

INTRODUCTION

Constraint induced language therapy (CILT) is a treatment approach that has recently been reported to be effective in treatment of individuals with chronic aphasia (Pulvermuller et al. 2001; Maher et al., 2006). The three basic principles of CILT include: 1) massed practice, 2) constraint of all modes of communication except speech, and 3) forced use of spoken language in relevant communication exchanges. Whether the beneficial effects of CILT are predominantly due to massed practice or constraint remains to be determined. However, recent evidence supports the notion that intensive practice improves therapeutic outcomes in aphasia rehabilitation (Basso & Caporali, 2001; Bhogal et al., 2003).

Cherney and colleagues (2008) conducted an evidence-based review of studies investigating the effects of intensive therapy, including CILT, on individuals with stroke-induced aphasia. They reported that, although each of the CILT studies included at least one measurement of communication activity/participation, these measures were fewer in comparison to measures of language impairment, they were often individualized, and many lacked reliability and validity. The authors concluded that future investigations of CILT should include more measures that address a patient's functional communication and quality of life.

The aim of this study was to comprehensively examine the effects that intensive language therapy (including CILT) had on functional communication in an individual with chronic aphasia.

METHODS

Participant:

A single-subject case study design was used. The participant, ACL, was a 55 year-old, English speaking male, three years post-onset of a single left CVA. He was classified as having moderate-severe Wernicke's aphasia as indicated by his performance on the Boston Diagnostic Aphasia Examination (BDAE; Goodglass, Kaplan, & Barresi, 2001): 9th percentile on the mean of three auditory comprehension tasks; 30th percentile on both word and sentence repetition; 10th percentile on responsive naming; and 9/60 on the Boston Naming Test (BNT; Kaplan et al., 2001).

Procedure:

ACL participated in two phases of intensive treatment, first CILT (treatment phase I) and then a modified version of Promoting Aphasic's Communicative Effectiveness (PACE; Carlomagno, 1999; Davis & Wilcox, 1985) (treatment phase II). ACL did not receive other treatment during either intervention phase. The treatment interventions were of equal intensity: three hours a day, five days a week, for two weeks. Both interventions were in the format of a card game that involved repetitive, intensive practice. In the card game ACL had to request an action or object depicted on a card or he had to respond to a request for an item on a card. The major difference

between the two interventions was that CILT targeted improved naming by constraining all responses to speech, while PACE targeted improved communication by promoting use of any mode of communication (e.g., gesture, writing, drawing).

Measures:

Measures of functional communication were administered pre-treatment phase I, post-treatment phase I, and post-treatment phase II. These measures included the Functional Outcome Questionnaire for Aphasia (FOQ-A; Ketterson et al., 2008) and discourse analysis of three conversations and picture descriptions.

The FOQ-A is comprised of 32 items on a 5 point Likert-type scale, each point representing a percentage (e.g. 1= 0%, 2 = 25%, 3 = 50%, 4 = 75%, 5 = 100%). It assesses four domains of functional language: communicating basic needs, making routine requests, communicating new information, and attention/other communication skills. The scale measures how successfully an individual with aphasia completes tasks based in each of these domains. The participant's spouse completed the FOQ-A on all three occasions.

Conversation and picture description samples were elicited and video-recorded across three testing sessions and are currently being analyzed. Conversational discourse was elicited to assess the occurrence and types of conversational repair (per Milroy & Perkins, 1992). ACL's descriptions of the Cookie Theft Picture from the BDAE are being analyzed for accuracy of conceptualization of events in the picture (per Nicholas & Brookshire, 1995). In addition, an ongoing collection of blind-raters' (n = 10 undergraduate students) judgments is currently underway to analyze ACL's conversational discourse. The raters will judge which conversations were more successful than others, rating them from "worst" to "best". We expect these subjective judgments to correspond to ACL's language improvements across treatment phases.

RESULTS

The results of the FOQ-A demonstrated an improvement over time within each of the functional language domains. Figures 1-4 illustrate ACL's improvement across Time 1 (T1: pre-treatment I), Time 2 (T2: post-treatment I), and Time 3 (T3: post-treatment II). ACL made gains on 21/32 items from the pre-treatment phase I questionnaire to the post-treatment phase II questionnaire. The domain specific patterns of change over time were as follows: *Communicating basic needs*: improved performance on 6/7 items; however, 2/6 of the improved tasks showed highest improvement at post-treatment I; 1/7 remained 100% successful over time; *Making routine requests*: improved performance on 6/7 items; 1/7 remained 100% successful over time; *Communicating new information*: improved performance on 6/8 items; 2/8 items remained unchanged at 100% success; and *Attention/Other communication skills*: improved performance on 3/10 items; 5/10 remained at 100% and 1/10 at 75% success, and 1/10 regressed from 90% to 75%.

