

Award Number: W81XWH-08-1-0021

TITLE: Automated Neuropsychological Assessment Metrics Version 4 (ANAM4): Examination of
Select Psychometric Properties and Administration Procedures

PRINCIPAL INVESTIGATOR:

Susan P. Proctor, D.Sc.

Kristin J. Heaton, Ph.D.

CONTRACTING ORGANIZATION:

Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.

1401 Rockville Pike, Suite 600

Rockville, MD 20852

REPORT DATE: December 2008

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT:

Approved for public release; distribution unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.				
1. REPORT DATE (DD-MM-YYYY) 01-12-2008		2. REPORT TYPE Annual		3. DATES COVERED (From - To) 01 DEC 2007 - 30 NOV 2008
4. TITLE AND SUBTITLE Automated Neuropsychological Assessment Metrics Version 4 (ANAM4): Examination of Select Psychometric Properties and Administration Procedures			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER W81XWH-08-1-0021	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Kristin J. Heaton, Ph.D and Susan P. Proctor, D.Sc .			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. Rockville, MD 20852			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) US Army Medical Research and Materiel Command Ft. Detrick, MD 21702			10. SPONSOR/MONITOR'S ACRONYM(S)	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT The ability to accurately and efficiently monitor the neurocognitive status of US warfighters under diverse operational and experimental conditions is of critical importance to the ongoing mission and network-centered initiatives of the United States military. The Automated Neuropsychological Assessment Metrics (ANAM) is a computer assisted tool for evaluating neurocognitive performance with demonstrated effectiveness for application in diverse military operational and research testing scenarios. The primary objective of this project is to examine select psychometric and administration properties of the newly-released ANAM4. Four studies are proposed that will 1) examine common use practices and determine the effect of specific administration procedures on ANAM4 performance, 2) assess the test-retest reliability of individual ANAM4 tests, 3) examine the validity of the ANAM4 mood scale, and 4) develop adverse, representative military normative dataset. We are currently in the data collection phase for Studies 1-3.				
15. SUBJECT TERMS ANAM, neurobehavioral, assessment, psychometrics, validity, reliability, normative, standardized				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 6
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U		
				19b. TELEPHONE NUMBER (include area code)

Table of Contents

INTRODUCTION.....	4
BODY	4
Key Research Accomplishments.....	6
Reportable Outcomes.....	6
Conclusions.....	6

INTRODUCTION

The ability to accurately and efficiently monitor neurocognitive status of U.S. warfighters under diverse operational and experimental conditions is of critical importance to the ongoing mission and network-centered initiatives of the U.S. military. The Automated Neuropsychological Assessment Metrics Version 4 (ANAM4) is a computer-assisted tool for evaluating neurocognitive performance with demonstrated efficacy for application in diverse military operational and research testing scenarios. The primary objective of this multi-study project is to examine select psychometric and administration properties of the ANAM4. This project includes four studies that will 1) examine common use practices and determine the effect of specific administration procedures on ANAM4 performance, 2) assess the test-retest reliability of individual ANAM4 tests, and 3) examine the validity of the ANAM4 mood scale, and 4) develop adverse, representative military normative dataset.

BODY

This project was funded 01 December 2007.

Progress made during the current funding period (01 December 2007 - 30 November 2008), corresponding to tasks 1-4, is described below.

The approved study timeline and Statement of Work (SOW) is presented in Table 1.

TABLE 1: STATEMENT OF WORK: *Study Timeline*

Year 1	Months 1-2	Task 1	Plan and finalize logistics for Phase I (studies 1-3)
	Months 3-12	Task 2	Subject recruitment, data collection and data management for Study 1
Year 2	Months 13-14	Task 3	Perform data analyses for Study 1
	Months 15-24	Task 4	Subject recruitment, data collection and data management for Study 2 & 3
		Task 5	Plan and finalize logistics for Phase II (study 4)
		Task 6	Subject recruitment, data collection and data management for Study 4
Year 3	Months 25-36	Task 7	Perform data analyses for Studies 2 & 3
		Task 8	Preparation of journal manuscript(s) for Studies 1-3
		Task 9	Continue recruitment, data collection and data management for Study 4
Year 4	Months 37-48	Task 10	Complete data collection for Study 4; Perform data analyses for Study 4
		Task 11	Prepare Study 4 manuscript for peer review
		Task 3	Preparation of final project

Initial USARIEM Human Use Review Committee (HURC) approval for this project was received on 14 June 2007 (initial approval pending modification given on 23 May 2007). However, approval for Study 4 (normative data collection) was tabled on 11 January 2008 by the

HURC due to the lack of a confirmed site(s) for data collection. Review of Study 4 by the HURC will be conducted at a later date when locations for data collection are confirmed and necessary approvals are obtained.

