quality, relation and manner, based on Grice's (1975) Maxims of Cooperative Principles of Conversation. The LCQ was administered to both participants in each dyad pre- and post-treatment.

Discourse Samples: Two ten-minute discourse samples were obtained pre- and post-intervention. One of the samples was collected during casual conversation between the individual with brain injury and the conversation partner. The other sample was collected during a problem-solving conversation. For the casual conversation sample, the partners were asked to engage in conversation on the topic of their choice. The problem-solving sample was obtained by asking the partners to jointly plan an event (a birthday party for a friend or family member). The narrative sample was elicited by prompting the individual with brain injury to recount a movie, book or television program they had recently seen/read. The examiner left the partners alone in the therapy room during collection of discourse samples to ensure that the naturalness of the conversation was maximized. Discourse samples were transcribed by the principle investigator and a student volunteer according to the Systematic Analysis of Language Transcript (SALT)

transcription conventions (SALT software LLC, 2013). The casual conversation and problem-solving discourse samples were analyzed for turn length in utterances, mean length of utterance, overlapping speech, and volume of speech (for definitions, see table 1). All transcripts were coded using a set of criteria developed by the examiner based on the coding criteria described by Coelho, Youse & Le (2002) and Coelho et al. (2003) (See table 1 for a brief description of coding conventions). One hundred to 150 utterances from each conversation sample were coded by the principle investigator. A volunteer research assistant independently coded 20% of the utterances in order to obtain a measure of inter-rater reliability. Inter-rater reliability ranged from 79% to 92%, and average inter-rater reliability was 85%.

Table 1: Definition of Discourse Analysis Measures	
Utterance	A single independent clause plus any attached subordinate clauses.
Utterances per Turn	Average number of consecutive utterances by one partner.
Mean Length of Utterance	Average number of words contained in each utterance.
Overlapping speech	Utterances in which both partners speak simultaneously.
Volume of speech	Total proportion of words spoken by each partner
Oblige	An utterance that requires a response from the communication partner
Comment	An utterance that maintains the current topic of conversation and does not require a response from the communication partner.
Adequate Response	A response that meets the demands of the oblige.
Adequate Plus Response	A response that exceeds the demands of the oblige
Inadequate Response	Response that does not completely address the demands of the oblige.
Novel Topic Introduction	Utterance that ends the previous topic of conversation and introduces an unrelated topic
Smooth Topic Shift	Utterance that shifts the conversation to a different but closely related topic.
Disruptive Shift	Utterance that shifts the conversation to a new topic in a disruptive or illogical manner.

Progress on Individual Goals: Progress on individual goals was evaluated quantitatively using data collected by participants and qualitatively using a subjective rating scale. Participants were provided with weekly data sheets and instructed on data collection procedures. They were responsible for presenting their data to the principle investigator at the beginning of each treatment session. During the post-testing session, each member of the participant dyad independently rated progress on each long-term and short term goals by marking their level of perceived progress on a continuous 100mm line with the lower limit defined as 'no progress' and the upper limit defined as 'the most possible progress.'

Results

LATROBE COMMUNICATION QUESTIONNAIRE

Dyad B.: PaBr's initial average LCQ rating was 2.0, which decreased to 1.8 post-treatment (see table 2). The decrease in the rating indicates a slightly better perception of communication skills; however, the change in score may be too small to interpret. JuBr's ratings of PaBr's communication skills also remained relatively stable from the initial assessment to the post-assessment (1.9 pre-treatment to 2.0 post-treatment). In addition to being stable over time, PaBr and JuBr's scores were highly consistent with one another.

Dyad W.: Prior to treatment, LaWa's average self-rating was 2.1 (see table 2). Post-treatment, her average rating increased to 2.5, indicating a decrease in perceived communication abilities following therapy. LiWa's average rating of LaWa's communication abilities pre-treatment was 1.7. Post-treatment, LiWa's average rating increased to 2.7, indicating that LiWa rated LaWa's communication abilities as poorer following treatment by a full point.