Analysis of ACL's discourse samples is still ongoing; however preliminary data supports the FOQ-A results demonstrating that the positive effect of intensive language treatment went beyond improvements in confrontation naming. In addition, anecdotal evidence has demonstrated a positive change in ACL's quality of life. He was taken off medication for depression following participation in the treatment interventions which his family has attributed to increased confidence and motivation due to improvement in his communication.

DISCUSSION

Previous research of intensive language therapy has demonstrated improvements in naming following two weeks of intensive practice; however, there has been little emphasis on functional outcomes. Measuring functional outcomes is important because it most closely resembles a person's real life communicative interactions. The results of this study demonstrate that intensive language therapy can have positive effects on functional communication in an individual with chronic aphasia. These results are significant because they suggest that ACL's gains in naming translated to greater ease or success in everyday conversations. They also support the use of CILT and other intensive treatment programs in aphasia therapy from a functional standpoint.

The gains in ACL's functional communication are attributed to the intensity of the language therapy though the individualized effects of CILT and PACE cannot be determined. Because ACL participated in the interventions back-to-back, the results of the post-treatment II questionnaire are not a pure measure of change due to treatment II (PACE). In addition, although PACE promotes exchange of information through any mode of communication, having recently completed the two-week phase of CILT therapy, ACL most often chose to communicate through speech, which made the interventions less distinct.

Future studies should continue to evaluate the effect that CILT and other intensive programs have on functional communication in individuals with chronic aphasia. They should also investigate the degree to which each variable (intensity, constraint of communication modes other than speech) plays a role in the outcome. Lastly, future studies should address the degree to which CILT and other intensive therapies affect patients' and spouses' quality of life.

References

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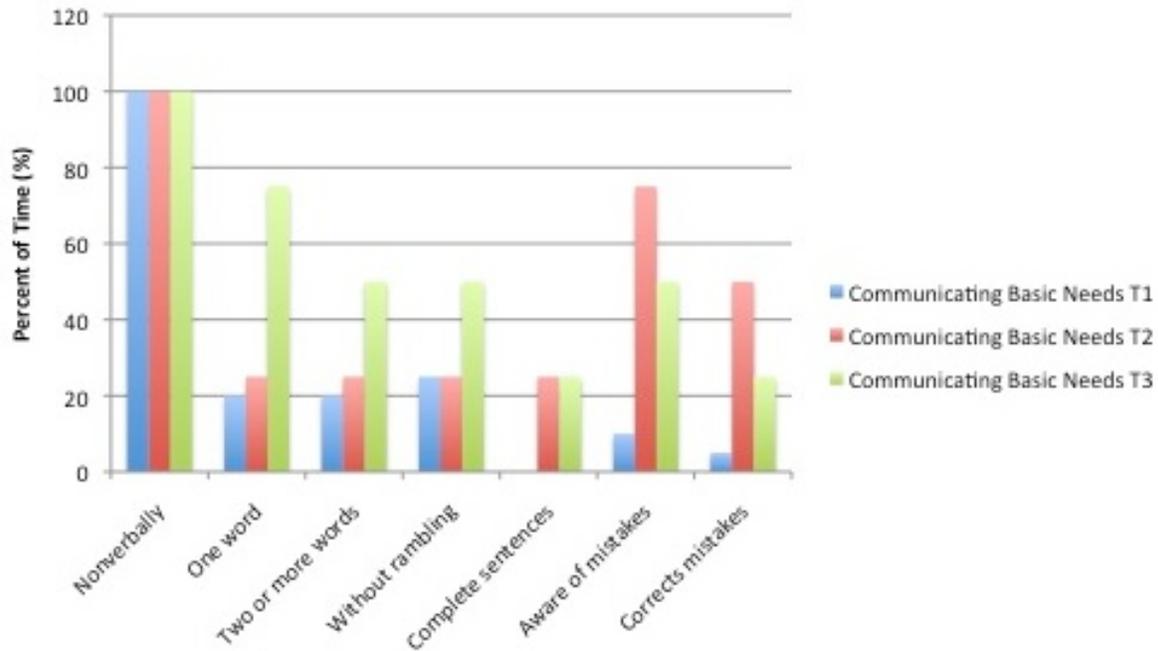


Figure 1. Changes over time on percent of time ACL was successful on functional communication tasks within the language domain, "Communicating Basic Needs" as reported by ACL's wife on the Functional Outcome Questionnaire for Aphasia (FOQ-A; Ketterson et al., 2008).

