Setting and achieving individualised social communication goals for people with acquired brain injury (ABI) within a group treatment

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ABSTRACT

Background and Aims: Cognitive-communication disorders are common following an acquired brain injury (ABI). Remediation should involve individualised goal setting, yet few reports describe the effectiveness of setting communication goals in a group setting. This paper aims to describe a process for setting and achieving goals for people with ABI.

Methods and Procedures: Twenty-one participants with ABI participated in a group treatment (triads and dyads) over 6 weeks (20 hours in total). Specific social communication goals were set using Goal Attainment Scaling (GAS) with the participant and their communication partner. Goals targeted strategy use that accounted for existing cognitive abilities. The participant and their communication partner evaluated the goals post-treatment and 6-8 weeks later. Data was analysed using Friedman's Test to identify achievement of GAS goals.

Outcomes and Results: Twenty participants recalled goals independently post-treatment. Significant improvement post-treatment on GAS goals was rated by both the participant ($p<0.001$) and their communication partner ($p<0.001$). This improvement was maintained at follow-up. No significant differences in ratings were found between participants and their communication partners at either time point.

Conclusions and implications: Individualised social communication goals can be set and achieved for people with ABI in group treatment, even when participants are several years post-injury. GAS offers a method for structuring and quantifying goal progress. Involving communication partners and cognitive strategies were effective in improving communication.

What this paper adds

What is already known on the subject?

Communication problems are common and pervasive following an ABI and can have a significant impact on a person's life. Setting individualised person-centred goals to address these problems is considered an important aspect of the rehabilitation process, though currently, little is known about the process for setting, measuring and achieving goals particularly within a group context.

What this paper adds to existing knowledge?

This paper describes a process for setting and achieving individualised social communication goals within the context of a group setting for people with ABI. Use of a range of strategies including, use of video recorded stimuli, communication partner involvement, text message reminders and drawing on metacognitive skills within the group setting were useful for helping people with ABI to set and achieve their goals. Moreover, GAS was an effective method for demonstrating achievement and maintenance of goals, which people with ABI could rate as well as their communication partner.

What are the potential or actual clinical implications of this work?

People with chronic brain injuries can set and achieve meaningful social communication goals many years after their initial injury. Clinicians and researchers should consider use of a multi-component approach that is person-centred and

collaborative and takes existing cognitive abilities into account in helping people with ABI achieve communication goals within a group setting.

INTRODUCTION

Communication problems frequently occur following acquired brain injury (ABI) and can negatively affect the individual's social functioning, social integration into the community, and return to work (Snow et al., 1998, Dahlberg et al., 2006). These difficulties can occur for many years post-injury (Bond and Godfrey, 1997, Snow et al., 1998) and are most commonly referred to as 'Cognitive-Communication Disorder' (CCD) (Togher et al., 2014). These problems come primarily from non-linguistic cognitive impairments (such as impaired attention, memory and executive function) rather than from language impairments, as is the case in aphasia (McDonald et al., 2014). The clinical presentation of a person with a CCD is complex and highly heterogeneous (Snow et al., 1997), reflecting the cause of injury, severity, extent of fronto-temporal pathology, and the diffuse nature of the injury (Prigatano and Wong, 1999). Owing to the heterogeneity, people with ABI have been described as overtalkative, tangential, repetitive, disorganised, inefficient, and lacking in verbal output (Hartley and Jensen, 1991, Snow et al., 1995, Coelho et al., 1991). They may present with problems in word retrieval (Hartley and Jensen, 1991, Snow et al., 1995), social appropriateness (Spence et al., 1993), difficulty taking turns (Snow et al., 1997, Snow et al., 1995, Coelho et al., 1991, Mentis and Prutting, 1991), and initiating, maintaining and extending a conversation (Coelho et al., 1991, Snow et al., 1997). The wide range of communication problems pose a particular challenge for people with ABI who already face difficulties developing social networks (Elsass and

Kinsella, 1987), forming new friendships and relationships (Zencius and Wesolowski, 1999), and have increased feelings of loneliness, social isolation and low self-esteem (Hoofien et al., 2001).

Goal setting is considered a fundamental component of neuro-rehabilitation (Bovend'Eerdt et al., 2009). However, a recent Cochrane review in 2015 found only low quality evidence that goal setting can improve outcomes for people receiving rehabilitation for acquired disability (Levack et al., 2015). Goals are important in providing structure during rehabilitation (Doig et al., 2009). A scoping review of 86 studies revealed that the majority (77%) used a formal approach to goal setting and attainment. Goal Attainment Scaling (GAS) was the most commonly used method (Prescott et al., 2015). Initially introduced by Kiresuk and Sherman (1968), GAS goals have the advantage of being "measurable, attainable, desired by all, and socially, functionally, and contextually relevant" (Ottenbacher and Cusick, 1990, p.520), and can be used to improve self-awareness for people with ABI (Malec, 1999). Achievement of goals is rated on a 5-point outcome scale, "much less than expected" (-2), "less than expected" (-1), "expected" (0), "better than expected" (+1) and "much better than expected" (+2). The baseline or pre-treatment score is usually rated as -1 and the "expected level of outcome" is 0. Malec (1999) suggests the use of numbers 0 to 4 rather than -2 to +2 as many people with ABI have indicated distress at being 'negatively' rated. The reliability, validity and sensitivity of GAS in rehabilitation settings have strong evidence from a systematic review based on 11 studies (Hurn et al., 2006). The measure has excellent inter-rater reliability when goals were rated by multiple members of a team (ICC>0.90), satisfactory concurrent validity and is responsive to change (Malec, 1999). Furthermore, positive outcomes have been widely reported from the use of GAS for people with ABI (Doig et al.,

2011), including those with CCDs (Dahlberg et al., 2007, Braden et al., 2010, Finch et al., 2017).

