

Use of Neuropsychological Measures to Predict Field Performance Ratings in Police Officers

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Introduction

Police officers are tasked with functioning in an increasingly complicated environment which requires a high level of multitasking. At this time, there are no current standards or requirements for this essential ability or its component cognitive skills to be evaluated prior to employment. Neuropsychological tests have shown relationships with job performance in some settings. In spite of these associations, there is scant research in this area with respect to law enforcement, despite the need for higher cognitive functioning to keep up with the demands of the job. The aim of this study was to evaluate the utility of neuropsychological measures evaluating attention, processing speed, executive function, and the ability to apply learned knowledge, in predicting police officer field performance ratings.

Methods

- Subjects:**
 - 46 police officers from two agencies in the Dallas Metroplex.
 - Age = 34.33, SD = 8.57
 - Education = 15.61, SD = 1.44
 - 85% male
 - 89% Caucasian, non-Hispanic
- Measures:**
 - NIH Toolbox Cognition Battery - crystallized and fluid intelligence
 - NIH Toolbox Emotion Battery – self-reported emotional health
 - Standard neuropsychological tests
 - WAIS-IV Digit Span – simple attention and working memory
 - Symbol Digit Modalities Test (SDMT): processing speed
 - Neuropsychological Assessment Battery (NAB) Categories: executive function
- Outcome Measure:**
 - Supervisor Survey – Total and Domain Ratings
- Statistics:**
 - Stepwise linear regression to identify predictors of the outcome variables.

Table 1: Regression Results for Toolbox Emotion Subtests

Supervisor Survey Domain	Subtest	B	Adj R ²
Conscientiousness and commitment problems	General Life Satisfaction*	-0.22	0.19
Impulse control problems	Perceived Stress*	0.77	0.14
Integrity problems	Instrumental Support**	-0.07	0.11
Feedback acceptance problems	Emotional Support*	-0.05	0.14
Routine task performance problems	Self-Efficacy**	-0.31	0.08
Decision making and judgment problems	Perceived Stress**	0.52	0.12
Assertiveness problems	Self-Efficacy**	-0.07	0.08
Social competence and teamwork problems	Perceived Stress*	0.31	0.15
Overall rating	General Life Satisfaction*	-0.09	0.21
Supervisor evaluation total	Perceived Stress*	1.60	0.15

*p<.01 **p<.05

Table 2: Regression Results for Standard Neuropsychological Variables

Supervisor Survey Domain	Neuropsychological test	B	Adj R ²
Emotional control and stress problems	Longest Digit Backward**	-0.21	0.07
Routine task performance problems	NAB Categories**	-0.26	0.08
Decision making and judgment problems	Symbol Digit Modalities Test**	-0.32	0.17
	Longest Digit Backward**	-0.34	
Assertiveness problems	Longest Digit Forward*	0.11	0.17
	Digit Span Scale**	-0.31	
Social competence and teamwork problems	Longest Digit Backward**	-0.28	0.11
Impulse control problems	Symbol Digit Modalities**	-0.05	0.16
	Longest Digit Backward**	-0.6	
Supervisor eval. total	Longest Digit Backward**	-1.52	0.08

*p<.01 **p<.05

Table 3: Regression Results for Standard Neuropsychological and Toolbox Emotional Variables

Supervisor Survey Domain	Subtest	B	Adj R ²
Decision making and judgment problems	Perceived Stress	0.53	0.29
	Longest Digit Backward	-0.48	
Social competence and teamwork problems	Perceived Stress	0.39	0.35
	Longest Digit Backward	-0.36	
Impulse control problems	Perceived Stress	0.10	0.29
	Longest Digit Backward	-0.08	
Supervisor eval. total	Perceived Stress	2.34	0.29
	Longest Digit Backward	-2.03	

Results

- Scores from the NIH Toolbox Cognition Battery were not significant predictors of Supervisor Survey ratings.
- Significant results are listed in Tables 1-3
- Several subtests from the NIH Toolbox Emotion Battery were significant predictors (Table 1), as were the standard neuropsychological tests (Table 2).
- A combination of a measure of emotional health and one standard neuropsychological test was the best predictor of Supervisor Ratings (Table 3).

Summary and Conclusions

- Police officers are required to function in an increasingly complicated environment while integrating and responding to multiple sources of stimuli.
- Current standards only require satisfactory psychological and emotional health and no assessment of multitasking ability.
- Results support a modest relationship between emotional health + neuropsychological functioning and police field performance ratings.
- These results add to the literature supporting a relationship between neuropsychological functioning and real world job performance.
- Most importantly, the findings suggest that the addition of two relatively brief measures of working memory and perceived stress, to current pre-employment testing may enhance the selection process.