

Critical Review:
Is Group Therapy Effective in Remediating Social Communication Skills Following a Traumatic Brain Injury (TBI) in Adolescents and Adults?

Ashley Stephen
M.Cl.Sc (SLP) Candidate
University of Western Ontario: School of Communication Sciences and Disorders

This critical review examines the evidence regarding the effectiveness of group social communication skills training in adolescents and adults following a traumatic brain injury (TBI). Two randomized controlled trials and one non-randomized controlled trial were used in this review. In addition, one qualitative study, one quasiexperimental study, and two reviews were used for further background knowledge and support. Overall, the majority of evidence gathered from this review suggests that group social communication skills training is efficacious for individuals with TBIs, as improvements were seen in social communication skills' post-treatment and at follow-up. However, since some of the evidence was only considered equivocal and suggestive, recommendations for future research and clinical practice are provided.

Introduction

Impairments in social communication skills are one of the most devastating consequences an individual experiences following a TBI (Driscoll, Dal Monte, & Grafman, 2011; Dalhberg, Cusick, Hawley, Newman, Morey, Harrison-Felix, Whiteneck, 2007). Specifically, individuals with a TBI experience social skill deficits such as: using less appropriate language and style of speech, taking too many "turns" per conversation, difficulty initiating and sustaining conversation topics, and having a disorganized manner of expression (Dalhberg et al., 2007). In addition, these individuals often have difficulty interpreting others' facial expressions and matching emotions to social situations (Knox & Douglas, 2009). All of these social communication skills deficits have the potential to negatively impact the individual's ability to communicate successfully with others. Since being an active member in society requires the ability to effectively interact and communicate with others, (Dahlberg, Hawley, Morey, Newman, Cusick, & Harrison-Felix, 2006) re-establishing and maintaining these social communication skills can have a significant impact on reintegrating individuals with TBIs into society (Driscoll et al., 2006).

Although many people with a TBI are able to successfully reintegrate into society, some individuals are left with significant social communication skills deficits which can make this process more challenging (Ylvisaker, Turkstra, & Coelho, 2005). As a result, the inability to reintegrate into society can have devastating consequences, which can differ based on the individual's current stage of life. Experiencing a TBI as an adolescent can be very detrimental, since adolescence is a period of time when further

development and acquisition of social skills occur. Due to the nature of the injury, an adolescent with a TBI often will have to spend some time apart from their normal social groups and social situations, which can further interfere with their development and/or maintenance of intimacy and relationships (Wiseman-Hakes, Stewart, Wasserman, & Schuller, 1998). In addition, being a part of a peer group aids the adolescent in developing social skills and an identity, as it gives them a means to evaluate their own actions (Wiseman-Hakes et al., 1998). Therefore, being apart from peer groups during this important developmental time can have devastating consequences for the adolescent. Similarly, both adolescents and adults with a TBI may also have difficulty returning to work, maintaining their role in the family, and participating in social and leisure activities (McDonald, Tate, Togher, Bornhofen, Long, Gertler, & Bowem, 2008). However, this may be more devastating for adults who were in stable careers and considered to be the main provider for the family. In addition to being faced with financial burden, their injury may also change their role in the family, placing an even larger barrier to overcome.

Regardless of one's age, deficits in social communication skills following a TBI are common and can drastically change an individual's life. Overall life satisfaction can decrease as these individuals can have difficulty reintegrating into society as a result of their deficits (Dalhberg et al., 2006). Social skills are important in order to be an active member of society, therefore lacking adequate social skills can decrease the possibility of obtaining many opportunities in life. Individuals with TBIs are often left with fewer employment opportunities, social isolation, and a higher risk of depression, resulting in a poorer quality of life (McDonald et al., 2008). Therefore, it is important to

examine the existing research literature in order to determine whether group social skills training can aid in re-establishing and maintaining social skills (Dalhberg et al., 2006).

Objectives

The primary objective of this paper is to critically evaluate existing literature regarding the effectiveness of group social skills training following a TBI in adolescents and adults. The second objective is to provide recommendations for clinical practice and future research.

