



Post-Hospital Brain Injury Rehabilitation: Comparison of Neurobehavioral Intensity & Neurorehabilitation Outcomes

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Disclosure Statements

Dr. Frank Lewis has no conflict of interest or financial interest in the data being presented in this research.

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Presentation Objectives

1. Determine outcome differences between Neurorehabilitation (NR) and Neurobehavioral (NB) clients following residential post-hospital brain injury rehabilitation.
2. Determine effectiveness of programming to reduce symptoms of behavioral dyscontrol among NB individuals.
3. Identify predictors of independent functioning for each group.

Methods

Total Study Sample

289 brain injured adults

Neurobehavioral Participants (NB)

70 persons exhibiting moderate (rating of 3) to severe (rating of 4) behavioral dyscontrol

Neurorehabilitation Participants (NR)

219 persons with no more than mild behavioral dyscontrol

Methods – Study Sample

Neurobehavioral Participants (NB) were defined by the following criteria:

Length of Injury to Admission was > 8 months (Mean = 99.6 months [8.3 years]);

Scores were either moderate (3) or severe (4) on admission MPAI-4 items for the following:

Irritability-Anger-Aggression

Novel Problem Solving

Inappropriate Social Interaction

Impaired Self-Awareness

Methods – Study Sample

Neurorehabilitation (NR) Participants were scored as no greater than mild (rating of 2) on MPAI-4 *Irritability-Anger-Aggression*;

Neurorehabilitation Participants onset to admission was < 8 months (Mean = 3.1 months);

Participants were undergoing active rehabilitation efforts including multidisciplinary programming;

Diagnoses for both groups were predominately Traumatic Brain Injury

(Neurobehavioral=83% and Neurorehabilitation=60%)

Methods – Measure & Design

Mayo Portland Adaptability Inventory (MPAI-4)

29 items rated on a 5-point scale from no limitation (0, 1) to severe problem (5).

Raw scores converted to T-scores within 3 subscales:

Abilities (physical, speech, & cognitive functioning),
Adjustment (behavioral/ emotional functioning), &
Participation (home and community skills toward independence).

The MPAI-4 was completed within 30 days of admission and at discharge for comparison.

Results

A Repeated Measures MANOVA revealed the following:

A significant *group main effect*: the NR group, as compared to the NB group, demonstrated significantly lower scores on both admission and discharge MPAI-4 scores: Ability, Adjustment, and Participation Indices [F(1,286)=97.29,p=.0001].

A significant *within subjects effect*: both groups showed statistically significant improvement on those indices from admission to discharge [F(2,286)=98.66,p=.0001].