Table 2: LaTrobe Communication Questionnaire scores pre- and post-treatment

	Mean Score Pre	Mean Score Post	Change
PaBr	2.0	1.8	-0.2
JuBr	1.9	2.0	+0.1
LaWa	2.1	2.5	+0.4
LiWa	1.7	2.7	+1.0

DISCOURSE MEASURES – DYAD B:

Turn Length and Complexity (Table 3): Initially, PaBr's mean number of utterances per turn (UPT) was similar across the two conversation contexts (Casual UPT:

2.13; Problem-Solving UPT: 2.07). However, his initial mean length of utterance (MLU) was higher in the casual conversation context than in the problem solving context (Casual MLU: 8.30; Problem-solving MLU: 5.39), indicating that his utterances were longer during casual conversation. PaBr's UPT remained relatively stable post-treatment (Casual: 2.47; Problem-solving: 1.85). However, his MLU during the problem-solving conversation increased by 2.74 words.

JuBr's initial UPT was somewhat higher during problem-solving conversation compared to casual conversation. During casual conversation, she used 1.83 utterances per turn compared to 2.34 UPT in the problem-solving context. Her MLU was stable across the two contexts (Casual MLU: 5.47; Problem-solving MLU: 5.46). Post-treatment, JuBr's UPT declined slightly in both contexts to 1.53 during casual conversation and 1.82 during problem-solving; however, her MLU increased in both contexts, indicating that her turns were shorter in terms of the number of utterances, but that each utterance that she made contained more words. This may indicate an increase in sentence complexity post-treatment.

Volume of Speech (Table 3): In terms of the proportion of words spoken by each participant, PaBr's overall volume of speech was greater during casual conversation (66% of total words); while JuBr spoke slightly more during the problem-solving conversation (55.9% of total words). Following treatment, the overall percentage of words spoken became more balanced during casual conversation (61.5% of words spoken by PaBr), but remained stable during the problem-solving dialogue.

Overlapping Speech (Table 3): Pre-treatment, nearly a third of all utterances in both contexts contained overlapping speech, indicating that both partners were speaking simultaneously (29.75% during casual conversation; 27.42% during problem-solving conversation). Post-treatment, the proportion of overlapping speech decreased to 10.0% during casual conversation and to 21.95% during problem-solving conversation. Neither participant interrupted the partner significantly more frequently than the other.

Topic Initiation (Table 4): JuBr made a larger proportion of topic shifts pre-treatment (60% of topic shifts) whereas PaBr was responsible for a greater proportion post-treatment (80% of topic shifts). All topic shifts were classified as 'smooth.' No disruptive shifts occurred during any sampled conversations.

Comments (Table 4): In general, comments made up the largest proportion of total coded utterances in all sampled conversations. Pre-treatment, comments accounted for 68% of total coded utterances. Post-treatment, the proportion of comments declined to 56% of total utterances. The decline in commenting was particularly apparent in the casual context. Following treatment, PaBr's comments declined from 74% of his total coded utterances to 64%, and JuBr's comments declined from 62% to 50%.

Obliges (Table 4): Obliges increased from 14% of total utterances initially to 20% post-treatment. PaBr increased the proportion of his speech made up of obliges during problem-solving conversation (22.5% pre-treatment vs. 35.42% post-treatment) but not casual conversation, while JuBr increased the proportion of obliges during casual

conversation (13.3% pre-treatment vs. 30.0% post-treatment) but not during problem-solving conversation.

Responses (Table 4): Most responses to obliges by both participants across contexts were coded as adequate. Only one response was coded as inadequate and one as adequate plus.

Table 3: Dyad B. Summary of General Discourse Measures Pre and Post-treatment

	Pre				**Post**			
	Casual		**Problem**		**Casual**		**Problem**	
	PaBr	**JuBr**	**PaBr**	**JuBr**	**PaBr**	**JuBr**	**PaBr**	**JuBr**
Mean Turn Length in Utterances	2.13	1.83	2.07	2.34	2.47	1.53	1.85	1.82
Mean Turn Length in Words	17.66	9.76	10.48	12.41	18	11.37	15.27	11.47
Mean Length of Utterance in Words	8.3	5.47	5.39	5.46	7.63	7.64	8.13	6.94
Volume of Speech (% total words by each partner)	66%	33.60%	44%	55.90%	61.50%	39.60%	55.60%	44.10%
Utterances with overlapping speech (% total utterances)	29.75%		27.42%		10.00%		21.95%	