Methods

Search Strategy

Articles related to the topic of interest were found using the following computerized databases: Medline, PubMed and PSYCHinfo. Keywords for databases were as follows:

[(acquired brain injury) or (TBI) and (group social skills training)]

[(acquired brain injury) or (TBI) and (pragmatic deficits)]

[(acquired brain injury) or (TBI) and (intervention)]

The search was limited to articles written in English.

Selection Criteria

Primary studies selected for inclusion in the critical review were required to investigate the effectiveness of training social communication skills in a group setting for adolescents and adults. Secondary studies discussing the effect of social communication skills deficits on reintegration into society and life satisfaction were also selected for the purpose of providing further background information.

Data Collection

Results of the literature search yielded seven articles congruent with the aforementioned selection criteria. For the primary selection criteria, two randomized controlled trials and one non-randomized controlled trial were discovered. For the secondary selection criteria, one quasiexperimental study, one qualitative study, and two reviews were discovered.

Results

Randomized Controlled Trials:

Randomized controlled trials (RCT) are commonly considered to be the most reliable form of scientific evidence. However, unless the study participants, caregivers, and outcome assessors are blinded to the purpose of the study, there is the potential for bias. In addition, RCTs can have high dropout rates when participants discover that they are not in the group receiving treatment.

Study #1:

One way to avoid dropout in RCTs, is to ensure that all participants will eventually receive treatment. Dahlberg et al., (2007) conducted a randomized controlled trial in order to evaluate the effectiveness of a group treatment program to improve social communication skills in individuals with TBIs using a randomized treatment and a deferred treatment controlled trial. The purpose of the study was to evaluate the following three hypotheses: (1) "social communication skills training in a group setting would improve specific individual pragmatic communication deficits for people with postacute TBI", (2) "overall social integration and satisfaction with life would improve through this group training", and (3) these acquired skills would be maintained at 6 months post-treatment". Forty-seven participants with TBIs between the ages of approximately 22 and 65 years, who were at least one year post-injury, completed the entire protocol for this study. All of the participants had received prior rehabilitation and were identified as having social communication deficits. Individuals with past or current psychiatric, psychologic, or substance abuse issues were excluded from this study. The participants were divided into two groups: one group which would receive treatment and one group in which treatment would be deferred for three months. Both groups were further divided into smaller groups, with no more than eight individuals per group. The treatment and deferred treatment sessions were both twelve weeks and meetings were held weekly for 1.5 hours. The group intervention was based on a program described in *Social Skills and Traumatic Brain Injury* and was run by a Speech-Language Pathologist and a social worker. This program focused on learning, establishing, and generalizing socially appropriate behaviors required for successful communicative interactions.

Data for both groups were collected through analysis of videotaped conversations and a variety of questionnaires at five points throughout the study: before treatment, immediately after treatment, and three-, six-, and nine-months post-treatment. Measures included functional communication impairment, social communication skills, goal attainment, social integration, and life satisfaction. Assessments were conducted in the same room in which the treatment was conducted. Trained

researchers (all women), who were blinded to the participants' treatment condition, were required to engage in conversation with the participants. For the primary analysis, data was analyzed through *treatment versus no-treatment comparisons* using both a per-protocol and an intent-to-treat (ITT) model. For second set of analyses, data was analyzed through *change over time comparisons* using repeated-measures general linear model (GLM). Overall, results strongly supported the authors' first and third hypotheses, and partially supported their second hypothesis (Dahlberg, 2007).

This randomized controlled trial was well designed as it included research assistants blinded to both the treatment and control groups, and it used measurement tools sensitive enough to detect improvement. In addition, the researchers used published treatment materials, allowing for the study to be replicated by other researchers. It can also be speculated that the researchers' inclusion of a deferred treatment group may have had an effect on the low dropout rate. Although this study did not deviate from the standard protocol and resulted in no adverse events as a result of treatment, some limitations of the study can be noted. To begin, due to the stringent exclusion criteria, results may not generalize to the entire population of individuals with TBIs. In addition, the subjects were assigned without blinding and most of the outcome measures did not allow for blinding as they were completed by subjects or their significant others.

