Training paid caregivers to improve their conversations with people with traumatic brain injury (TBI)

Biography

Nicholas Behn graduated from The University of Sydney in 1999 as a Speech Pathologist and has been employed by the Brain Injury Rehabilitation Trust (UK) for the last 4 years. Nicholas has lectured postgraduate students at the University of Essex in TBI and has been involved in creating national policies for the management of people with TBI through the Royal College of Speech and Language Therapists. His presentation draws on research undertaken for his Master's degree through the University of Sydney.

Introduction

Paid caregivers are frequently involved in the lives of people with TBI to provide leisure and social opportunities and vital support to families. Complex interpersonal skills are required to fulfill the multiple roles that have been identified to exist for a paid caregiver (McCluskey, 2000). Problems with communication can affect the ability of a person with TBI to have successful conversations and to form and maintain friendships with others. Therefore, support and training is required to interact with people with TBI who often present with significant and disabling communication impairments. However, no studies to date have examined the impact of improving the communication skills of paid caregivers on interactions with people with TBI. This paper therefore describes the first single-blinded randomized controlled trial and addresses three research questions;

1. Can paid caregivers for people with TBI be trained to improve their communication skills?
2. Can a change in skill for the paid caregivers have an impact on the interactions that involve people with TBI?
3. Is a change of skill sustainable at a 6 month follow-up assessment post-training?

Method

Participants were 10 paid caregivers from a residential rehabilitation centre that were randomly selected and allocated to either a control (n=5) or training group (n=5) (Table 1). Inclusion and exclusion criteria for paid caregivers are listed in Table 1. Five people with TBI were selected but not randomized to interact with paid caregivers. Characteristics of people with TBI, inclusion and exclusion criteria are shown in Table 2.

Paid caregivers assigned to the control group were not trained but continued to work with people with TBI in a residential rehabilitation centre. Paid caregivers assigned to the training group attended a communication training program that involved a 2-hour introductory session followed by five 3-hour sessions. Training was conducted over an 8-week period in groups of two to three. Attendance was 100% for the entire program. Training consisted of a program that combined collaborative and elaborative conversational procedures (Ylvisaker, 1998) with discourse based activities (Togher, McDonald, Code, & Grant, 2004). Training focused on situations that

frequently occur for paid caregivers within the workplace and used a combination of didactic (e.g. discussion) and performance based approaches (e.g. role-play) to teach strategies. Homework exercises involved paid caregivers audiotaping conversations with people with TBI to discuss in subsequent sessions. An outline of the six week program is in Table 3.

Interactions of paid caregivers and people with TBI were collected at three time intervals; (1) one to two weeks prior to the commencement of training; (2) one to two weeks after training and; (3) six months after training. Paid caregivers were given a list of questions (Snow, Douglas, & Ponsford, 1997) to facilitate a conversation with people with TBI.

Interactions lasted 10-minutes and were judged by two trained raters blind to group allocation for three outcome measures, the Adapted Measure of Participation in Conversation (MPC), the Adapted Measure of Skill in Supported Conversation (MSC) (Togher, Power, McDonald, Tate, & Rietdijk, 2010) and Global Impression Scales (Bond & Godfrey, 1997). The three measures contained 9-point Likert scales that ranged from 0 to 4 with 0.5 intervals. The first measure, the MPC, refers to the level of participation of the person of TBI and consists of two scales, interaction (social connection) and transaction (content). Inter-rater reliability was fair to good with ICC's ranging from 0.53 to 0.66. The second measure, the MSC, rated the skill of the paid caregiver and consists of two scales that rate how well the paid caregiver can acknowledge competence (AC) and reveal competence (RC) of the person with TBI. Inter-rater reliability was excellent with ICC's ranging from 0.78 to 0.86. Low scores reflected no participation or support by a person with TBI or communication partner and a high score reflected full participation and highly skilled support. The third measure, the Global Impression Scales rate how appropriate, effortful, interesting and rewarding each conversational interaction was. Scales rate the conversational behaviours of the person with TBI and their communication partner rather than focusing on the impairments of the person with TBI. Inter-rater reliability was excellent with ICC's ranging from 0.80 to 0.94.

Data from pre-training, post-training and follow-up were analysed using repeated-measures ANOVA with helmert contrasts to examine the differences between the two groups (training and control) in the amount of change they demonstrated over time.