Table 4: Dyad B. Summary of Coded Utterance Types Pre and Post-treatment

	Pre				**Post**			
	Casual		**Problem**		**Casual**		**Problem**	
	PaBr	**JuBr**	**PaBr**	**JuBr**	**PaBr**	**JuBr**	**PaBr**	**JuBr**
Total Coded utterances (n)	58	45	40	49	62	40	48	43
Topic Initiations – Novel (n)	1	0	0	1	1	0	1	0
Topic Shift – Smooth (n)	2	2	2	4	2	1	2	0
Topic Shift – Disruptive (n)	0	0	0	0	0	0	0	0
Speaker Initiation - Comment (n)	43	32	25	30	40	20	27	22
Speaker Initiation – Oblige (n)	6	6	9	6	4	12	17	5
Speaker Response – Adequate (n)	6	5	4	7	11	4	1	15
Speaker Response - Adequate Plus (n)	0	0	0	1	0	0	0	0
Speaker Response Inadequate (n)	0	0	0	0	0	0	0	1
Interruptions (% of other's utterances)	10	11	9	10	4	3	6	9

DISCOURSE MEASURES – DYAD W:

Turn Length/Complexity (Table 5): LaWa's initial mean UPT was 2.85 during casual conversation and 2.13 during the problem-solving exchange. Her initial MLU was 6.7 during casual conversation and 5.38 during the problem-solving conversation, which means that she took longer and more complex turns during casual compared to problem-solving conversation. Post-treatment, LaWa's UPT and MLU both declined during casual conversation (UPT: 2.29; MLU: 5.61) but remained relatively stable during problem-solving conversation. LaWa's problem-solving UPT declined slightly from 2.29 to 1.93, while change in MLU was negligible, indicating that LaWa reduced the length and complexity of her turns during casual conversation but not during problem-solving conversation.

LiWa's initial UPT was slightly higher during problem-solving conversation (1.54) than during casual conversation (1.23). However, her MLU was higher during casual conversation (MLU: 5.4) compared to problem-solving conversation (MLU: 4.87), which indicates that, initially, LiWa took shorter, more complex turns during casual conversation and longer, less complex turns during problem-solving conversation. Post-treatment, LiWa's mean UPT increased slightly during casual conversation (UPT: 1.44) while her MLU decreased significantly (MLU: 4.54). Neither UPT nor MLU changed during the problem-solving conversation following treatment.

Notably, LaWa's UPT and MLU were higher than LiWa's during all conversations, indicating that LaWa's contributions were both longer and more complex than LiWa's during all conversations. Predictably, LaWa contributed a larger proportion

of total words during all conversations. Pre-treatment, LaWa contributed 74% of total words to the casual conversation and 55.6% of total words to the problem-solving exchange. Post-treatment, the proportions of total words spoken were more balanced during casual conversation (LaWa: 65%) and slightly less balanced during problem-solving conversation (LaWa: 63.5%). While both LaWa and LiWa reduced their MLU during the casual conversation, LaWa used significantly fewer utterances per turn while LiWa used slightly more, leading to a greater degree of conversational parity during casual conversation.

Overlapping Speech (Table 5): A similar proportion of utterances contained overlapping speech during casual conversation (22.75%) and problem-solving conversation (19.2%) pre-treatment. Proportion of utterances containing overlapping speech remained relatively stable post-treatment (Casual: 25.64%; Problem-solving: 17.0%). LaWa interrupted a greater proportion of LiWa's utterances (i.e., LaWa interrupted LiWa more often than LiWa interrupted LaWa) both pre-treatment (LaWa 21.3%; LiWa 7.2%) and post-treatment (LaWa 20.8%; LiWa 7.7%).

Topic Initiations (Table 5): LiWa made 100% of the novel topic introductions across all four sampled conversations, whereas LaWa was responsible for a greater proportion of topic shifts (68.1% pre-treatment; 71.4% post-treatment). LaWa made two disruptive shifts in the casual conversation pre-treatment and no disruptive shifts during either post-treatment conversation.

