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Bridge/Adapt: Transfer from Computer Remediation to Functional Skill

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INTRODUCTION

Individuals with acquired brain injury (ABI) often experience cognitive deficits that impair their ability to perform instrumental activities of daily living, which results in decreased quality of life (Cicerone et al., 2011). Computer-based cognitive rehabilitation (CBCR), a remedial intervention, addresses these cognitive deficits by improving cognitive skills, such as memory and attention. However, these improvements do not generalize into functional performance (Li et al., 2015). Bridge/Adapt was developed to bridge the gap between remedial intervention and functional performance. It combines remedial and adaptive strategies, with focus on self-awareness and self-generation of strategies through two occupational therapy frameworks: Cognitive Orientation to daily Occupational Performance (CO-OP) and the multicontext approach.

STATEMENT OF PURPOSE

The purpose of this study was to pilot test Bridge/Adapt to determine its effectiveness in facilitating generalization of improved cognitive skills to functional performance in individuals with ABI.

LITERATURE REVIEW

- Neuroplasticity is the brain's process of changing neural structures and connections, and it is the process by which learning and recovery of cognitive skills is possible (Berlucchi, 2011).
- Generalization is the ability to transfer skills and strategies learned in one context to various novel situations and environments (Toglia, 1991). It is crucial in increasing independence.
- CO-OP uses adaptive strategies for improving functional skills in individuals with a variety of different conditions. The therapist guides the individual to discover and plan strategies to meet these goals (Dawson et al., 2009).
- Multicontext approach facilitates generalization of cognitive strategies for individuals with ABI (Toglia, 1991). Key aspects include gradually grading activities, improving the individual's metacognitive skills, and developing the individual's ability to self-generate cognitive strategies (Toglia, Johnston, Goverover, & Dain, 2010).

METHODOLOGY

Bridge/Adapt is an eight-week program consisting of three weekly components:
- **Parrot Software:** remedial CBCR lessons focused on memory or attention followed by group discussion
- **Bridge/Adapt module:** group instruction taught adaptive strategies via simulated activities (e.g. bill paying and shopping)
- **Homework:** assignments required participants to apply adaptive strategies in a self-selected, occupation-based goal in their natural environments

Using a single group pre-test post-test design, data were collected for Cognistat, medication box assessment, and goal attainment scale (GAS), as well as a four-month follow-up for GAS.
- **Cognistat:** measure of changes in overall cognition, attention, and memory
- **Medication box assessment:** measure of generalization via transfer of cognitive skills to functional performance
- **GAS:** participant-rated measure of progress toward goal along a 5-point scale

