

Using the Mayo-Portland Adaptability Index to evaluate clinical acquired brain injury rehabilitation services

Durham, Miffy¹., Blight, Rose¹., Mumme, Rachael¹.

¹WA Health, North Metropolitan Health Service Mental Health and Public Health, State Head Injury Unit

Introduction

The State Head Injury Unit (SHIU) is a community-based multi-disciplinary service that provides rehabilitation to clients with an acquired brain injury (ABI). Individualised goal centred rehabilitation plans are created and implemented by an allied health dominant team of Case Coordination, Occupational Therapy, Physiotherapy, Allied Health Assistants, Speech Pathology, Clinical Psychology, Neuropsychology, and Rehabilitation Medicine.

To evaluate client functioning, the Mayo-Portland Adaptability Inventory (MPAI-4) is completed by Case Coordinators (i.e., Clinician rating) at both admission to the service, as well as at discharge. The questionnaire is completed by Case Coordinators based on clinical assessment.

The MPAI-4 is a well refined rating scale based on a thorough scale development process and is designed specifically for use with ABI. It uses a 5-point likert scale to assess ability (i.e., sensory, motor, and cognitive abilities), adjustment (i.e., mood, interpersonal interactions), and participation (i.e., social contacts, initiation, money management) that reflect key areas of global function¹. It aids the clinical evaluation of people with ABI during the post-acute period, as well as the evaluation of rehabilitation programs. It includes three subscales of. Of note, novel exploratory works conducted by the WA Brightwater Care Group suggests the adjustment subscale is the greatest predictor of rehabilitation outcomes.

While the SHIU regularly uses the MPAI-4 in an individual client focused manner, the results have not yet been used in the broader evaluation of the SHIU rehabilitation program. This investigation, therefore, sought to use existing MPAI-4 data to explore service level changes in client functioning during admission to the SHIU rehabilitation program.

Method

Archival MPAI-4 data from 1987 – 2020 was extracted and analysed. There were no additional inclusion criteria imposed beyond that of service eligibility (i.e., adults between ages 16 – 65 years who have obtained an ABI). This included examination of change statistics between MPAI-4 scores at admission and MPAI-4 scores at discharge. This was completed across the three MPAI-4 sub-scales of ability, adjustment, and participation. Additionally, mean change scores were compared to established MPAI-4 clinical significance thresholds:

A 5-point difference in T-scores = minimal clinically important difference (87% of clinical raters indicate meaningful improvement)³.

A 9-point difference in T-scores = robust clinically important difference (99% of clinical raters indicate meaningful improvement)³.

Results

The MPAI-4 scores of approximately 2500 clients were available for analysis. At admission, all three sub-scales of ability, adjustment, and participation had mean scores in the 'mild limitations' range according to MPAI interpretation guidelines². At discharge, all three subscales were in the 'good outcomes' range with MPAI interpretation guidelines suggesting any score below 30 should be considered 'relatively good outcomes'².