Comments (Table 6): LaWa was responsible for a greater proportion of total comments both pre- and post-treatment (72.2% pre; 70.0% post). Commenting made up a greater proportion of LaWa's utterances both pre-treatment (62.2% of total coded utterances) and post-treatment (59.8% post-treatment). The proportion of LiWa's utterances composed of comments also remained stable pre- and post-treatment.

Obliges (Table 6): Overall, LiWa made a greater proportion of total obliges both pre-treatment and post-treatment (62.5% pre; 61.9% post). However, the proportion of obliges made by each partner differed depending on the conversation context. LaWa made a slightly greater proportion of total obliges during problem-solving conversations both pre-treatment (54.5%) and post-treatment (64%), while she made a smaller proportion of obliges during casual conversation pre-treatment (16.7%) and even fewer post-treatment (4.8%). Obliges accounted for a greater proportion of LiWa's total utterances post-treatment (28.1% pre vs. 36.1% post).

Responses (Table 6): Neither participant made a significant number of inadequate or adequate plus responses during any of the four sampled conversations. A greater proportion of obliges obtained a response post-treatment (86%) compared to pre-treatment (73%). Both partners increased their responsiveness to obliges. LaWa responded to 80.0% of LiWa's obliges pre-treatment and 100% post-treatment. LiWa responded to 60.0% of LaWa's obliges pre-treatment and 75.0% post-treatment.

Table 5: Dyad W. Summary of General Discourse Measures Pre and Post-treatment								
	Pre				**Post**			
	Casual		**Problem**		**Casual**		**Problem**	
	LaWa	**LiWa**	**LaWa**	**LiWa**	**LaWa**	**LiWa**	**LaWa**	**LiWa**
Mean Turn Length in Utterances	2.85	1.23	2.13	1.54	2.29	1.44	1.93	1.52
Mean Turn Length in Words	19.4	6.56	11.28	7.86	12.61	6.41	10.14	5.66
Mean Length of Utterance in Words	6.7	5.4	5.38	4.87	5.61	4.54	5.34	4.85
Volume of Speech (% total words by each partner)	22.75%		19.20%		25.64%		17.00%	
Utterances with overlapping speech (% total utterances)	74%	26.04%	55.60 %	44.30 %	65.61 %	34.30 %	63.50 %	36.40 %

Table 6: Dyad W. Summary of Coded Utterance Types Pre and Post-treatment								
	Pre				**Post**			
	Casual		**Problem**		**Casual**		**Problem**	
	LaWa	**LiWa**	**LaWa**	**LiWa**	**LaWa**	**LiWa**	**LaWa**	**LiWa**
Total Coded utterances (n)	109	42	58	47	60	36	57	36
Topic Initiations – Novel (n)	0	1	0	1	0	1	0	1
Topic Shift – Smooth (n)	10	3	3	4	2	2	3	0
Topic Shift – Disruptive (n)	2	0	0	0	0	0	0	0
Speaker Initiation - Comment (n)	68	15	36	25	38	12	32	18
Speaker Initiation – Oblige (n)	3	15	12	10	1	20	15	6
Speaker Response – Adequate (n)	10	1	7	6	18	1	4	11
Speaker Response - Adequate Plus (n)	2	0	0	0	1	0	1	0
Speaker Response Inadequate (n)	1	1	0	1	0	0	2	0
Interruptions (% of other's utterances)	13	6	6	6	9	6	6	3

PROGRESS ON INDIVIDUAL GOALS: DYAD B (TABLE 7)

PaBr and JuBr used the data sheets provided by the clinician to monitor progress on goals during three out of four weeks during the intervention phase. No data were recorded during week four of the intervention phase, but the clients' estimated

performance on goals provided via verbal report are presented in table 5. Short-term goal 1.1 was met on two of four weeks, and was partially met on one week (the meeting was held, but decisions were not recorded in the designated notebook.) Short-term goal 1.2 was met on one out of four weeks. Short-term goals 2.1 and 2.2 were modified due to participants' difficulty with the data collection procedure. Instruction and practice with data collection was provided during the first intervention session; however, the clients reported continued difficulty the following week. Goal 2.1 was modified to state: "JuBr and PaBr will use 2-3 verbal prompts per day (e.g., "TMI," "Pause," "Hold on") to signal the speaker to end their turn," and goal 2.2 was modified to state "JuBr and PaBr will each use 1-2 comprehension checks per day." With modifications, PaBr and JuBr recorded data on these goals during one of four weeks, although the mastery criteria for these goals was not reached during the intervention phase.