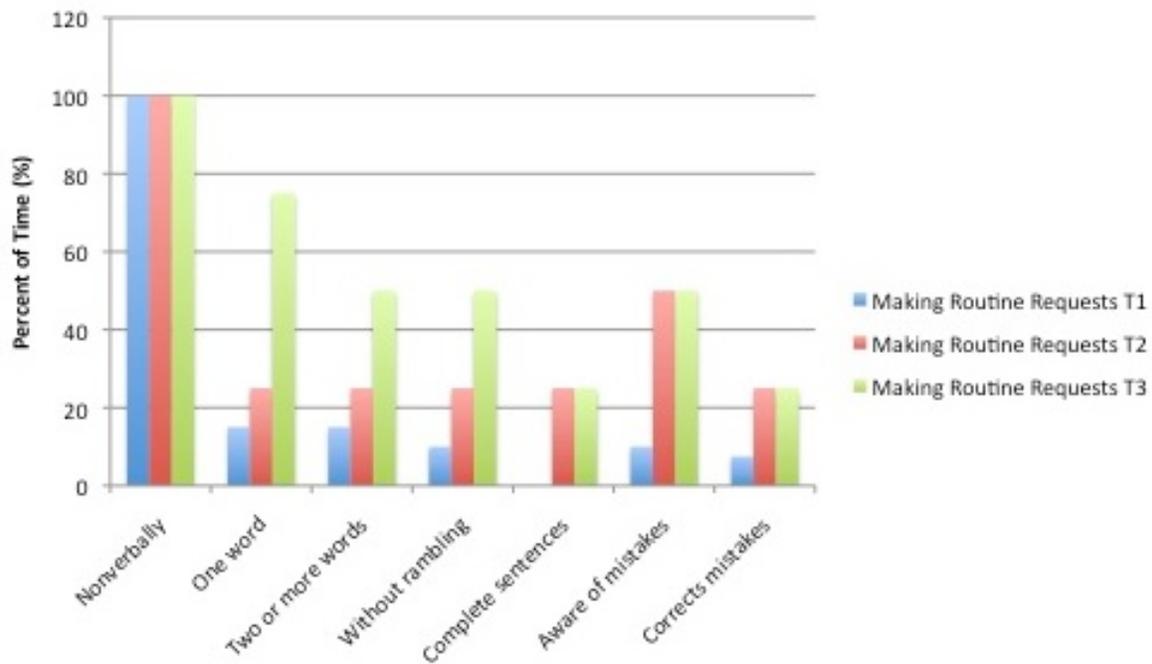


Figure 2. Changes over time on percent of time ACL was successful on functional communication tasks within the language domain, "Making Routine Requests" as reported by ACL's wife on the Functional Outcome Questionnaire for Aphasia (FOQ-A; Ketterson et al., 2008).