The results accrued from this study can be interpreted with great confidence, due to the strong design of the study and the strict protocol followed by Dahlberg et al., (2007). In addition to directly examining the research question in this review, Dahlberg et al., (2007) also examined subjects with TBIs and their significant others' perceptions about their communication skills, community participation, and satisfaction with life. Overall, this level 1 evidence, along with the compelling validity of this study, provide promising implications for future research..

Study #2:

McDonald et al., (2008) conducted a randomized controlled trial in order to determine "whether or not social skills deficits including unskilled, inappropriate behavior, problem reading social cues (social perception), and mood disturbances (such as depression and anxiety) could be remediated after severe traumatic brain injuries" (McDonald et al., 2008). A total of 39 participants between the ages of approximately 25 and 47, who were recruited from brain injury units in Sydney, Australia, participated in this study.

Participants were assigned randomly to one of three groups: a skills training group, a social activity group, and a waitlist group that would received deferred treatment. The social activity group was included to determine whether or not social activity alone could improve performance.

The members of the skills training group participated in a 12-week social skills training program, in which they met for 3 hours each week. Groups consisted of three to five members and two therapists. In addition, members of this group were also required to attend a one hour individual therapy session weekly with a psychologist to address personally identified issues such as anxiety, self-esteem, and depression, in order to help reinforce skills learned in the group sessions. Each week in group therapy, a specific aspect of social behavior (e.g. introducing oneself and others, listening, starting a conversation, etc.) were addressed and individual goals were identified for each client based on their difficulties. In addition, one hour each week was devoted to training the participants in how to decode and understand expression of emotions in face, voice, and gestures. Important aspects of therapy included high levels of social reinforcement, along with immediate feedback and excessive repetition.

Assessments were conducted pre-treatment and immediately post-treatment using a variety of measures such as observation of videotaped conversations, standardized assessments (The Awareness of Social Inference Test traumatic brain injury, TASIT; Wechsler Adult Intelligence Scale, 3rd Edition, WAIS-III), and questionnaires (Katz Adjustment Scale – R1, KAS-R1; Social Performance Survey Schedule, SPSS; La Trobe Communication Questionnaire, LCQ; Sydney Psychosocial Reintegration Scale, SPRS). The videotaped sessions were conducted on three different occasions, both prior to treatment and following treatment, and consisted of spontaneous social encounters with a male and female stranger (professional actors). Primary measures included social behaviors during encounters with others, social perceptions, as well as depression and anxiety. Secondary measures assessed social behavior and participation based on repeated-measures analyses via a series of 1-way ANOVAs. In addition, in order to assess interrater reliability for the two raters rating the participants' behavior, two-way random effects intraclass correlation coefficients (ICC) were used. Results indicated that providing social skills training for individuals with TBIs in a group setting is limited and that social activity alone does not lead to improved performance. In addition, no changes were found post-treatment in relation to social functioning and social participation and improvements in social behavior

appeared to be specific to partner directed behavior. Therefore, the authors concluded that treatment effects of group social skills training is modest and limited to direct measures of social function.

Although the raters were blinded to the goals of the study, the results of this study must be interpreted with caution as there are more limitations than strengths to this study. To begin, the validity of the study was compromised when logical constraints restricted the maintenance of the initial randomization. In addition, the number of participants was relatively small and the high number of dropouts resulted in less than optimal numbers. Due to the timely requirement of the participants, most individuals who had part- or full-time jobs were not able to participate. As a result, the majority of the participants were perhaps more severely impaired and had less opportunities in which to practice social skills. Given these limitations, it is difficult to interpret the results of the study with great confidence.

Although this study provides level 1 evidence, the validity of this study and its implication for clinical practice can only be considered equivocal. This conclusion is based on the methodological issues of the study, such as the destruction of the initial randomization, along with the small and restricted sample size.