Results

At baseline there were no statistically significant differences between the two groups on the demographic variables of age, education, years working as a caregiver, years working with people with an ABI and a measure that estimates intelligence levels (Table 1). Mean scores and interactions effects for the two groups at pre-, post-training and follow-up on the outcome measures are shown in Tables 4 and 5. No significant differences were found for the outcome measures at baseline.

The first set of interaction effects tested if any change from pre-training to post training and follow-up was the same in both groups. Three of these scales were highly significant, MSC AC ($F_{1,8} = 36.54$, p <0.001), MSC RC ($F_{1,8} = 21.51$, p = 0.002) and rewarding ($F_{1,8} = 20.1$, p = 0.002) (Figures 1 and 2). In other words, conversations involving trained paid caregivers were scored higher than controls (as a group) on these scales. Two scales were marginally significant,

appropriateness ($F_{1,8} = 5.20$, p = 0.05) and interesting ($F_{1,8} = 7.11$, p = 0.03). Non-significant interactions were found for MPC interaction ($F_{1,8} = 0.29$, p = 0.61), MPC transaction ($F_{1,8} = 0.51$, p = 0.50) and effort ($F_{1,8} = 2.40$, p = 0.16).

The second interaction tested if any change from post training to follow-up was the same in both groups. No significant effects were found indicating that gains made as a result of training were maintained at 6-months follow-up.

Discussion

This RCT provides positive preliminary evidence for the training of paid caregivers of people who have sustained a severe TBI in a long-term care facility. Trained caregivers had improved conversations when compared to a control group who received no communication training. Specifically, the communication of trained paid caregivers was perceived by blinded raters as being more sensitive and adult-like and, as a result, the person with TBI was perceived to have been given increased opportunities to communicate. While, the person with TBI was not perceived to have improved their communication skills, the improved skills of the trained paid caregiver resulted in interactions that were perceived to be more appropriate, interesting and rewarding compared to paid caregivers in the control group. Caregivers reported that using the new strategies in workplace situations was helpful, as they incorporated their skills into the daily care routines of the people with TBI.

A limitation of the study was the small sample size. Future replication studies with larger numbers of participants are needed. Nonetheless, the results highlight the positive effect that trained paid caregivers can have on the interactions of people with TBI. Training paid caregivers to modify their communication behaviours during everyday tasks may foster improved independence in the home and in the community for the person with TBI.

References

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Table 1

Basic demographic data for paid caregivers as randomised (mean ± SD)

Variable	Training (n=5)	Control (n=5)	F	*df*	p
Age (years)	24.20 ± 3.83	38.60 ± 17.56	1.79	1,8	0.14[a]
Education (years)	12.60 ± 1.51	12.60 ± 1.34	<0.001	1,8	1.00
Work caregiver (years)	3.93 ± 4.15	11.30 ± 7.89	1.85	1,8	0.10
Work ABI (years)	2.33 ± 1.33	1.90 ± 1.24	-0.53	1,8	0.61
WTAR	91.80 ± 3.35	92.25 ± 5.56	0.15	1,7	0.88

Note. ABI = acquired brain injury; WTAR = Wechsler Test of Adult Reading
[a]Levene's test of equality of variances significant at 0.002 so "equal variances not assumed" p value reported

Inclusion criteria were; (1) no known previous history of significant alcohol/substance abuse or psychiatric problems; (2) proficient speakers of English to be able to engage and participate in the videotaped interactions and communication partner training; (3) not attended or obtained university qualifications and; (4) employed full-time.

Table 2

Demographic and Clinical Characteristics of TBI Participants

Person	Sex	Age (y)	PTA estimate (m)	Time post TBI (y)	Time post-discharge (m)	Nature of injury	CT scan
Paul[a]	M	30	Several	11	6	MVA	DAI with (R) frontal and temporal contusion and SAH
Simon[b]	M	48	4	5	16	Assault	Bilateral haematomas
Adam[a]	M	29	1	4	12	MVA	Small thalamic bleed, shearing
Sally[a]	F	19	4	2	12	MVA	(L) SDH, SAH and DAI
Lisa[c]	F	20	Unknown	12	6	MVA	Large extradural haematoma, small acute SDH
Mean		29.2	3	6.8	10.4		