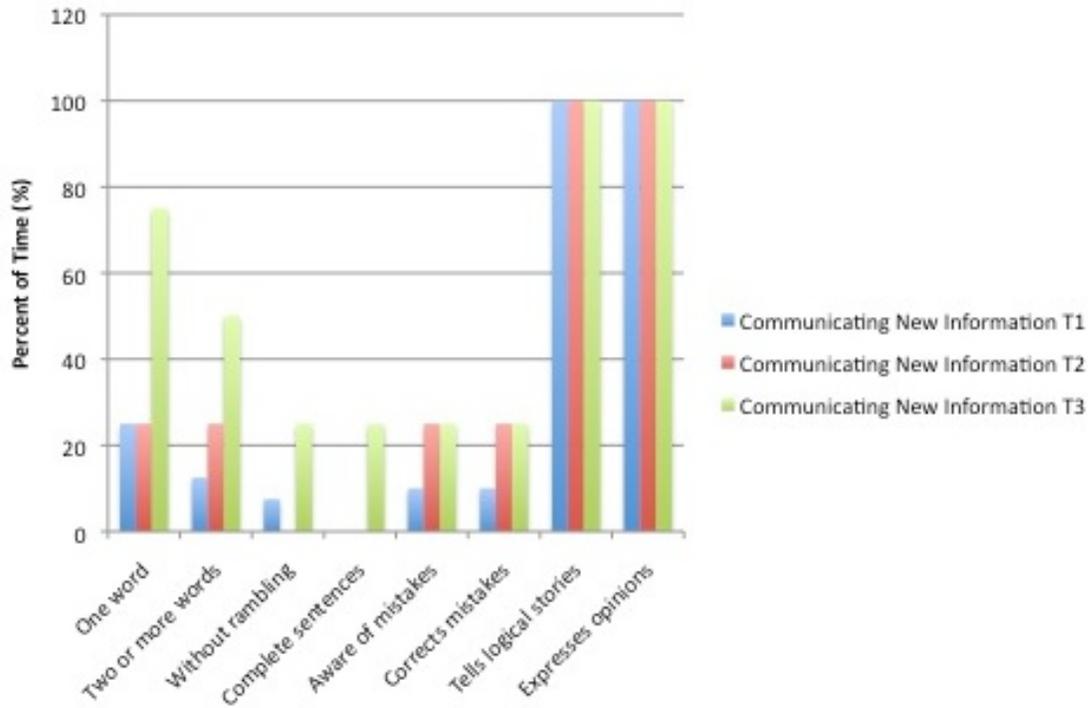


Figure 3. Changes over time on percent of time ACL was successful on functional communication tasks within the language domain, "Communicating New Information" as reported by ACL's wife on the Functional Outcome Questionnaire for Aphasia (FOQ-A; Ketterson et al., 2008).

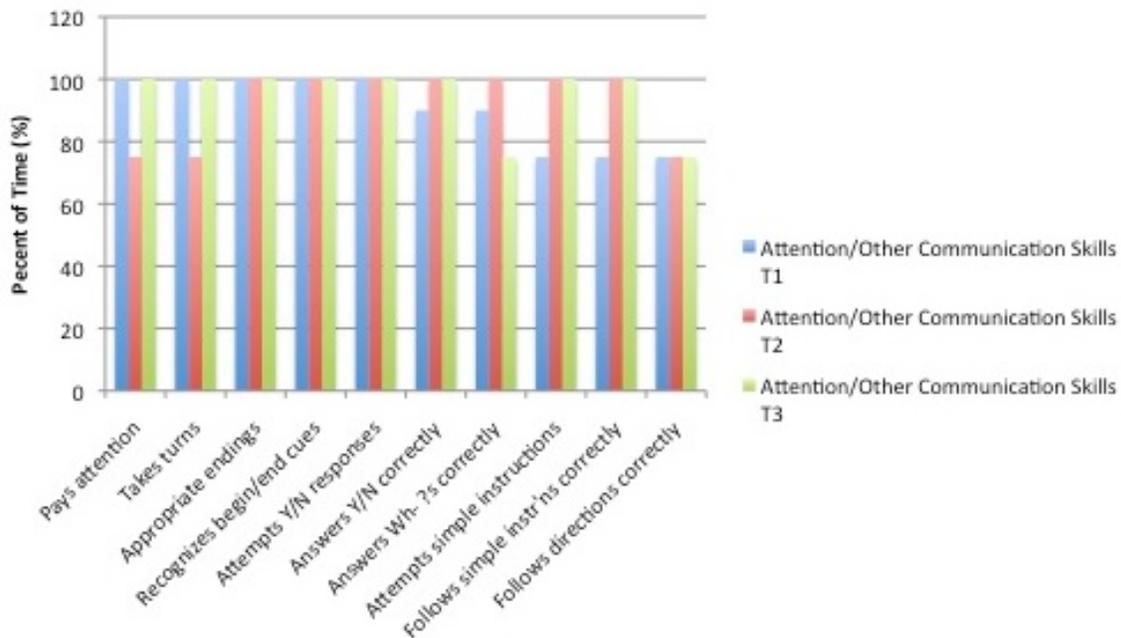


Figure 4. Changes over time on percent of time ACL was successful on functional communication tasks within the language domain, "Attention/Other Communication Skills" as reported by ACL's wife on the Functional Outcome Questionnaire for Aphasia (FOQ-A; Ketterson et al., 2008).