RESULTS

Cognistat: Overall

Cognistat: Attention

Cognistat: Memory

Medication Box Assessment
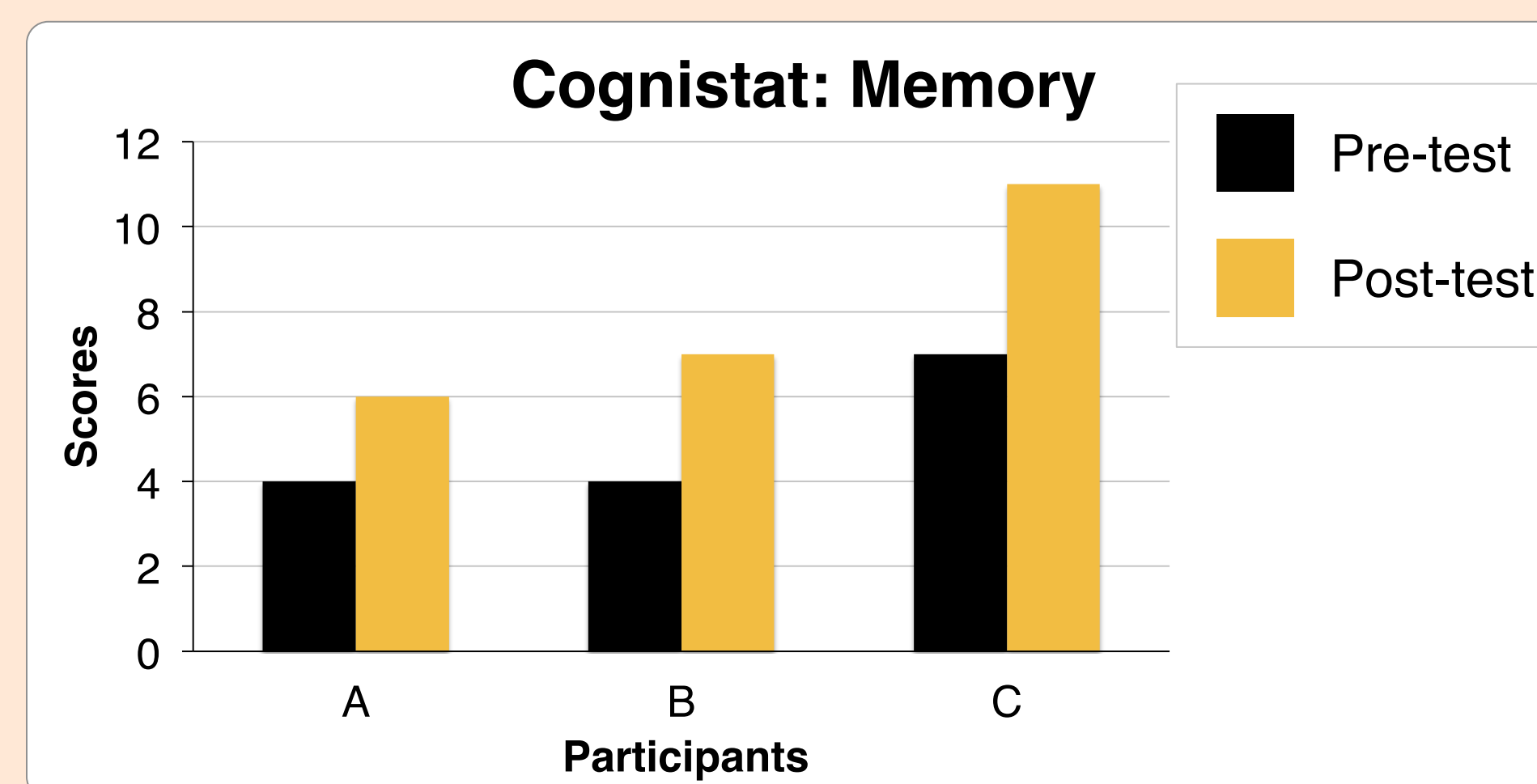