Table 7: Summary of weekly progress data collected by Dyad B.

	Intervention Session 1	Intervention Session 2	Intervention Session 3	Intervention session 4
Short-term goal 1.1: (Meeting)	*Met*	Partially met	*Met*	Not met (verbal report)
Short-term goal 1.2 (To-Do List)	4/5 days	4/5 days	*5/5 days*	3/5 days (verbal report)
Short-term goal 2.1 (Turn-Taking)	Not Completed	Data not Recorded	5/7 days	0/7 days (verbal report)
Short-term goal 2.2 (Comprehension Check)	Not Completed	Data not Recorded	5/7 days	3/7 days (verbal report)

PROGRESS ON INDIVIDUAL GOALS: DYAD W. (TABLE 8):

LaWa and LiWa recorded weekly progress during three out of four weeks during the intervention phase. Mastery criterion for goal 1.1 was not reached during any of the four weeks of treatment; however, both participants stated that LiWa was using the

notebook consistently to keep track of her daily schedule. The morning and evening meetings were also held consistently and were reported to be beneficial. Short-term goal 1.2 was not met during the intervention phase, despite external supports (a visual schedule created by LiWa) and modifications to the data sheet (using an easier 'checklist' style format to facilitate data collection). Short-term goal 2.1 was met on one out of four weeks. The participants reported similar difficulties with data collection procedures as dyad B reported. After additional instruction was provided, data were recorded on this goal during one out of four weeks. Following the second intervention session, the participants ceased to record data on this goal, although they reported using the turn-taking cues consistently throughout the week.

Table 8: Summary of weekly progress data collected by Dyad W.

	Intervention Session 1	Intervention Session 2	Intervention Session 3	Intervention session 4
Short-term goal 1.1: (% Daily Tasks Completed)	Data not recorded	74%	67%	71%
Short-term goal 1.2 : (Nightly Routine)	Data not recorded	2/7 days	1/7 days	2/7 days
Short-term goal 2.1 (Turn-Taking)	Data not recorded	*100%*	Data not recorded (100% per verbal report)	Data not recorded (100% per verbal report)

Discussion

SUMMARY OF FINDINGS: DYAD B.

Analysis of Dyad B's discourse pre-treatment and post-treatment revealed changes in the amount of overlapping speech and the proportion of comments vs. obliges/responses; however, findings from the LCQ and participant progress monitoring did not give a strong indication of change. Overlapping speech occurred in approximately every third utterance in the conversation samples obtained pre-treatment. The following is an example of a typical pre-treatment exchange containing an excessive amount of overlapping speech:

P Oh I have my <x>.

*C <would you wanna>^*

P XX I'm <sorry>.

C <yeah>.

C Would you want to try to go somewhere like the Blanton?

*P I don't know <because>^*

C <if there's> something interesting?

P I don't know because the Super Bowl's on.

C ok.

*C you know that was <another>^*

P <but> we have to get out of the house.

Post-treatment, both PaBr and JuBr reduced the frequency with which they talked over their partner. Reducing overlapping speech was not initially selected as a communication goal; however, when PaBr and JuBr were asked to evaluate their own videotaped interactions, they identified interruptions as a problem. Subsequent therapy sessions

included discussion and role-plays related to limiting interruptions. The decrease in commenting and increase in obliges/responses post-treatment indicate that Dyad B. invited each other to contribute ideas and perceptions more frequently following treatment. Increasing 'comprehension checks,' a specific type of oblige, was targeted during therapy to decrease miscommunications; however, inspection of the transcripts did not reveal an increase in comprehension checks post-treatment. The increase in obliges appeared to be due to an increase in requests for information and ideas. Lack of change on the LCQ is not surprising, given the specificity of the dyad's communication goals. Most LCQ items were not directly related to the dyad's goals, so change on these items would not be anticipated as a result of treatment.