Setting goals for people with ABI can be challenging due to poor motivation, cognitive impairments and reduced self-awareness (Doig et al., 2009). For this population, making goals person-centred and collaborative is widely documented as important (Prescott et al., 2015). Person-centred goals take account of the complex and heterogeneous nature of CCDs following an ABI (Togher et al., 2014) and have been described in a range of treatment studies for this client group (Dahlberg et al., 2007, Braden et al., 2010, Togher et al., 2004, Togher et al., 2013, Behn et al., 2012, McDonald et al., 2008). Person-centred goals set with the person with ABI are more meaningful and motivating (Cott, 2004, Prescott et al., 2015, Togher et al., 2014) and increase the likelihood of treatment participation (Ownsworth et al., 2008) and positive rehabilitation outcomes (Bergquist et al., 2012). Collaborative goal setting with families (or those who know the person better than the therapist) can enhance the process by offering valuable insights into a person's difficulties and can encourage and facilitate goal achievement during the rehabilitation process (Togher et al., 2014, Prescott et al., 2015, Doig et al., 2009). Better rehabilitation outcomes have been reported when family members are involved (Sherer et al., 2007). During therapy, they can help an individual achieve their goals and help to ensure learnt skills are not lost over time as therapy is withdrawn.

For people with ABI, addressing some of the barriers with cognition and self-awareness are particularly important because impaired executive functioning can affect a person's ability to self-monitor and regulate goal performance thus affecting the long-term maintenance and generalisation of skills. Metacognitive skills training has been introduced as a strategy to improve self-monitoring of goal or task

performance (Ownsworth et al., 2008, Schmidt et al., 2013) including, for people with CCDs (Togher et al., 2014). Such training refers to improving a person's ability to self-monitor, evaluate and regulate their performance on tasks; and helps to build self-awareness, increase strategy use, and transfer and generalise skills to everyday situations (Cicerone et al., 2011). Prigatano and Wong (1999) suggest that asking a person to predict and evaluate task performance should be emphasised for repeated tasks. Several studies have demonstrated the positive effects of treatments that have included self-prediction and evaluation, on goal achievement and task performance (Goverover et al., 2007, Ownsworth et al., 2008). People are likely to have trouble remembering their goals and thus are less likely to carry out goal-directed behaviours that help them achieve their goals. Good evidence exists for the use of technologies to help a person attend to their goal including the use of mobile assistive devices (Gillespie et al., 2012) although this is likely to be affected by severity of injury, age and experience of technology. Some of these concerns are overcome by using mobile phones which are commonplace, socially acceptable and require minimal training beyond making sure the person with ABI knows how to receive and read a text message. Culley and Evans (2010) found that 11 people with TBI had better goal recall from daily text alerts of their goals compared to a group that did not receive text alerts. Text alerts prompt the person with ABI to remember and think about their goals and prompt engagement in goal-directed behaviour thus, reducing the need for clinician-led monitoring.

Reduced self-awareness can affect motivation to engage in treatment, and lead to poor compliance with strategies and techniques to remediate impairments if the person with ABI does not acknowledge that those impairments exist (Fleming et al., 1998, Trahan et al., 2006). Approaches to restore awareness may include the creation

of a supportive, safe and therapeutic environment; selecting everyday activities and environments important to an individual to help develop awareness of one's own goal; providing clear feedback and opportunities for a person to evaluate their performance; and group therapy (Fleming and Ownsworth, 2006) . The use of video-taping as a tool to help a person develop awareness by asking them to review and discuss their performance on set tasks has shown some positive results for improving awareness in people with ABI (Schmidt et al., 2013). In addition, reviewing videotaped conversations of an individual has been suggested as a starting point for setting goals and planning treatment (Hoepner and Turkstra, 2013).

In many studies, the person with ABI determines goal achievement. However, people with CCD who exhibit impaired communicative awareness, tend to rate their communication skills as better than a significant other rates them (Dahlberg et al., 2006, Douglas et al., 2007). Some studies addressed this by getting both the person with ABI and their significant other to rate the level of goal achievement (Dahlberg et al., 2007, Braden et al., 2010). However, neither of these studies compared the goal ratings of a person with ABI with that of their significant other, to determine whether there was agreement between the two.

This paper reports on the use of GAS to set goals, which was incorporated into a controlled group treatment trial for people with ABI (Behn et al., 2019). The first hypothesis was that individualised social communication goals could be set and measured using GAS within a broader, group-based treatment. The second hypothesis stated that GAS ratings would improve post-therapy, reflecting the achievement of goals, and that gains would be maintained at 6-8 weeks follow-up. Strategies to help achieve goals included person-centred goals, communication partner involvement, use of videotaping, text message reminders and metacognitive skills training. Finally, the

third hypothesis was that there would be agreement between how people with ABI and their communication partners rated goal achievement post-treatment and at follow-up.

METHOD

Ethical approval for the study was granted by City, University of London, School of Health Sciences Ethics Committee, and the Brain Injury Rehabilitation Trust Ethics Committee.

Participants

Inclusion criteria for participants with ABI were: (1) aged over 18 with a diagnosis of ABI; (2) a moderate-to-severe injury based on period of post-traumatic amnesia (PTA), Glasgow Coma Scale at time of injury, or clinical presentation based on the extent of cognitive and physical impairments (for people who sustain a traumatic brain injury); (3) at least 1 year post-injury; discharged from rehabilitation services for at least 6 months; (4) presence of cognitive-communication problems as diagnosed by a qualified speech and language therapist; (5) able to identify a family member, friend or paid carer to attend assessment sessions; (6) time available to attend assessment and treatment sessions; (7) a mobile phone that is able to receive text messages; (8) able to consent to participate in the study; (9) and sufficient English to participate in the study. Exclusion criteria for participants with ABI included: (1) poor speech intelligibility that would affect their ability to be understood by others in the group or severe aphasia diagnosed by a speech and language therapist as the linguistic support needed would be different to what was needed for this target population; (2) people receiving therapy from a speech and language therapist for the

duration of the study; (3) diagnosis of an active mental health disorder; (4) or significant behavioural problems that would disrupt group participation.