Note. y = years; m = months; PTA = post-traumatic amnesia; TBI = traumatic brain injury; MVA = motor vehicle accident; DAI = diffuse axonal injury; SAH = sub-arachnoid haemorrhage; SDH = sub-dural haemorrhage; L = left; R = right.
[a] Person with TBI who interacted with 1 control and 1 trained paid caregiver;
[b] Person with TBI who interacted with 1 trained paid caregiver
[c] Person with TBI who interacted with 1 control and 2 trained paid caregivers

Participants with TBI were recruited from 28 consecutive admissions from the residential rehabilitation unit during the period January 2005-November 2007. Inclusion criteria for the study were (1) a diagnosis of a TBI, (2) a minimum estimated period of post-traumatic amnesia (PTA) of 14 days as determined by a qualified clinical psychologist/neuropsychologist, (3) occurrence of injury at least 6 months earlier, (4) discharged from the rehabilitation unit a minimum of 6 months previous and (5) evidence of a pragmatic communication disorder as diagnosed by a speech pathologist. Exclusion criteria included (1) the presence of a motor speech impairment or moderate-severe aphasia as diagnosed by a speech pathologist, (2) previous diagnosis of CVA, (3) people receiving speech pathology intervention for the duration of the study and (4) English as a second language. From the sample of 28 people with a brain injury, 11 met the criteria. Of these, 1 person was sectioned within a mental health unit and therefore unable to participate, 1 person declined to participate, 3 people were out of area and unable to fulfill the obligations of the study and 1 person was unable to be contacted. This left five people with TBI to participate in the study. Allocation was not randomised but conducted on the availability of the people with TBI and staffing schedules.

Table 3

Overview of the group training program

Session	Session Title	Description
1	**Introduction**	This session included; (1) Discussion of difficult conversational situations within the workplace; (2) The range of cognitive, behavioural and social communication changes following a TBI; (3) Understanding how to observe and compare these interactions to people who have not sustained a TBI.
2	**Brain Injury and Communication**	The session included; (1) Understanding the importance and purpose of communication; (2) Describing the use of language within different communicative contexts and understanding that the role of the communication partner in affecting the outcome; (3) Examining the structure of interaction types found to be most problematic within the workplace; (4) Discussing a range of communication strategies that can facilitate good interactions; and (5) Identifying barriers to successful conversations within the workplace.
3	**Collaboration**	The session introduced five components of a collaborative style of communication; (1) Collaborative intent; (2) Cognitive support; (3) Emotional support; (4) Questions: positive style; and (5) Collaborative turn taking. How to use strategies to speak and receive a message from a person with TBI was discussed.
4	**Elaboration**	The session introduced the two components of an elaborative style of communication; (1) Elaboration of topics including maintenance of topic and; (2) Elaborative organisation during a topic, between topics and over time including the review of information during a conversation. How to use strategies to assist people with TBI to extend and elaborate their conversations was discussed.
5	**Asking Questions**	The session focused on the variety of question types that may contribute to the effectiveness of a conversation. These included (1) Open and closed questions; (2) Simple and complex questions; (3) Primary and follow-up questions; (4) Dynamic questions; (5) Loaded and neutral questions and; (6) Testing and true questions. The session involved teaching a more positive style of questioning.
6	**Putting It All Together**	The session focused on consolidating information from the previous sessions and incorporating them into genre's that are specific to the paid caregiver's and the workplace. It focused on five genre's in particular; (1) Planning and negotiation; (2) Discussion; (3) Problem solving; (4) Planning and; (5) Casual conversation. The session involved the rehearsal and role-play of various interaction types using a collaborative and elaborative style of communication.

Table 4

Scores at pre-, post-training and at follow-up on outcome measures (mean ± SD)

Outcome (0-4)	Pre-training		Post-training		Follow-Up	
	Train	Control	Train	Control	Train	Control
MPC						
Interaction	2.6 ± 0.65	3.0 ± 0.87	2.9 ± 0.82	3.0 ± 0.50	2.7 ± 0.76	2.7 ± 0.76
Transaction	2.9 ± 0.82	3.2 ± 0.67	3.0 ± 0.87	3.0 ± 0.50	3.0 ± 0.87	3.0 ± 0.61
MSC						
AC	2.5 ± 0.61	3.3 ± 0.76	3.1 ± 0.65	2.4 ± 0.65	2.9 ± 1.14	2.6 ± 0.65
RC	2.4 ± 0.74	3.2 ± 0.67	3.1 ± 0.53	2.4 ± 0.66	2.9 ± 0.95	2.6 ± 0.71
Global impression scales						
Appropriateness	3.0 ± 0.87	3.4 ± 0.42	3.3 ± 0.57	3.1 ± 0.42	3.4 ± 0.65	3.1 ± 0.22
Effortful	2.7 ± 0.91	3.1 ± 0.74	2.8 ± 1.03	2.6 ± 0.74	2.9 ± 0.96	2.7 ± 0.67
Interesting	2.7 ± 0.57	3.2 ± 0.76	2.9 ± 0.74	2.7 ± 0.76	3.1 ± 0.89	2.7 ± 0.84
Rewarding	2.2 ± 0.84	3.0 ± 0.71	2.8 ± 0.76	2.4 ± 0.82	2.8 ± 0.91	2.6 ± 0.65