Both PaBr and JuBr indicated that the weekly meetings had helped to improve communication related to planning and organization. PaBr reported that the couple was "more mindful of decisions, events and upcoming activities" as a result of the meetings. However, both partners reported difficulties incorporating communication strategies into their daily interactions. Problems that PaBr and JuBr identified during the post-treatment interview were that opportunities to practice communication strategies were limited because of the lack of casual conversation in the couple's daily routine, and that progress monitoring required a high level of effort and was difficult to remember. Concerns regarding limited conversation time were addressed during treatment sessions. Modifications to the daily routine to increase conversation (e.g., putting on music in the evenings instead of television) were identified, but were not implemented consistently.

Both participants acknowledged the difficulty of the progress monitoring component of therapy. JuBr stated that "job demands and personal concerns" interfered with data collection. Data collection was more consistent when goals were divided into components that could be 'checked off' at the end of the day or week and was less consistent when it involved counting instances of specific behaviors 'in the moment' while engaging in conversation.

SUMMARY OF FINDINGS: DYAD W.

Outcome measures for Dyad W. indicated increased deficit awareness on LaWa's part, as well as less conversation dominance by LaWa during casual conversation. Dyad W. did not reach criterion level on any goals, but completed progress monitoring consistently on most goals. LaWa's average LCQ rating increased by nearly half a point on the four-point rating scale, indicating that she rated her communication skills as poorer post-treatment than pre-treatment. A likely explanation for this finding is that the inclusion of the communication partner in therapy increased LaWa's level of insight into her deficits. This interpretation is corroborated by statements that LaWa made on her treatment evaluation form; e.g., "If you just included me, I would have told you I had no issues." LiWa also rated LaWa's communication skills as poorer post-treatment by a full point. The instability of LiWa's ratings may be a function of the communication partner's lack of access to the thoughts of the individual being rated. Douglas, O'Flaherty and Snow (2000) reported that close others' ratings of partners' communication abilities are less stable over time compared to self-report of communication abilities. Several of the items on the LCQ concern intentions, emotions

and beliefs that a communication partner may not have access to and may have difficulty evaluating (e.g., "Do you allow other people to assume wrong impressions from your conversation?"). Alternatively, the treatment may have increased LiWa's awareness of LaWa's specific deficits.

Discourse analysis measures for Dyad W. indicated that LaWa reduced her conversation dominance during casual conversation. LaWa took shorter, less complex conversational turns during casual conversation following treatment, while LiWa's turn length and complexity remained steady. The change in LaWa's turn-taking behavior could be due to increased restraint on LaWa's part, more assertiveness on LiWa's part or a combination of the two. The change in conversation dominance may have been related to progress on Dyad W.'s turn-taking goal. Both members of dyad W. reported that LaWa had begun responding consistently to LiWa's cues to end her turn. Regarding the turn-taking goal, LaWa stated in her post-treatment interview, "I think I am more aware of my conversation dominance and that helps me work to keep it balanced." LiWa stated, "[The turn-taking goal] helped me to be more active in the conversation."

The mastery criteria were not reached for any of dyad W's goals during the intervention phase. However, LiWa and LaWa reported that they had made progress, particularly on the 'daily tasks' goal and the turn-taking goal. LaWa and LiWa stated during the final session interview that completing the morning and evening meetings and having LiWa use the notebook to keep track of her daily activities had been very benenficial. Although LaWa kept consistent data on her nightly routine goal, minimal

progress was made. Part of the difficulty with this goal was that LaWa was the last in the house to go to bed, and so she had to complete her nightly routine tasks independently. LaWa and LiWa reported difficulty with the data collection procedures for the turn-taking goal, although they both reported that LaWa was responding consistently to LiWa's prompts. They reported that they wished to begin applying this strategy during social outings.

EVALUATION OF PROGRAM COMPONENTS:

The brain injury education component was well-received by Dyad W. LaWa stated, "I enjoyed learning about how the brain works and what the part of my brain that is missing is supposed to do." Dyad B. reported less benefit from the education component. JuBr reported that most of the information in the presentation was already familiar to her, while PaBr reported that it was difficult to retain the information without having a hand-out to refer to. Both participant dyads had been living with the effects of the brain injury for several years, and had learned about brain injury from therapy, support groups and individual research. Including an education component to treatment may be more important when treating individuals with brain injury with more recent injuries who have not had the same level of exposure to information about brain injury.