Participants were recruited from charitable brain injury organisations and local support groups across the UK. Phone screening and assessment procedures were used to determine eligibility. Across all recruitment sources, 21 eligible participants agreed to participate and were allocated to a group (of 2-3 participants). There were eight groups in total. Participant demographic variables are described in Table 1. Thirteen participants had sustained a TBI from a motor vehicle accident, fall or assault (severe = 12; moderate = 1). Diagnoses of the remaining 8 participants included meningioma, hypoxic injury, atrial venous malformation and stroke. All participants were discharged from rehabilitation and not receiving services however, six people were attending the national Headway program, which provides a day program for people with ABI. Each participant's cognitive abilities were assessed using the Repeatable Battery of the Assessment of Neuropsychological Status (RBANS)(Randolph, 1998) and their executive function assessed using the Wisconsin Card Sorting Test (WCST)(Heaton et al., 1993).

Table 1. Demographic variables

	ALL people with ABI (n=21)
Age	45.80 ± 14.47
Gender	
Male	12
Female	9
Years post-injury	11.95 ± 12.69
Injury type	
Trauma	13

Non-trauma	8
Injury severity (n=13)[a]	
Severe	12
Moderate	1
Living arrangements	
Alone	5
With others	15
Care home	1
Employment status	
Full-time	1
Part-time	2
Unemployed	18
Communication partner	
Family member	11
Spouse	4
Friend	3
Paid carer	3
RBANS	
Total score	70.85 ± 15.27
WCST	
Categories	3.62 ± 1.78
Perseverative errors	25.24 ± 15.47

[a]Injury severity can only be determined for traumatic injuries

Note. Values are mean ± SD. RBANS = Repeatable Battery of Assessment of Neuropsychological Status; WCST = Wisconsin Card Sorting Test.

Measures

Goal Attainment Scaling (GAS) was used to quantify clinically meaningful change towards social communication goals that were highly individualised for participants. Procedures for setting goals were based on previous description of the

development and implementation of GAS goals (Bovend'Eerdt et al., 2009, Malec, 1999), including treatment studies for people with CCDs (Dahlberg et al., 2007, Braden et al., 2010). Goals were formulated collaboratively in a 2-hour individual session with involvement of the participant, their communication partner and the therapist. To help with goal-setting, a pre-recorded (video) 10-minute conversation between the participant and their communication partner was used to help identify observable examples of communicative exchanges considered to be areas of strength and weakness and identify positive changes to facilitate a better conversation. This information was then formulated into a single social communication goal written in simple and accessible terms, often using the words of the participant. The goal was then translated into specific, concrete observable behaviours using a 5-point scale ranging from 0 to 4 where 1 is the baseline level (Malec, 1999). Levels were carefully defined, with descriptors for each score, starting with the expected level of achievement (i.e. 2), which can make it easier for defining the remaining outcome levels (Turner-Stokes, 2009). Goal achievement was evaluated at two points; immediately post-treatment and at 6-8 weeks follow-up. Participants and their communication partners rated achievement of goals to determine whether each of them perceived positive change post-treatment and at follow-up. Ratings were completed by each participant separate from one another and without referring back to the GAS levels set at the outset of treatment. The therapist was present when the participants rated the goals but did not provide any support that would lead the participant to rate a goal more or less favourably. Goal ratings were used to determine the level of agreement between participants. Examples of goals from three participants are shown in Table 2.

Table 2. Examples of three participants specific social communication goals set using GAS levels.

	SOCIAL COMMUNICATION GOAL		
GAS outcome level	Think about talking a little less with people and listening to feedback from my daughters	Make sure the topic you are talking about is interesting to the other person and makes sense	Try and give more extended responses in conversation
Much better than expected (4)	I dominate the conversation 50% of the time (50/50 conversation)	I will do this 80% + of the time in conversations	I rate my ability to do this as 9-10 (on a 10-point scale) in conversation
Better than expected (3)	I dominate the conversation 60% of the time (60/40 conversation)	I will do this 70% of the time in conversations	I rate my ability to do this as 8 in conversation
Expected level of outcome (2)	I dominate the conversation 70% of the time (70/30 conversation)	I will do this 50-60% of the time in conversations	I rate my ability to do this as 7 in conversation
Less than expected (1)	I dominate the conversation 80% of the time (80/20 conversation)	I will do this 30-40% of the time in conversations	I rate my ability to do this as 5-6 in conversation
Much less than expected (0)	I dominate the conversation 100% of the time (all of the time)	I will do this less than 20% of the time in conversations	I rate my ability to do this as <5 in conversation

Intervention

All participants engaged in a group-based treatment comprehensively described elsewhere (Behn et al., under review). The treatment comprised 10 two-hour sessions (one individual; nine group) over a six-week period (20 hours in total). The treatment was project-based and addressed social communication goals within a broader context that encompassed a range of social and cognitive skills. The individual session involved the participant, their communication partner and a Speech and Language Therapist. The group treatment sessions were each facilitated by a Speech and Language Therapist.

In addition to identifying and setting an individualised goal (as described in the previous section), the first session also aimed to provide participants and their partners with strategies and techniques to improve their conversations. Using materials from a published communication partner training manual (Togher et al., 2011), a discussion about the use of a positive questioning style was individualised and related to each person's social communication goal. For example, if the person was passive and quiet, techniques to encourage increased participation were discussed. The provision of individualised techniques enabled the communication partner to help participants achieve and generalise their social communication goal to other settings and people (e.g. out in the community or with different familiar and unfamiliar communication partners). Also, the techniques provided support to help participants and their partners communicate better about the treatment and any homework tasks set (*or action plans*) about treatment-related activities and actions that required completion for future sessions.