Non-Randomized Controlled Trial

Study #3:

Wiseman-Hakes et al., (1998) examined the effectiveness of training social communication skills in a group setting using a quasiexperimental design. This study recruited adolescents between the ages of 14-17 years-old who were experiencing social skill deficits following a TBI. All of the participants were previously in school and were performing at their appropriate level academically. In total, six adolescents completed the study; four of which had a fairly recent injury and two individuals who were eight- and nine-years post-injury. An individual treatment program entitled, "Improving Pragmatic Skills in Persons with Head Injury", was modified by a Speech-Language Pathologist to accommodate group therapy. Hourly sessions were held four days a week for six weeks and focused on initiation, maintenance, turn taking, and active listening. In order to facilitate generalization, practice outside of therapy, in addition to selecting age-appropriate activities, was encouraged. Measures were conducted pre-treatment, post-treatment, and at follow-up six months later through questionnaires (Rehabilitation Institute of Chicago Rating Scale of Pragmatic Communication Skills, RICE-RSPCS; Communication

Performance Scale, CPS; Vineland Adaptive Behavior Scales, VABS) and observations. Observations took place at a setting unique to each individual (e.g. in the classroom) for a period of one to two hours by a trained research participant who evaluated their pragmatic communication skills.

Statistical analysis included repeated-measures analysis (ANOVA) followed by a profile analysis to compare measures between pre-treatment and post-treatment, as well as measures between post-treatment and follow-up. The mean score for the RICE-RSPCS subscales and CPS increased by an average 44% and 32% from pretreatment to posttreatment respectively. No change occurred during posttreatment to follow-up for the CPS and the VABS. Specifically, for the RICE-RSPCS subscales Nonverbal Communication (M1), Use of Linguistic Context (M3), and Organization of a Narrative (M4), statistically significant changes occurred ($P = .002$) as well as for the Conversational Skills (M2) subscale ($P = .001$). For the Profile Analysis, significant differences occurred in all subscales for the pretreatment-to-posttreatment periods. Importantly, significant improvements were observed in pragmatic skills that were trained as opposed to skills that were not, demonstrating that treatment was effective. For CPS, a statistically significant change ($p = .002$) occurred over the duration of the study. Profile analysis showed significant differences in the pretreatment-to-posttreatment period ($p = .001$), although no change occurred in the posttreatment-to-follow-up period. Overall, maintenance of skills learned was observed at follow-up and was also observed clinically. It was also very compelling that improvements were observed in the two participants who were eight and nine years post-injury, suggesting that gains can be attributed to treatment rather than spontaneous recovery. Overall, the authors concluded that without treatment, the participants would have had difficulty with social reintegration into their communities.

Although the positive changes that occurred in overall communication competence are compelling, results must be interpreted with caution as the study, by nature, was subject to limitations. Although selection criteria were reported in detail, the sample may only be representative for a portion of adolescents with a TBI. To begin, due to subject availability, the sample size was small and control groups were not used. In addition, two out of the original eight participants were lost from the same group; therefore the researchers had to compile all of the data for purposes of analysis. Another strong limitation of the study was that the research participants were aware of the purpose of the study, leading to potential for bias. In addition, there are currently no reliability data for one of the measures

used, (RICE-RSPCS) to assess pragmatic skills through observation.

Despite the level 2c evidence from this study, the non-randomized design of this study along with the methodological weaknesses stated above, weaken the compelling results accrued from Wiseman-Hakes (1998). Therefore, the results of this study and their clinical implication can only be considered suggestive.

Discussion

Overall, the majority of research suggests that social functioning deficits in individuals with TBI can be ameliorated to some degree through a group training intervention. In addition, results from Dahlberg et al., (2007) and Wiseman-Hakes et al., (1998) suggested that maintenance and generalization occurred as improvements were evident at follow-up. Perhaps most importantly, Dahlberg et al., (2007) discovered that training social communication skills ultimately improves overall life satisfaction.

Although the research is promising, there are a number of significant limitations in this area of research. To begin, all of the studies examined varied in their design including specific characteristics of the participants (e.g., age and severity of deficits), lesion characteristics (e.g. age of onset and injury severity), and the outcome measures used to assess progress varied considerably. Other factors to consider include presentation of data, effect sizes, and “dosage” of training (Driscoll et al., 2011). In addition, the studies were based on relatively small sample sizes and outcome measures may not have been completely adapted to the TBI population.