Both dyads reported that participating in setting goals was beneficial. JuBr stated "[setting goals] forced me to think about what I hoped to accomplish," and LaWa reported that "The goals made it much easier for me to see a reason for keeping accurate records." Monitoring progress on goals was motivating for Dyad W., but was perceived as a burden for Dyad B. LaWa reported that she viewed progress-monitoring as a

competition to see if she could surpass her performance on her goals from the previous week. However, PaBr reported that "Too many distractions…kept us from treating the study as seriously as we should have." The fact that Dyad B. perceived progress monitoring as more difficult than Dyad W. may be related to lifestyle differences between the groups. While PaBr and JuBr both work full-time, LaWa works part-time and LiWa is retired, so they may have had more time to devote to progress monitoring. Clinicians who wish to involve clients in progress monitoring should discuss this with clients to ensure that the clients have the time and desire to monitor their own progress. If clients do not express interest, then alternative home practice activities may be substituted.

Discussing communication strategies and evaluating strategy use in self and others were perceived as useful by both dyads. Interestingly, both participants with brain injury rated the self-evaluation as slightly more useful than evaluation of the training videos, while both conversation partners rated the self-evaluation and other-evaluation as equally useful. In this study, evaluation of videotaped interactions was completed after the goal-setting session. However, completing the self-evaluation activity prior to goal-setting might have been useful, as the self-evaluation led to the identification of communication problems that they were previously unaware of, such as Dyad B.'s tendency to speak simultaneously during casual and problem-solving conversations.

Role-play activities were well-received by Dyad W; however, Dyad B. reported feeling uncomfortable with this treatment component. PaBr reported, "I felt awkward

trying to come up with things to say and being under scrutiny." JuBr stated that role-play activities "sometimes felt fake.' Modifications to role-play activities might have made them less intimidating to PaBr and JuBr. During the sessions, the participants were given a situation and asked to role-play it without preparation. Allowing for more discussion and preparation for role-plays might have reduced the participants' anxiety. For participants who are particularly uncomfortable with improvised role-plays, preparation might involve writing a script and then reading it aloud.

All four participants rated including both communication partners in therapy as one of the most helpful components of therapy. JuBr stated that "I felt unsure of how to adapt to [PaBr's] new normal and this gave me some direction."

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Limitations of the study include the small sample size and unclear etiology in one of the participant dyads. A larger number of participants would have strengthened the findings; however, recruitment for this study was complicated by the fact that many individuals in the community with brain injury did not have a close communication partner who was available to participate. Social isolation is a commonly reported long-term consequence of brain injury. Thirty-one percent of individuals with brain injury surveyed 10-20 years post-onset reported that they had no friends, while 8% stated that they had neither friends nor family (Hoofein, Gilboa, Vakil & Dominick, 2001). The individuals surveyed also had a higher rate of divorce compared to the general population. Thus, although providing therapy to individuals with brain injury along with a communication partner may be ideal, it may not always be a possibility.

Dyad B. presented a special case in that physiological evidence of brain injury was not available and as PaBr stated in his initial interview, only about half of the specialists that he saw following his injury believed that he had sustained a TBI. However, PaBr demonstrated pragmatic language deficits, even though their basis in brain injury was not clear. Although the treatment program was designed for individuals with brain injury, Dyad B's success may indicate that the methods used may be used for individuals with pragmatic language deficits resulting from other etiologies.

Future research is needed to determine the utility of communication partner training for a greater variety of individuals with brain injury. Neither participant in this study had a severe injury, evidenced by the fact that both individuals with brain injury obtained the lowest possible severity rating on the SCATBI, and both participants' injuries occurred several years prior to participation in the study. The caregivers and communication partners of individuals with recent brain injury or with more severe injuries may have an even greater need for communication partner training to facilitate adjustment. The utility of the program described in this study for use with more severely impaired individuals warrants further investigation.

CONCLUSION

The treatment program led to changes in the communication and daily routines of the two participant dyads, including changes in discourse measures, progress on individual goals and subjective ratings of the usefulness of specific treatment components. However, the small number of participants and single case study design of this study make generalization to other individuals with brain injury difficult. Clinicians

who wish to include communication partners in therapy for individuals with brain injury are encouraged to modify the program to meet participants' needs.

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