To help participants *achieve* their own social communication goals, a range of methods were employed. To aid goal recall, each participant was sent a daily text

message in the morning containing his or her social communication goal for the duration of the group treatment. On days the group sessions were conducted, texts were sent prior to the treatment session. An online text messaging service was used to manage the high volume of messages (www.textanywhere.net). To help facilitate goal generalisation outside treatment sessions, communication partners were involved in goal setting with participants. Furthermore, partners were regularly reminded of the goals via weekly text messages and were contacted at least once by phone call during the group treatment. This contact was made to discuss the progress of the participant and offer any further guidance or support specifically related to working on the social communication goal.

Finally, each participant's goal was addressed in each of the nine group treatment sessions. At the beginning of each session each participant was asked to independently recall their own goal, provide examples of how they achieved their goal between sessions, and self-rate their expected performance for the current treatment session (on a scale of 1-10). During sessions, participants received specific feedback about their goals from either the therapist or their peers, which included positive reinforcement, advice on how they may achieve their goal, and setting up opportunities for practice and repetition within the sessions. At the end of each treatment session, participants rated their performance against their own social communication goal and discussed any discrepancies or changes they could make for successive sessions. This method of feedback was introduced to help improve self-monitoring and self-regulation skills in relation to the goal.

Data Analysis

The first hypothesis was evaluated by observing participants' ability to set and

rate their goals. At the beginning of each of the nine group treatment sessions, each participant was asked to recall their goal. The number of times the goal was accurately recalled by a participant was recorded by the therapist throughout the treatment. To check the subjective judgement of this evaluation, a randomly sampled videotaped treatment session was selected from each group (11% of the data) and blindly reviewed by the second author. Agreement for the accuracy of goal recall was calculated with 86% agreement between the therapist and second author.

The second hypothesis was primarily evaluated by statistical analyses of GAS scores. The nature of GAS is such that all participants start at the same baseline level (i.e. “less than expected” = 1.0) so there is no range in the data at this time point. For that reason, a non-parametric Friedman’s test was conducted. This test was done to determine whether there is change from pre-treatment to follow-up as rated by both the participant and their communication partner. Planned comparisons were then conducted to identify the source of a significant effect from pre-treatment to post-treatment, and post-treatment to follow-up, using the Wilcoxon Signed-Ranks Test. A non-significant result for the post-treatment to follow-up comparison would suggest maintenance of skills. If this is the case, a comparison between pre-treatment and follow-up would then be done to show that there is still a significant gain overall. In addition to reporting group statistics, visual analysis of goal achievement for each participant pair was conducted. Group-level data can sometimes mask individual variability and so the raw change scores (ranging from -1 to +3) were displayed for each participant and their communication partner to examine the variability within the group as a whole.

The third hypothesis was tested by comparing the ratings of participants and their partner’s ratings, both post-treatment and at follow-up. Ratings were compared

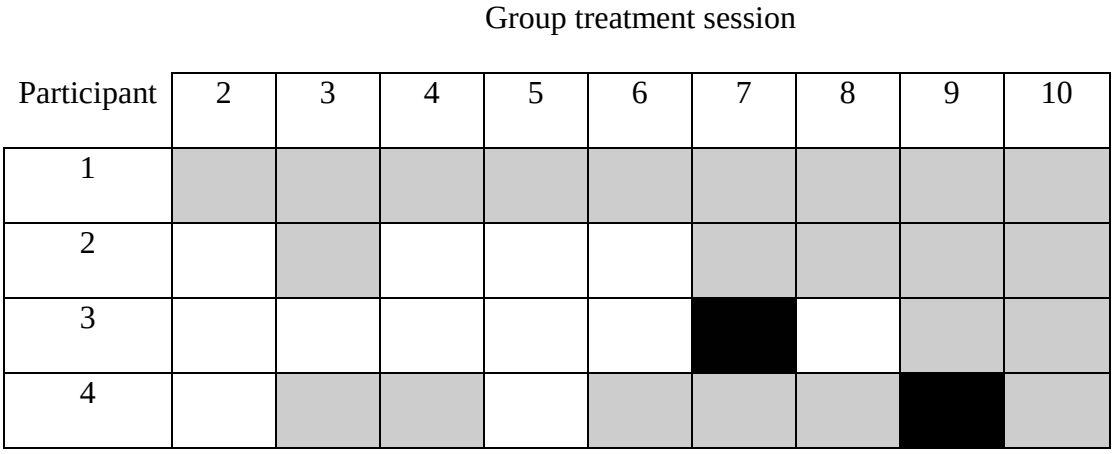
at each time point using the Mann-Whitney U two-tailed test. Good agreement was shown by a non-significant difference between each of their ratings.

RESULTS

Goal setting and recall

All participants were able to set goals with their communication partners within a 2-hour individual session. Participants' awareness of their communication difficulties was variable however and watching the videotaped conversation and feedback from communication partners helped to facilitate goal setting. All participants were able to write the goal in their own words, which was later texted to them on a daily basis.

During group treatment sessions a participant's ability to recall their goal independently was recorded (Figure 1). Participants' recall of goals varied. One person (P14) was unable to recall their goal throughout treatment. Goal recall improved as treatment progressed. In the first treatment session (session 2), 38% of participants recalled their goal correctly, while in the final treatment session (session 10), 95% could recall their goal correctly. The majority of people (n=15) could recall their goal independently within 5 (of 9) treatment sessions.