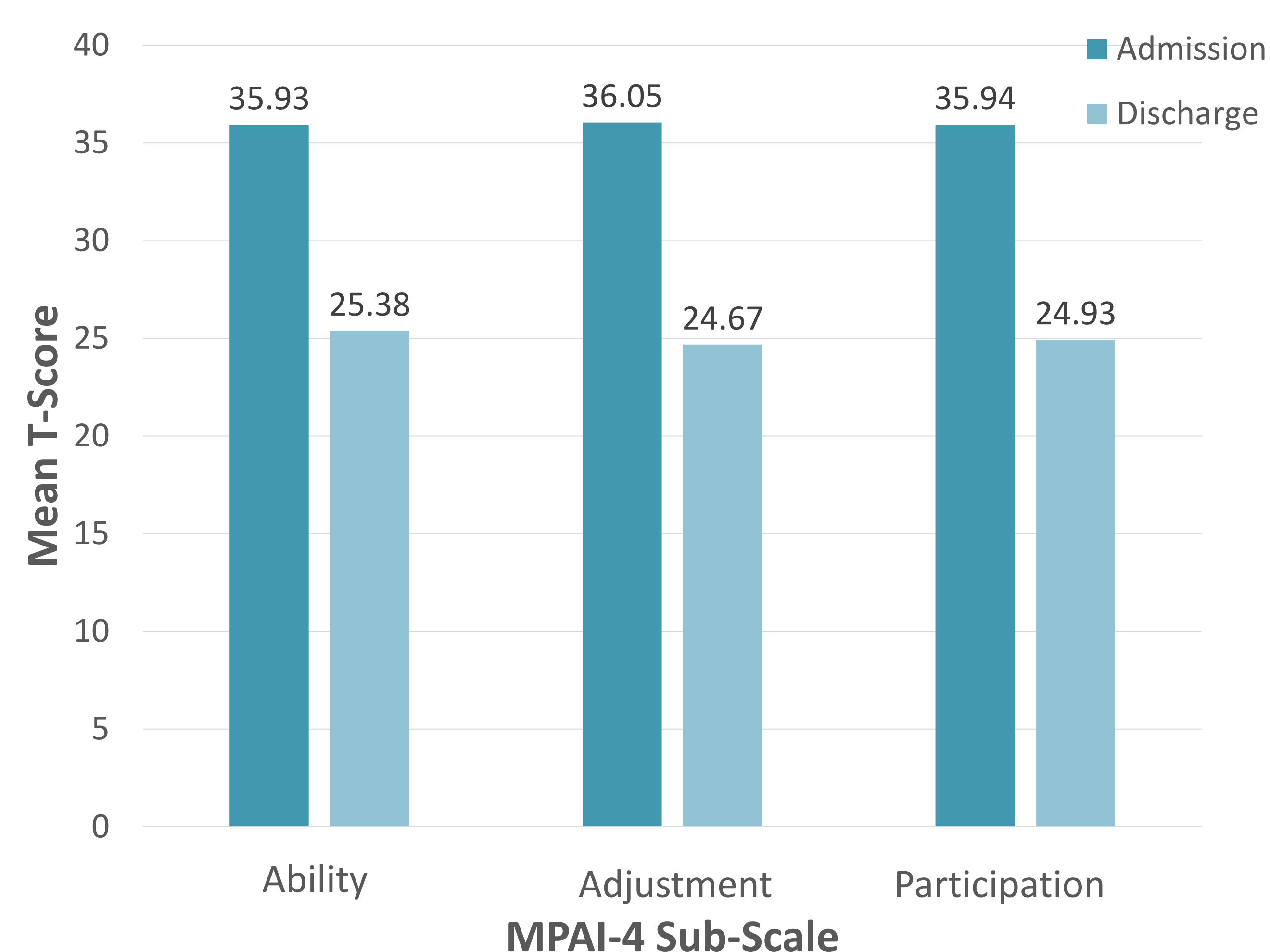


Figure 1. Mean MPAI-4 T-Score at admission and discharge by subscale

Due to non-normality in the data distribution, non-parametric Bayesian paired sample t-tests were conducted. These provided more support for there being a mean difference between scores at admission and discharge than no mean difference. This was seen across subscales of ability ($BF_{10} = 1.404e+189$, error% = 6.113e-192) and participation ($BF_{10} = 5.307e+191$, error% = 6.076e-194). Put another way, for the ability subscale there was 1.404×10^{189} more support for there being a difference between admission and discharge than there being no difference. Visual examination of the Bayes Factor Robustness Check indicated very strong evidence of robustness. Mean change scores met criteria for robust clinically important differences with a 9-point reduction in ability, 11-point reduction in adjustment, and an 11-point reduction in participation.