Although the previously mentioned limitations weaken the validity of the results, there were many encouraging factors that should be considered for initiating further research. One of the most compelling pieces of evidence was observed in the study conducted by Wiseman-Hakes et al., (1998), as they observed significant improvements in social communication skills in individuals who were eight and nine years post-injury. This suggests that gains made were as a result of treatment as opposed to spontaneous recovery, and also instills hope for gains to be made with individuals in the chronic stage of TBI. Similarly, results from McDonald et al., (2008) revealed that even individuals with severe and chronic brain injuries can make improvements.

Conclusion

At present, a concrete statement about the effectiveness of group training to improve social communication skills cannot be made, as there has been limited research

in this area. However, considerable progress in regards to understanding social communication deficits, the consequences it has on social functioning, along with appropriate methods of treatment have been made. Presently however, empirical evidence is not strong enough to support the use of group intervention on a large scale until further research is conducted.

Clinical Implications

One of the most detrimental consequences of a TBI are the impairments in social communication skills, as it often leads to social isolation and a poorer quality of life (Driscoll et al., 2011; Dahlberg et al., 2007). Clinically, social communication skills are often the most difficult to teach and generalize, as every single communication interaction is unique and unpredictable. However, research has shown moderately strong evidence that these deficits can be improved with group training, although there were limitations in each study. Therefore, based on the aforementioned limitations of the current research, it is recommended that further research be conducted and include:

- a. Larger sample sizes
- b. Blinding of research assistants
- c. Use of similar therapeutic strategies (to allow for comparison between studies)
- d. Individuals with milder injuries in earlier stages of recovery (arguably, and as stated by McDonald et al., (2008), since improvements were seen with severe and chronic injuries in short durations of treatment, perhaps more gains would be seen in individuals with milder injuries in earlier stages of recovery)

In conclusion, although research in this area is limited, the research available is promising and provides evidence-based techniques for maximizing the remediation of social communication skills in a group setting for adolescents and adults following a TBI.

References

- Dahlberg, C.A., Cusick, C.P., Hawley, L.A., Newman, J.K., Morey, C.E., Harrison-Felix, C.L., & Whiteneck, G.G. (2007). Treatment efficacy of social communication skills training after a traumatic brain injury: A randomized treatment and deferred treatment controlled trial. *American Congress of Rehabilitative Medicine and the American Academy of Physical Medication and Rehabilitation*, 88, 1561-1573.

- Dahlberg, C., Hawley, L., Morey, C., Newman, J., Cusick, C.P., & Harrison-Felix, C. (2006). Social communication skills in persons with post-acute traumatic brain injury: Three perspectives. *Brain Injury, 20*(4), 425-435.
- Driscoll, D.M., Dal Monte, O., & Grafman, J. (2011). A need for improved training interventions for the remediation of impairments in social functioning following brain injury. *Journal of Neurotrauma, 28*, 319-326.
- Knox, L., & Douglas, J. (2009). Long-term ability to interpret facial expression after traumatic brain injury and its relation to social integration. *Brain and Cognition, 69*, 442-449.
- McDonald, S., Tate, R., Togher, L., Bornhofen, C., Long, E., Gerlter, P., & Bower, R. (2008). Social skills treatment for people with severe, chronic acquired brain injuries: A multicenter trial. *Archives of Physical Medicine and Rehabilitation, 89*, 1648-1659.
- Ylvisaker, M., Turkstra, L.S., & Coelho, C. (2005). Behavioral and social intervention for individuals with traumatic brain injury: A summary of the research with clinical implications. *Seminars in Speech and Language, 26*(4), 256-267.
- Wiseman-Hakes, C., Stewart, M.L., Wassarman, R., & Schuller, R. (1998). Peer group training of pragmatic skills in adolescents with acquired brain injury. *Journal of Head Trauma Rehabilitation, 13*(6), 23-38.