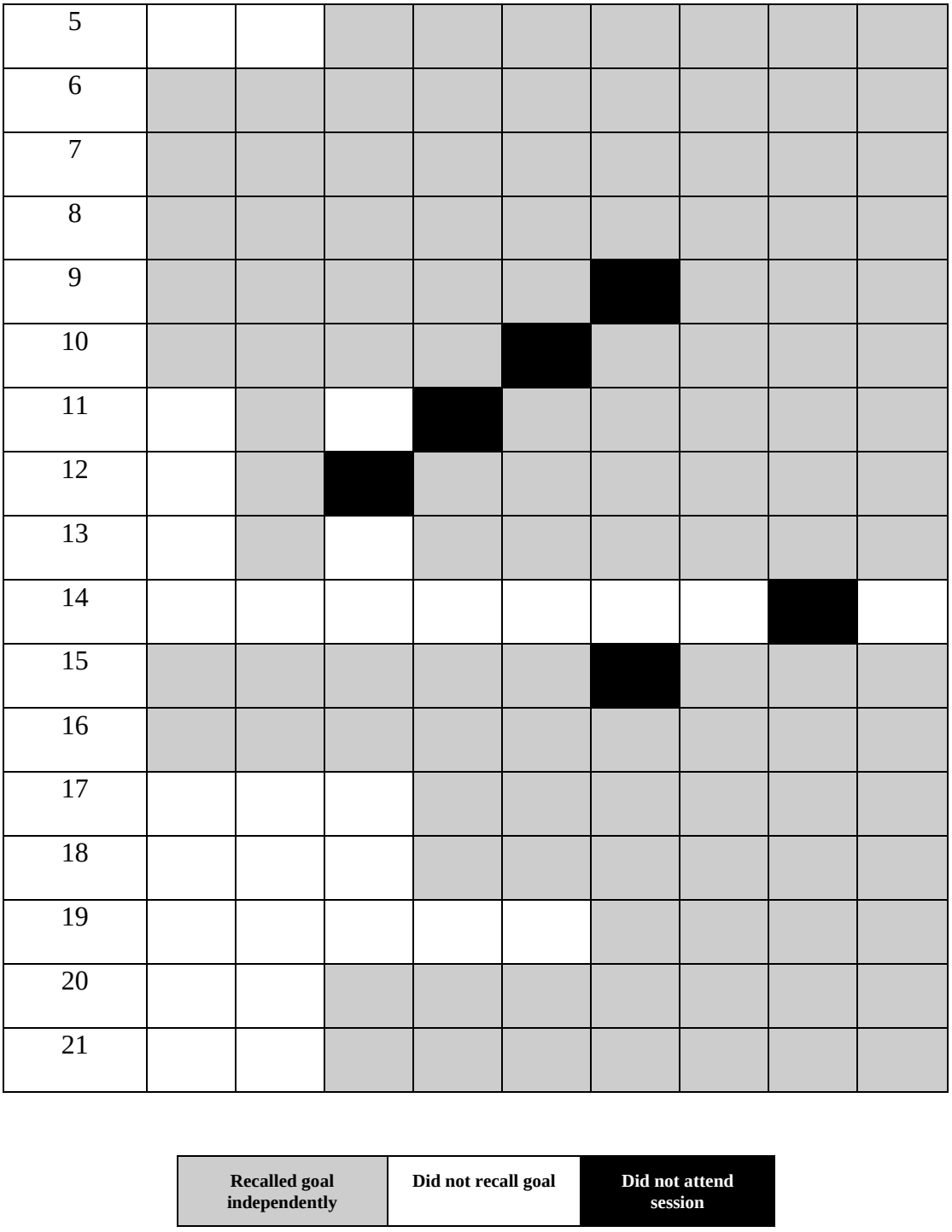


Figure 1. Goal recall for each individual participant

Goal achievement

The treatment found a significant increase from pre-treatment to follow-up in GAS scores as rated by the participant (n=21), $X^2(2)=28.71$, $p<0.001$ (Figure 2), and

similarly in ratings made by their communication partner (n=19), $X^2(2)=25.48$, $p<0.001$ (Figure 3, nb. two communication partners were unavailable post-treatment).

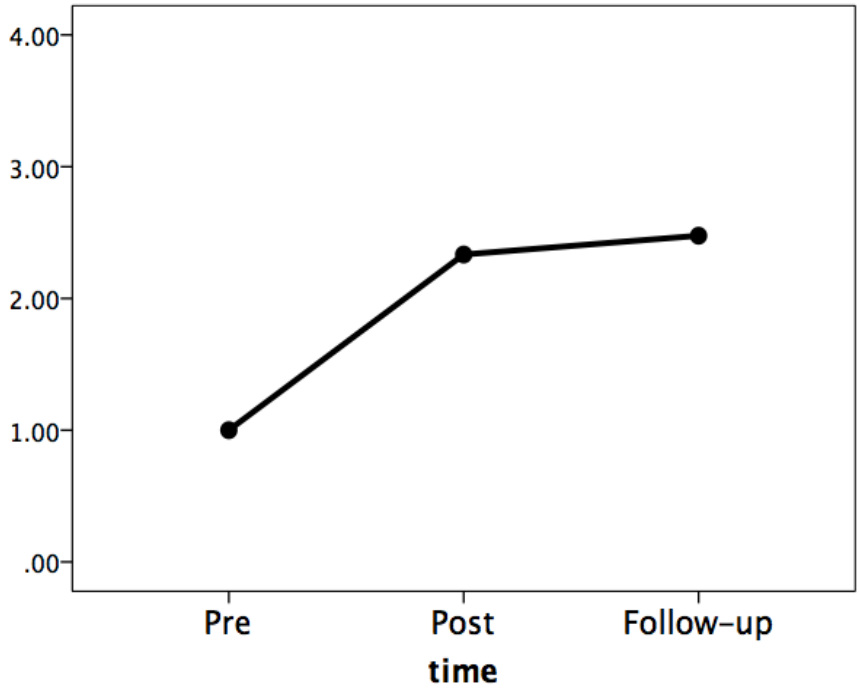


Figure 2. Mean GAS (Self) scores pre-treatment, post-treatment, and follow-up, as rated by the participant.