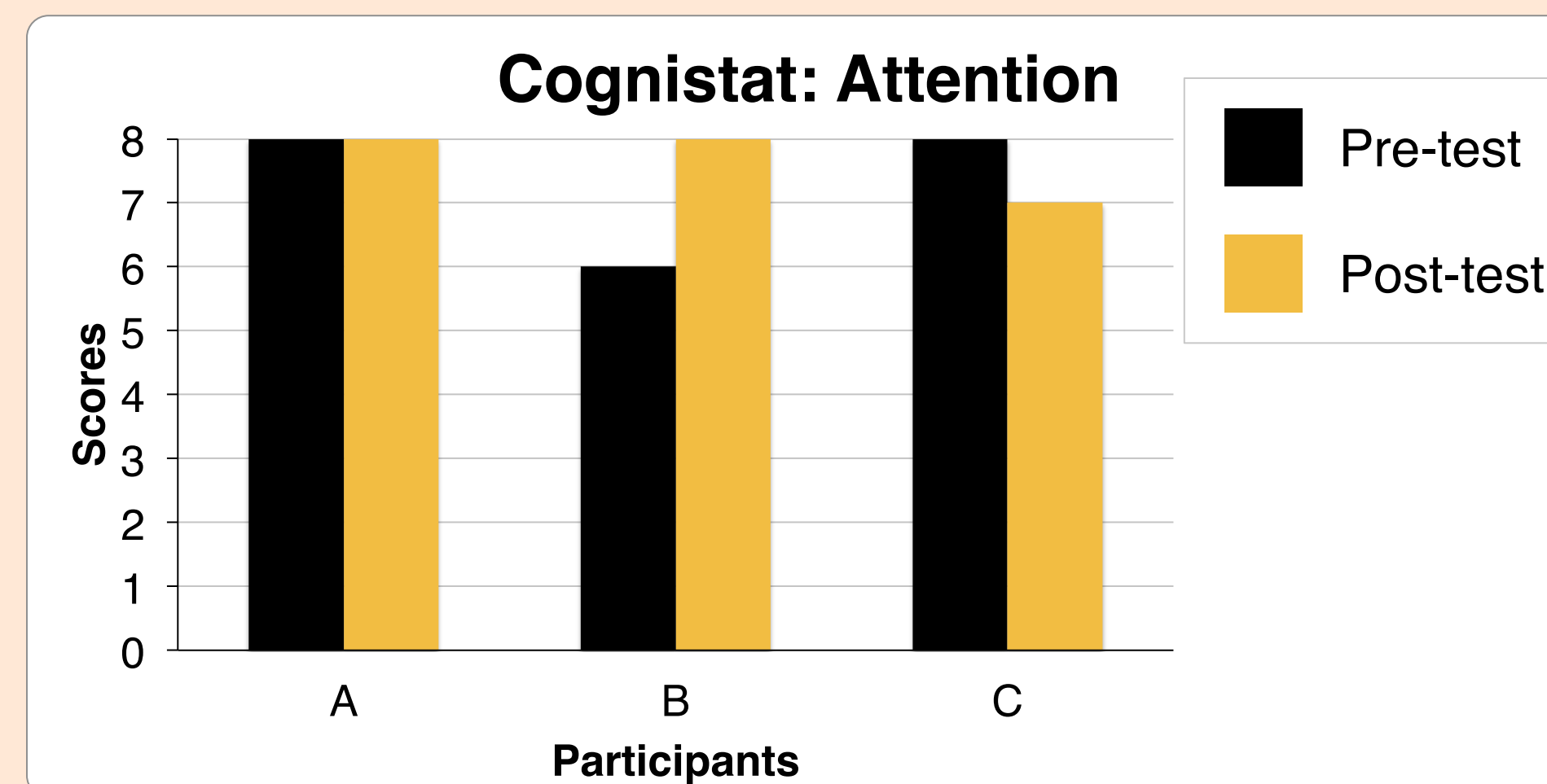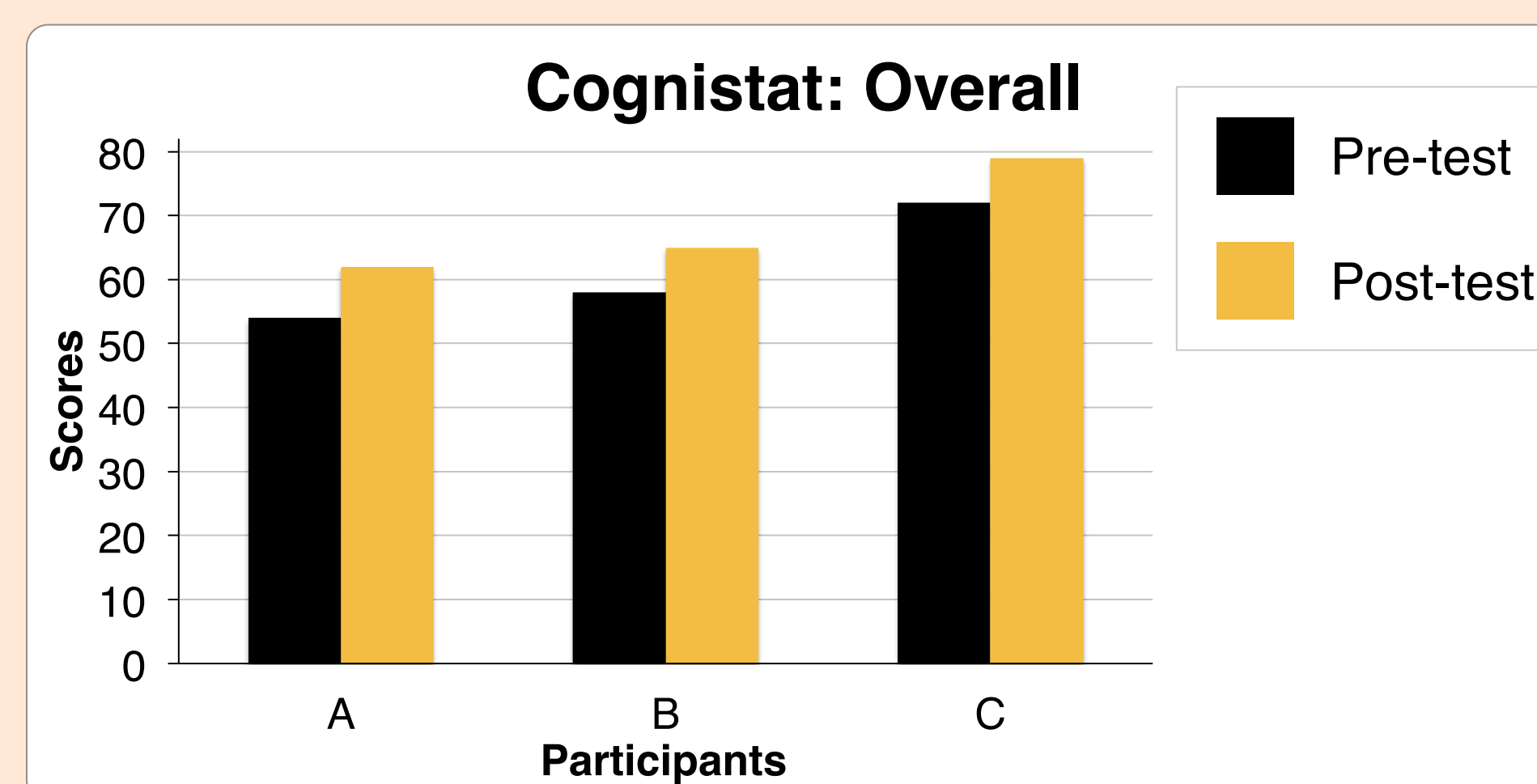
Scores for the Medication Box Assessment