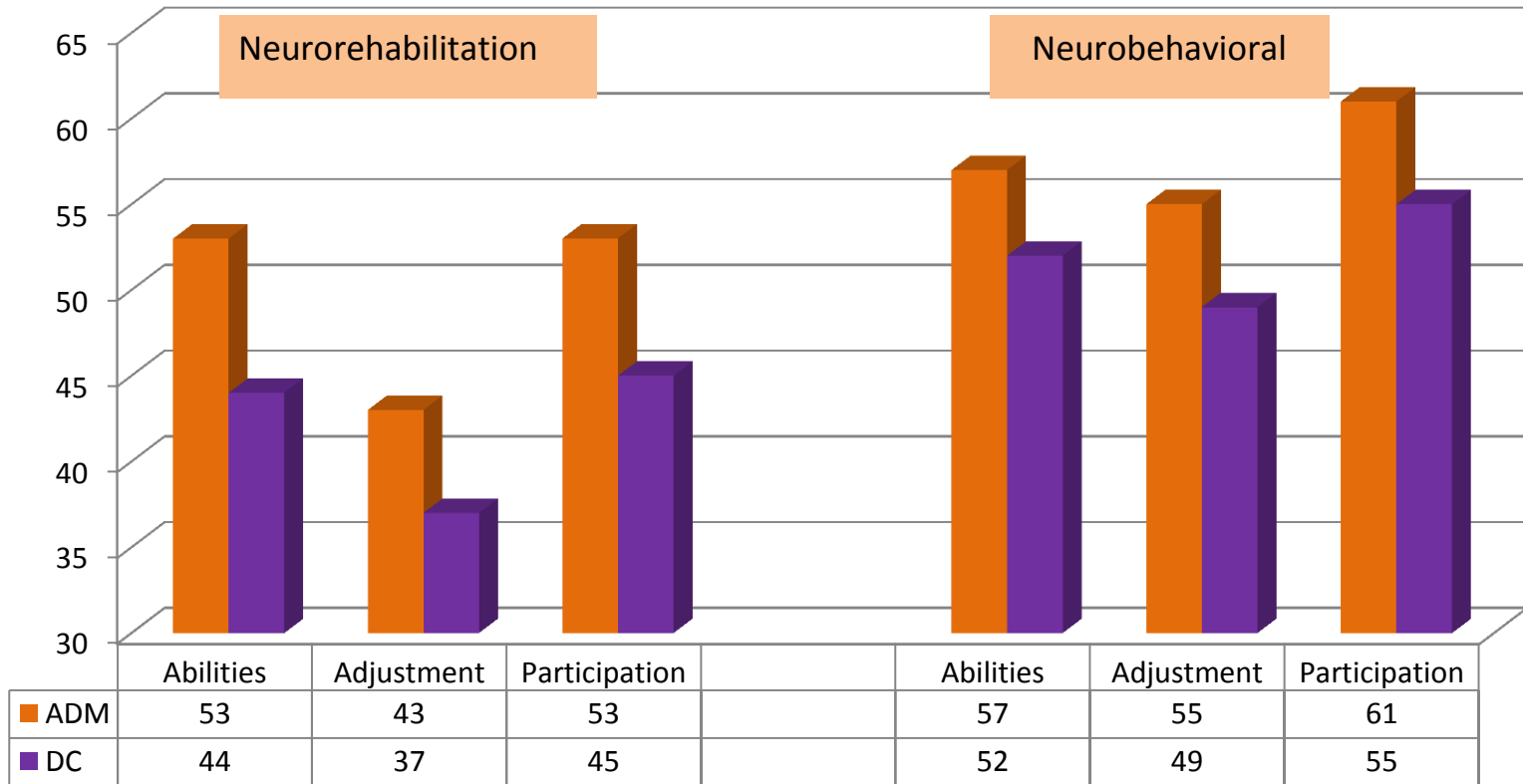
Results

Follow-up Wilcoxon Z-tests revealed:

The NB group achieved statistically significant gains from admission to discharge for each of the four MPAI-4 variables defining behavioral dyscontrol ($p < .0001$).

Lastly, a stepwise multiple regression found that *Initiation was the strongest predictor of successful community outcome for both groups* ($p < .0001$). Initiation, as a cognitive-behavioral skill, has a significant impact on the ability to perform tasks without supervision.

Comparisons from Admission to Discharge

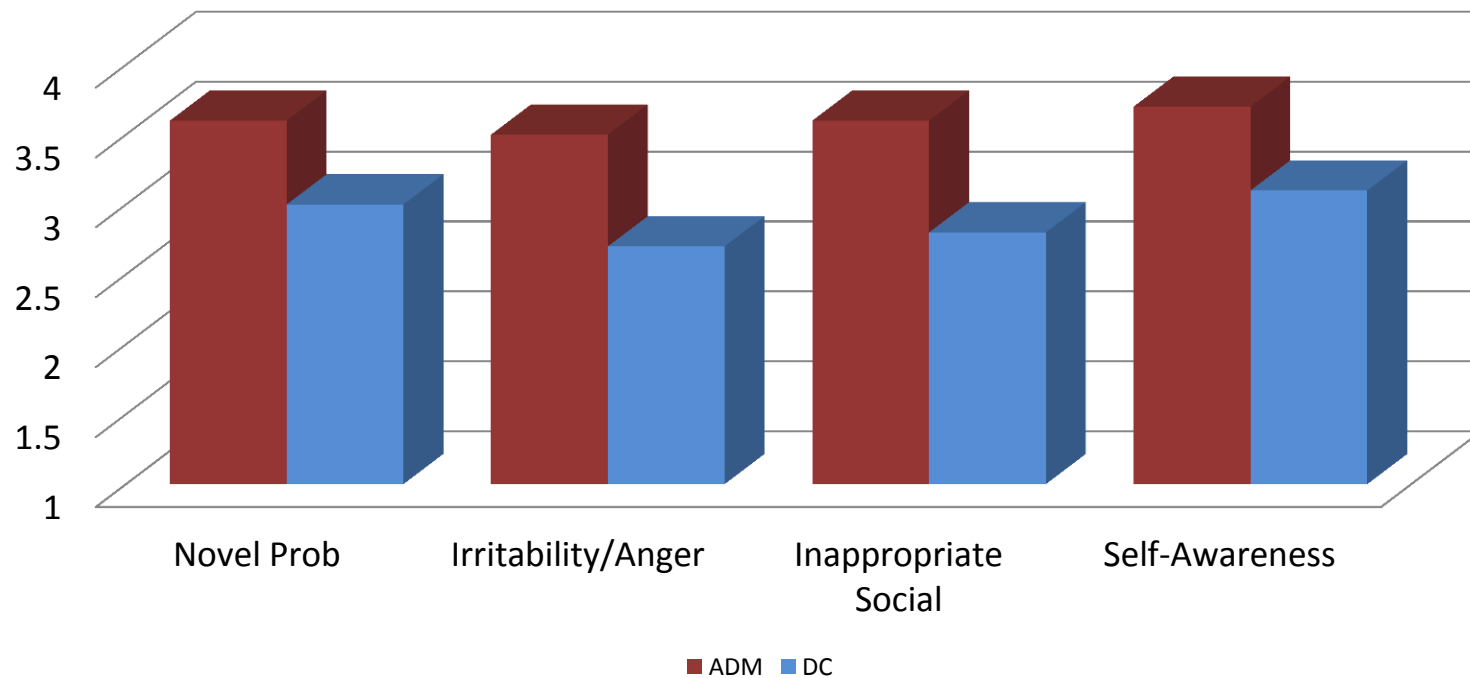


The Neurorehabilitation group was less impaired at admission and showed greater improvement at discharge than the Neurobehavioral group ($p < .001$). Both groups made significant gains from admission to discharge ($p < .0001$).

Neurobehavioral Group Improvement

MPAI-4 Behavioral Measures

Measures of Behavioral Dyscontrol
Admission to Discharge



Admission to discharge change on each variable was statistically significant
 $p < .0001$

Conclusions

Participation in comprehensive post-hospital rehabilitation programs lead to *significant reduction in disability* for Neurorehabilitation (NR) and Neurobehavioral (NB) groups.

Significant disability reduction was demonstrated within the Neurobehavioral group (chronic behavioral dyscontrol). This is a remarkable finding since this group averaged 8.3 years post injury at the time of study inclusion.

The improvements noted in the NB group were not attributed to time or natural healing.

The *Initiation* variable demonstrated the strongest predictor of independent functioning and community success for both groups.

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