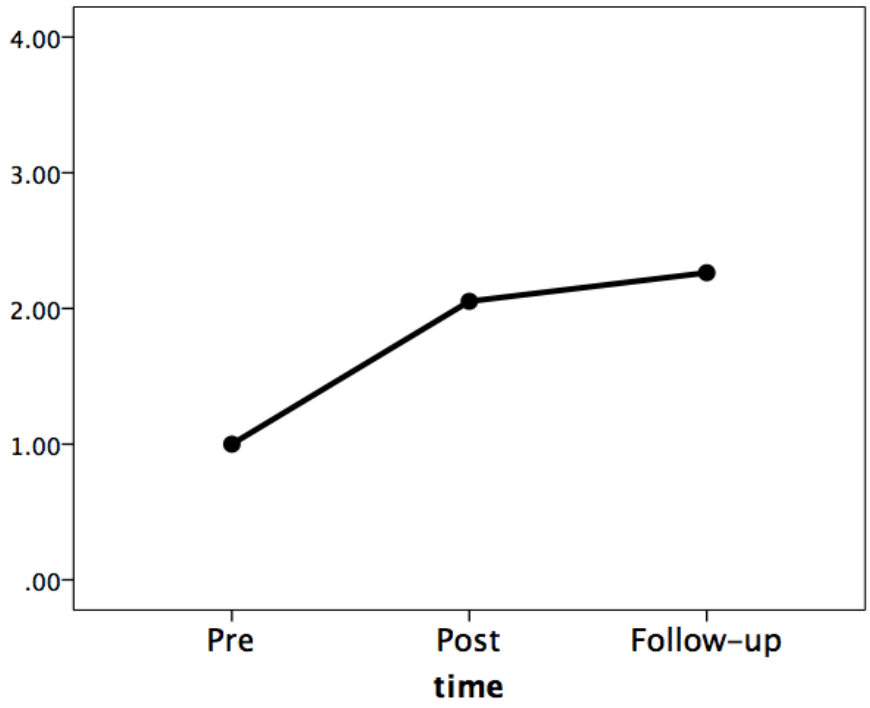


Figure 3. Mean GAS (Other) scores pre-treatment, post-treatment, and follow-up, as rated by the communication partner

Planned comparisons demonstrated that the source of the significant change occurred between pre-treatment and post-treatment for both the participant ($z=3.83$, $p=<0.001$) and their communication partner ($z=3.40$, $p=0.001$). There was also significant change between pre-treatment and follow-up for both the participant ($z=3.79$, $p<0.001$) and their communication partner ($z=3.60$, $p<0.001$). No significant change was found between post-treatment and follow-up for either the participant ($z=0.78$, $p=0.44$) or communication partner ($z=1.19$, $p=0.23$), indicating that post-treatment improvement was maintained.

Participant-level change

As group-level data can sometimes mask individual variability, the change scores of each participant were visually analysed. Figure 4 shows the post-treatment

change scores of the GAS goals, as rated by the participant and their communication partner. The Y-axis plots each participant, and the X-axis presents the degree of change in GAS goals as rated by the participant and communication partner. The possible change score in GAS goal can range from -1 to +3. No participant was rated to have achieved a change score of -1. Two participants (16 and 18) have change scores rated by the participant only as the communication partners were not available following treatment. For all other participants, a missing bar indicates that either the participant or the partner recorded no change. Notably participant 17 and communication partners 2, 10 and 11 perceived no change, and both participants and communication partners 7 and 21 perceived no change. Inspecting individual pairings, participants rated goal achievement the same as their communication partner 53% of the time (10/19), greater than their communication partner 37% of the time (7/19), and lesser than their communication partner 11% of the time (2/19).

At the individual level, GAS goals were rated at the "expected" level of achievement or higher by 86% of participants (18/21), i.e. achieving change score of minimum of +1, and by 74% of communication partners (14/19). A further exploration of these results revealed that 62% (13/21) were rated by *both* the participant and their communication partner at the "expected" level of achievement or higher. Overall, there were 10 instances where the participant and their partner agreed about the extent of change; and 9 instances of disagreement.