Task 1 (Month 1-2)

Plan and finalize logistics for Phase I – COMPLETED

All logistical aspects for HURC approved studies (Studies 1-3) have been confirmed. Recruitment procedures, equipment, testing facilities, and other data collection elements are operating and/or being carried out smoothly and as anticipated.

Task 2 (Month 3-12)

Subject recruitment, data collection and data management for Study 1 – IN PROGRESS

Subject recruitment, data collection and data management are ongoing and on track. Data management is current. Recruitment of both Human Research Volunteers and Civilians has been effective and efficient. Study 1 is examining the impact of practice and individual vs group session administration. Our recruitment goal for Study 1 is 99 participants total or approximately 30 participants per each of the 3 conditions (individual, group testing; practice, no practice; single, double session). The following table (Table 2) shows our recruitment thus far.

TABLE 2. Study 1 recruitment

		# of participants recruited
Condition 1	individual	31
	group	11
Condition 2	practice	31
	no practice	8
Condition 3	single session	31
	double session	2

- Note that many participants consented to participating in more than one condition and/or more than one study, thus increasing sample numbers above expected recruitment goals in certain cells.

Task 3 (Month 13-14) Perform Data Analysis for Study 1 – IN PROGRESS

With data collection still in progress, data analyses have not yet been performed. However, data management procedures are ongoing, including entry of data into Excel spreadsheets and SPSS data files, as well as checking of data, in preparation for data analysis.

Task 4 (Months 15-24)

Subject recruitment, data collection and data management for Studies 2 & 3 – IN PROGRESS

Recruitment and data collection for Studies 2 & 3 are occurring concurrently with Study 1, given the favorable recruitment and study support. Study 2 is examining aspects of test-retest intervals and Study 3 is examining the validity of the ANAM4 mood scale. As with Study 1, our recruitment goal for Study 2 is 99 participants, roughly 30 participants per test-retest condition (days 1 & 7; days 1 & 30; 7 consecutive day retest). Table 3 presents the recruitment progress

for Study 2. The recruitment goal for Study 3 is 50 participants; we have currently recruited 32 participants.

TABLE 3. Study 2 recruitment

		# of participants recruited
Condition 1	1 and 7	5
Condition 2	1 and 30	2
Condition 3	7 consecutive	17

KEY RESEARCH ACCOMPLISHMENTS

Key research accomplishments during the current study period include:

- Data collection is on track for Study 1 and ahead of schedule for Studies 2 & 3. Nearly 66% of the total required sample for Study 1, 24% for Study 2, and 64% for Study 3 have been completed.
- Manuscript for Study 3 is in preparation as we near completion of data collection for this study.
- Continuing Review report was reviewed and approved by the USARIEM HURC (01 July 2008)

REPORTABLE OUTCOMES

1. Reports, manuscripts, abstracts

None to report at present.

2. Degrees and research training opportunities

One bachelor's level student (currently applying for graduate school) and two undergraduate students have assisted in data collection for this project.

3. Collaborative funding applications related to work supported by this award

None currently.

4. Related projects and collaborations initiated

Drs. Proctor and Heaton are also currently initiating another study focused of the ANAM4. Specifically, plans are underway to examine the validity of the ANAM4TBI task battery in a case-control study design involving mild TBI patients and controls (USARIEM #H09-08).

CONCLUSIONS

There has been significant progress in this initial funding period. We anticipate continued success in subject recruitment and testing procedures.

Data from this project will add significantly to the development and use of ANAM4 and subsequent versions of the neurocognitive assessment tool, as well as provide useful information regarding use and of this assessment tool and interpretation of testing result within a military population.