Note. MSC = Measure of Skill in Supported Conversation; AC = acknowledge competence; RC = reveal competence

Table 5

Interaction effects for conversations on outcome measures

| Outcome	Training[a]			Maintenance[b]		
	F (1,8)	P	ES	F (1,8)	P	ES
MPC						
Interaction	3.27	0.11	0.29	0.08	0.79	0.01
Transaction	2.05	0.19	0.21	<0.001	1.00	<0.001
MSC						
AC	36.54	**<0.001**	0.82	0.78	0.40	0.09
RC	21.51	**0.002**	0.53	0.43	0.53	0.05
Impression Scales						
Appropriate	5.20	**0.05**	0.39	0.07	0.79	0.01
Effortful	2.40	0.16	0.23	<0.001	1.00	<0.001
Interesting	7.11	**0.03**	0.47	0.17	0.69	0.02
Rewarding	20.1	**0.002**	0.72	0.17	0.69	0.02

Note. Effect sizes are expressed as partial η^2. ES = effect size; MSC = Measure of Skill in Supported Conversation;
AC = acknowledge competence; RC = reveal competence
[a]Interactions indicating training effects (pre vs post/follow-up interactions)
[b]Interactions indicating maintenance effects (post vs follow-up interactions)
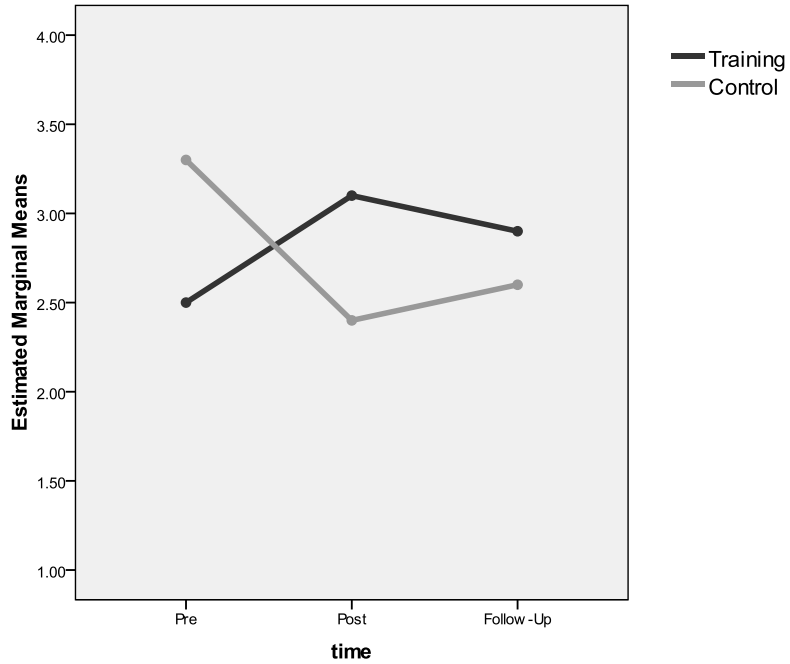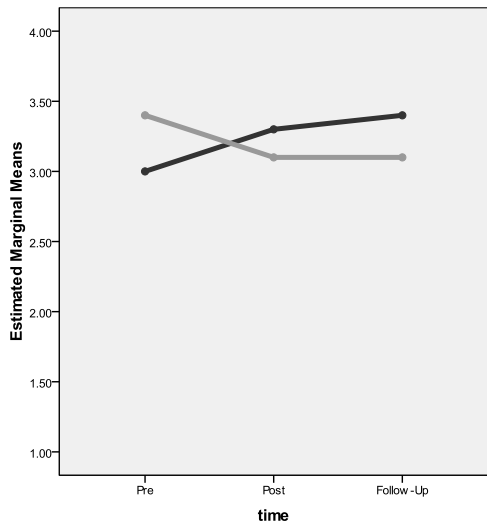
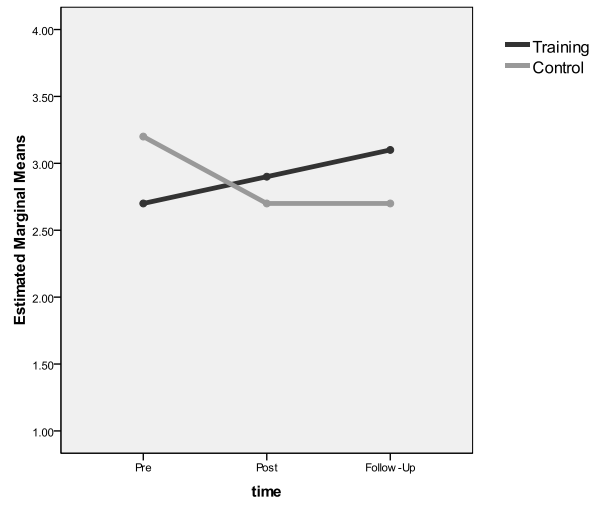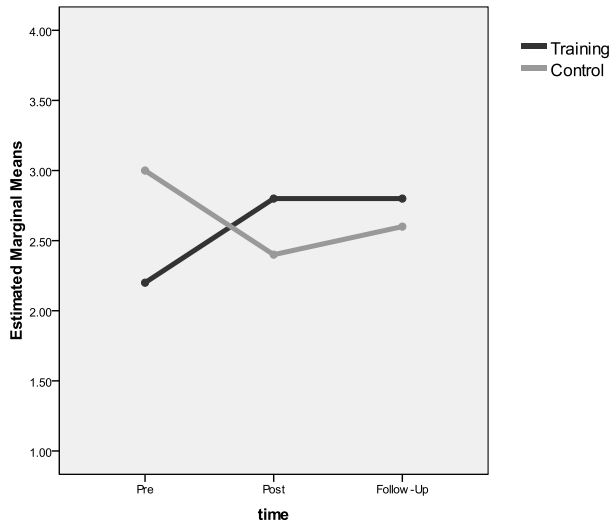a) MSC Acknowledging competence
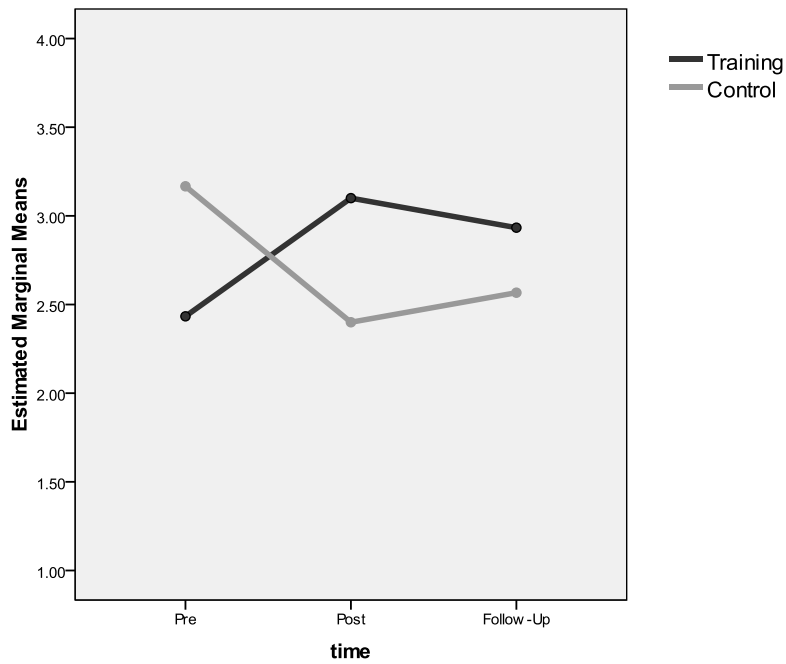
b) MSC Reveal competence

Figure 1. Mean scores for significant pre-, post- and follow-up on MSC outcome measure

a) Appropriate

b) interesting

c) rewarding

Figure 2. Mean scores for significant pre-, post- and follow-up on global impression scales