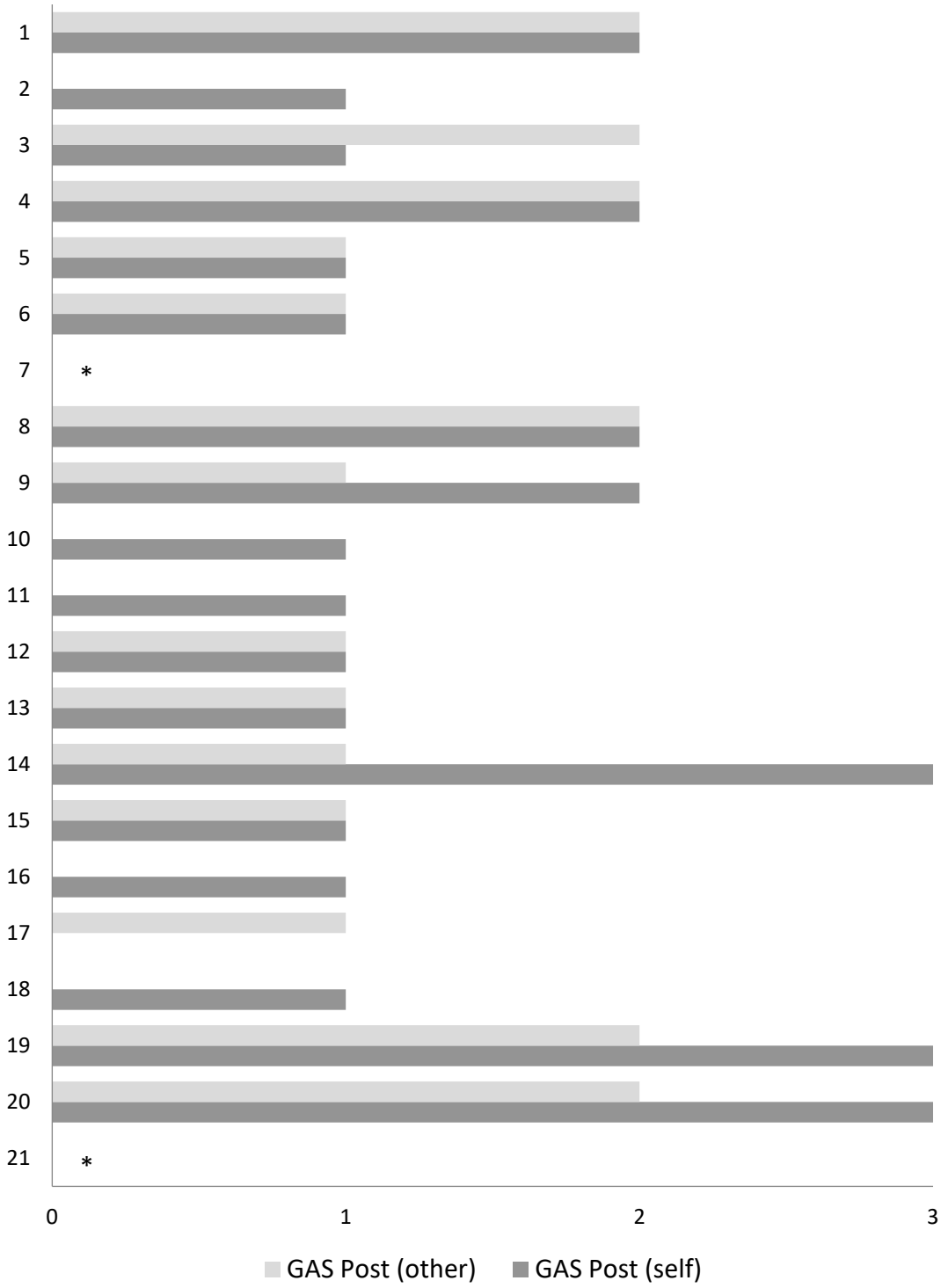


Figure 4. Change scores on GAS (N=21)

*Neither the participant nor communication partner recorded change

Rating agreement between participants and their partners

Comparison of ratings between the participant and their communication partner demonstrated no significant difference either at post-treatment ($z=-1.73$, $p=0.08$), or follow-up ($z=-0.78$, $p=0.44$). This finding means there was statistical agreement between the participant and their communication partner in rating the degree of goal attainment using GAS.

DISCUSSION

Setting individualised social communication goals is a key part of treatments that aim to remediate communication impairments following an ABI. This study highlighted that goals could be successfully set, targeted, measured and achieved as part of a broader group-based treatment. Participants complied with the process and found it meaningful. It was practically feasible to review a video-recorded conversation with participants and their communication partners to help with collaborative goal setting. In particular, videotaped feedback was important for those participants with impaired awareness to identify communicative strengths and weaknesses. The goals were then able to be set by the therapist using the GAS continuum to quantify progress within a 2-hour individual session supporting the notion of a therapist-led structured goal setting process (Doig et al., 2009). Text messaging was feasible with use of an online text messaging service and drawing on metacognitive skills that were reinforced in treatment sessions. Goal recall was variable but for most participants, it improved as the treatment progressed. Regular texts acted as a reminder by focusing a person's attention and effort towards their social communication goal. Greater patient understanding of the goal setting process

contribute to better patient outcomes (Levack et al., 2015). While our study does not indicate which of the above three strategies are the most effective, the results highlight that a multi-component approach that addresses a person's existing cognitive abilities is feasible for setting and achieving social communication goals.

Significant improvements were found for individualised GAS goals set at the beginning of treatment for all participants over time, from pre-treatment to follow-up. These findings are in line with other studies that have reported achievement of social communication goals within a group context (Braden et al., 2010, Dahlberg et al., 2007, Togher et al., 2013). A proposed reason for why these goals could be achieved is related to the close alignment between the social communication goal, the method of evaluation (i.e. GAS), and the treatment process. Group sessions provided a supportive, safe and facilitative context for practice and rehearsal of skills and opportunity for feedback and discussion about goals. Additionally, there is value in the structure provided by goals (Doig et al., 2009). The process of identifying, negotiating and formulating individualised and meaningful goals may act as an intervention in itself and may have been sufficient to focus the participant on problem areas and create improvement (Doig et al., 2011).

Communication partner involvement was likely integral to participants' goal achievement. Social communication does not occur in a vacuum, and practise outside treatment sessions necessitates others' involvement. Communication partners are also important in providing encouragement and increasing understanding of a person's context and problems outside of treatment sessions (Doig et al., 2009). Participants' improved social communication skills are likely to have been facilitated by engaged communication partners who supported home practice, but also partner involvement is likely to have contributed to perceived improvement through awareness and joint

working outside treatment on the goals. It is positive that this was achieved with a relatively low dose of input for communication partners (i.e. one initial face-to-face session, weekly text messages, one telephone update). However, one quarter of communication partners (5/19) did not perceive change and this deserves consideration. Factors that may explain this include the person with ABI (chronicity of communication impairments, persistent lack of awareness) and the treatment design (fewer opportunities for therapist feedback to the communication partner, treatment didn't target goal practice at home). Engagement with the treatment may also be a contributory factor as some communication partners were more actively involved than others (e.g. making additional telephone calls to the therapist, asking about progress following sessions). Less involvement may have led to fewer opportunities for participants to practice and rehearse their communication skills, thus affecting the communication partner's perception of goal achievement. It may also be that actual training of communication partners is required both for participants to improve and for communication partners to perceive change (Behn et al., 2012, Togher et al., 2004, Togher et al., 2013). Thus, future research might target greater involvement of communication partners to specifically target generalisation of skills, and potentially also embrace home/ community-based participation goals (Salter et al., 2011, Grant et al., 2012) such as 'discuss daily weather with shop assistant when doing grocery shopping'.