Participant	Pre-test	Post-test
A	0	0
B	0	14
C	0	0

Scores for the Goal Attainment Scale

Participant	Pre-test	Post-test 1 (≤ 1 week follow-up)	Post-test 2 (4-month follow-up)
A	0	2	2
B	0	0	2
C	0	2	2

CASE STUDIES

- **Participant A:** 67-year-old male, 7 years post-ABI. He required maximum prompting to stay on-task, initiate problem-solving, and apply the adaptive strategies. He had minimal support from a paid caregiver. He had the greatest overall Cognistat score improvement but did not generalize to performance on the medication box assessment.
- **Participant B:** 70-year-old female, 16 years post-TBI. She stayed on-task, initiated problem-solving, independently sought assistance, and consistently applied the adaptive strategies. She had no additional support. She improved in attention, memory, and overall Cognistat score. She generalized those improvements on the medication box assessment.
- **Participant C**: 75-year-old male, 2 years post-TBI. He stayed on-task, initiated problem-solving, and applied the adaptive strategies. He had moderate support from a non-paid caregiver. He had the greatest improvement in memory but did not generalize to performance on the medication box assessment.

CONCLUSIONS

- Bridge/Adapt may be ineffective as a group-based intervention in facilitating generalization of improved cognitive skills to functional performance.
- Consistent with previous findings, CBCR appears to have a positive effect on memory and cognition.
- The degree of external support and client factors like active participation play key roles in facilitating successful skill generalization.
- A balance of intrinsic motivation and external support are key factors for success.

RECOMMENDATIONS

Bridge/Adapt may be more effective:
- As an individual-based intervention
- For more acute post-ABI clients, who are more likely to be receptive to learning new strategies and motivated to return to previous life roles and occupations
- To focus on teaching adaptive strategies in client-centered, meaningful occupations rather than using simulated activities

REFERENCES

Berlucchi, G. (2011). Brain plasticity and cognitive rehabilitation. *Neuropsychological Rehabilitation*, 21(5), 560-578. doi:10.1080/09602011.2011.573255

Cicerone, K. D., Langenbahn, D. M., Braden, C., Malec, J. F., Kalmar, K., Fraas, M., …Ashman, T. (2011). Evidence-Based Cognitive Rehabilitation: Updated Review of the Literature From 2003 Through 2008. *Archives of Physical Medicine and Rehabilitation*, 92(4),519-530. doi:10.1016/j.apmr.2010.11.015

Dawson, D., Gaya, A., Hunt, A., Levine, B., Lemsky, C., & Polatajko, H. (2009). Using the Cognitive Orientation to Occupational Performance (CO-OP) with Adults with Executive Dysfunction following Traumatic Brain Injury.*Canadian Journal of Occupational Therapy, 76*(2), 115-127. doi:10.1177/000841740907600209

Li, K., Alonso, J., Chadha, N., & Pulido, J. (2015). Does generalization occur following computer-based cognitive retraining? -- An exploratory study. Occupational Therapy in Health Care, 29(3), 283-296. doi:10.3109/07380577.2015.1010246

Toglia, J. (1991). Generalization of treatment: A multicontext approach to cognitive perceptual impairment in adults with brain injury. American Journal of Occupational Therapy, 45(6), 505- 516. doi:10.5014/ajot.45.6.505

Toglia, J., Johnston, M. V., Goverover, Y., & Dain, B. (2010). A multicontext approach to promoting transfer of strategy use and self regulation after brain injury: An exploratory study. Brain Injury, 24(4), 664-677. doi:10.3109/02699051003610474