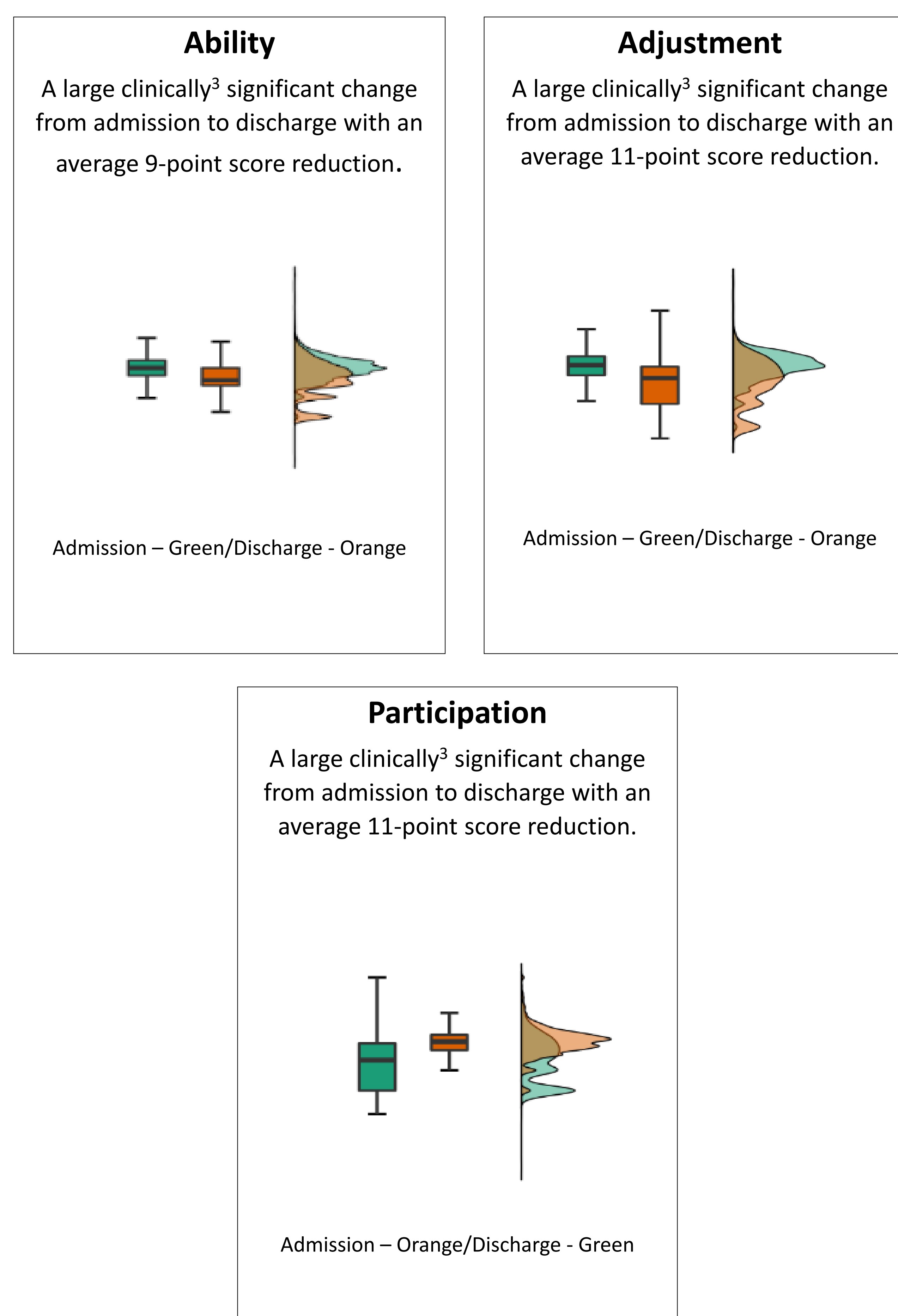


Figure 2. Change in MPAI-4 score between admission and discharge by subscale, including box and whisker plots.

Conclusions

Examination of historical clinician rated MPAI-4 data demonstrated that clients with an ABI showed a clinically significant improvement in functioning while engaged with the SHIU rehabilitation program.

Clinical Implications

Clinician rated performance measures demonstrate a clinically robust improvement in clients abilities (i.e., sensory, motor, and cognitive abilities), adjustment (i.e., mood, interpersonal interactions), and participation (i.e., social contacts, initiation, money management) during their rehabilitation program with the State Head Injury Unit. This provides support for the effectiveness of the SHIU model of care which is based on wider ABI rehabilitation literature on the Comprehensive Enhancement Practice: An Implementation Model 4.

Limitations

The current study was based on available clinical data and as such does not include a control group to compare the effectiveness of the community rehabilitation program versus no rehabilitation program or spontaneous recovery.

Future Research

To build a more comprehensive understanding of client outcomes. Future research will seek to explore client-based measures of service outcomes including consumer satisfaction data.

References

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Contact

Miffy Durham, Program Manager,
miffy.durham@health.wa.gov.au