A few people did not achieve their goal and goal recall was an issue for some participants more than others. This finding may reflect the complexity, severity and chronicity of a person's communication impairments, and perhaps critically, impaired awareness. People with prior awareness of difficulties respond better to treatment (Anson and Ponsford, 2006, Schrijnemaekers et al., 2014). They may better

understand the need for treatment and be more motivated to change and engage in goal-directed behaviour (Anson and Ponsford, 2006). While attendance at sessions was high from all participants (90% and above), there is little available information about a participant's level of engagement. Existing evidence highlights that it is unclear whether awareness can be improved a long-time post-injury (Schrijnemaekers et al., 2014). Clinical observation during treatment sessions suggested that some people in this study were able to develop communicative awareness despite the chronic nature of their impairments and this seemed to be related to having supportive communication partners who provided regular and consistent feedback. For some participants more individual attention on the goals may be needed. A study by Ownsworth and colleagues (2008) found that individual training on client-centred goals in the home and community with metacognitive skills training and involvement of communication partners had a greater influence on goal achievement post-treatment than group intervention alone.

Goal maintenance from post-treatment to follow-up was one of the secondary aims of this study. The results showed goal achievement was maintained up to eight weeks post-treatment. Previous studies have also demonstrated maintenance (Braden et al., 2010) and even enhancement (Dahlberg et al., 2007) of goal-based change. However, both of these studies evaluated a group treatment over a longer period of therapy (12-13 weeks) and placed a greater emphasis on communication in their treatment. A shorter intervention over 8 weeks found that participant performance and satisfaction with occupational therapy-based goals (and that of their relatives) was most likely to maintain with a combination of group and individual sessions (Ownsworth et al., 2008). As each participant in this study had a single goal, they focused on during the treatment period, provision of individual sessions alongside the

group may need to be considered if additional goals are introduced. It is therefore encouraging that maintenance of a single goal was achieved from a comparatively low dose group-based intervention and one that was not exclusively focused on communication.

As a group, people with ABI rated their goal achievement similar to how communication partners rated at both time points. This is an encouraging finding as no studies that have previously used GAS statistically compared the ratings of the person with ABI with their communication partner (Braden et al., 2010, Dahlberg et al., 2007). However, this finding should be interpreted with caution, as at an individual level there were seven occasions where participants rated goal achievement differently and higher than that their communication partner. This may be because people with ABI commonly have impaired communicative awareness, which means they tend to rate their ability as better than significant others rate it (Dahlberg et al., 2006, Douglas et al., 2007). This highlights that despite no statistical group difference, the range of communication impairments and levels of awareness across participants means that goals should continue to be rated by *both* the person with ABI and a communication partner.

Study limitations

A major limitation of the study is the small sample size. Given the variability in achievement of social communication goals at an individual level, findings would need to be confirmed in future research. This study also focuses on chronic cases of ABI, which limits the generalisability of the results to people with ABI who have less chronic communication impairments. Incorporating a blinded assessor to conduct the ratings of goal achievement from participants would have enhanced the study's

methodological quality. There are also inherent problems with the GAS scale itself, which need to be addressed. Initially, all participants agreed on a baseline level of 1 so there was no variability in scores at this time point however, people may realistically rate baseline performance differently. Implementation of GAS was guided by a communication focused treatment study (Dahlberg et al., 2007) however, a recent paper provides stricter recommendations for the use of GAS with people with ABI including the use of a checklist to help guide construction of the scale (Grant and Ponsford, 2014). Based on these recommendations, some of the social communication goals in the current study may have been considered to have multiple components and thus may potentially be more difficult to achieve. This issue can be addressed using GAS T-Scores which aggregate performance across multiple goals and allow for comparisons to be drawn across participants (Grant and Ponsford, 2014). Such a method was recently used in a pilot treatment study of social communication skills (Finch et al., 2017).

We acknowledge that GAS data alone offers a weak measure of treatment success, given the likely expectancy effect (participants expect to improve as a result of intervention) and other sources of bias. However, the importance of using patient reported outcome measures has been emphasised in the literature (Togher et al., 2014, Wilde et al., 2010) to ensure that the perspective of those receiving intervention is reflected in evaluations. Our study shows that the participants in the research were able to set and score personal goals in the context of a group intervention. Their perceived changes in goal attainment underscore the value that they ascribed to the therapy.

Conclusion

As cognitive-communication disorders are common following an ABI, any treatment intended to improve a person's communicative ability should incorporate the setting of individualised social communication goals. This preliminary study reported on the process of goal setting incorporated into a broader group treatment for people with ABI. GAS was a useful method for structuring and quantifying progress and recording the level of achievement towards social communication goals for people with ABI. Further strategies that were feasible included the review of videotaped conversations to generate goals, text message alerts and communication partner involvement. This combination of strategies helped to address a person's existing cognitive impairments. The findings also demonstrated that people with ABI can perceive meaningful changes in their communicative performance as a result of treatment highlighting the benefit of patient-reported outcomes, rather than simply scores of clinical measures. Such changes are also evident to their communication partner, which suggests a social validation of real improvement in communication performance that is observable to others. The nature of CCDs is complex and heterogeneous, so it is promising to be able to show quantifiable change aligned to a specific individual and goal that is achieved within a broader group context. This study provides preliminary guidance and insight to rehabilitation professionals on the goal setting process for people with ABI presenting with social communication difficulties. As these disorders can have a profound impact on a person's quality of life through affecting their ability to communicate in social and vocational environments, the increased need to address these disorders during rehabilitation grows ever more important.

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