

# Use of a Brief Screening Tool to Assess Intellectual Functioning in a Forensic Population

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**Abstract:** Individuals with intellectual disability are over-represented in forensic settings, including jails, prisons and forensic psychiatric treatment units. Identification of intellectual disability is important in such settings, especially in light of the implications of intellectual disability in legal issues including competency to stand trial, criminal responsibility and capital sentencing. We examined the utility of a brief test of intelligence (PROFOKS), assessing knowledge of proverbs, fund of knowledge and similarities in a series of 29 inpatients residing in a forensic psychiatric unit. PROFOKS correlated strongly with performance on the Wechsler Abbreviated Scale of Intelligence (WASI), including the full scale, verbal and performance IQs and WASI subscales. The PROFOKS appears to be a useful screening tool in identifying intellectual disability in a forensic psychiatric population.

**Keywords:** Intellectual Disability, Assessment, Screening, Forensic, Evaluation, Brief, Tool, Instrument.

## INTRODUCTION

It is important to identify cognitive impairment, including intellectual and developmental disability, in individuals undergoing assessment or treatment in forensic settings. Examples of forensic evaluations in which cognitive and intellectual abilities are relevant to the legal outcome of a case include assessment of: competency to stand trial [1-5], a defendant's state of mind at the time of an offense [6, 7], capacity for employment, treatment refusal [8], parental fitness [9], need for guardianship [10] and issues related to capital punishment [11, 12]. Evaluation of intellectual abilities is essential for formulating an effective treatment plan [13] and in maximizing the effectiveness of competency restoration [1, 14, 15]. Because intellectual impairment, particularly when coupled with mental illness or substance abuse, is a risk factor for criminal recidivism [16], identification of intellectual impairment is useful in forensic assessment and treatment, with harm reduction as a goal.

Despite the fact that individuals with intellectual disabilities are common in forensic settings [17, 18], identification and quantification of these disabilities is often inadequate. An Australian study estimated that ten percent of young male prisoners met criteria for intellectual disability [19]. Despite this, screening for intellectual disabilities is uncommon in jail settings [20].

Forensic assessments can be extensive and can include psychological testing of intelligence, but a brief screening tool would also be useful. Traditional tests of intellectual disability tend to be lengthy, and may require a psychologist skilled in testing to administer [21-26]. Brief cognitive tests familiar to psychiatrists and other mental health professionals, including the Mini Mental State Examination (MMSE) [27] are inadequate for detecting intellectual disability in individuals with subnormal intelligence [28], and similar instruments such as the Montreal Cognitive Assessment (MOCA) [29] likely have little utility in this population. Other brief intelligence tests exist and have been used in the forensic setting, such as the Kaufman Brief Intelligence Test (K-BIT) [30]. K-BIT is a relatively brief tool, but it cannot easily be employed as part of a routine mental status examination because it requires 20 minutes to administer, specific test materials and some expertise in psychological testing. Given the lengthy nature of available tests of intellectual abilities, and the lack of utility of screening tools such as the MMSE, the availability of a brief screening tool for the assessment of intellectual disability in forensic settings would be useful.

PROFOKS is a brief test of intelligence [31]. It is an easily administered test that evaluates an individual's ability to interpret proverbs, tests fund of knowledge and understanding of similarities. PROFOKS has been shown to be an effective tool in evaluating cognitive impairment in community and clinical samples of individuals with intellectual disability [31]. This study

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seeks to determine if the PROFOKS is a valid screening instrument for the identification and gross quantification of intellectual disabilities in a forensic setting.

## METHOD

This study was approved by Delaware's Division of Health and Social Services' Institutional Review Board. Patients at the Delaware Psychiatric Center's inpatient forensic unit were informed of the foreseeable risks and benefits of participation and asked to participate in the study, with the understanding that participation did not affect their treatment plan or length of stay at the hospital. Prospective participants were informed that they could withdraw from the study at any time and this too would not alter treatment or duration of hospitalization. A written informed consent document was utilized, in conjunction with verbal explanation. Participants were informally assessed for the ability to provide consent and given the opportunity to ask questions at the onset and throughout the study.

## PARTICIPANTS

The individuals who participated in this study were all committed to the Delaware Psychiatric Center's forensic unit either because they were adjudicated incompetent to stand trial, found guilty but mentally ill, found not guilty by reason of insanity or were prisoners who were civilly committed to the hospital for treatment. A series of 29 participants were chosen randomly from the inpatient census of 42 patients over a period of six months.

Of the 29 participants, diagnostic information was available on 28 subjects. One subject was diagnosed with intellectual disability. Eleven subjects had a primary diagnosis of a psychotic disorder, eight had a mood disorder, five had either a personality disorder, addictive disorder or an impulse control disorder, two had an organic brain dysfunction, one had Asperger's Disorder (without intellectual disability) and one had Pervasive Developmental Disorder, Not otherwise Specified with Mild Intellectual Disability. Axis V Global Assessment of Functioning (GAF) score results included a range of 25 to 65 with a mean of 44.

The sample was comprised of 79% males, and 21% females. Participants were from 20 to 62 years of age. Median age was 37.2 years and 96 % were less than 56 years of age. Most had a high school diploma. The average educational level was 12.6 years of completed

schooling. 11% were married, 70% were single and 19% were divorced.

## MEASURES

### Wechsler Abbreviated Scale of Intelligence

The WASI is a brief test that measures intellectual abilities, requiring approximately 30 minutes to administer. The WASI consists of four subtests: Vocabulary, Similarities, Block Design, and Matrix Reasoning. The four-subtests are used to compute Verbal IQ (VIQ), Performance IQ (PIQ), and Full Scale IQ (FSIQ) scores. This scale has demonstrated validity as a measure of intellectual abilities in samples of psychiatric inpatients and in other samples [32, 33].

### PROFOKS

The PROFOKS scale assesses knowledge of proverbs, fund of knowledge and similarities. Subjects can score between zero (a perfect score) and 16 points (no correct answers). See PROFOKS instrument (Figure 1). On PROFOKS, a lower score represents superior performance; zero is a perfect score and 16 is the worst possible score.

### Procedure

After consent was obtained, we administered the PROFOKS and the Wechsler Abbreviated Scale of Intelligence (WASI) to a series of 29 inpatients at the Mitchell Forensic unit of the Delaware Psychiatric Center. The tests were given by staff trained in administering psychological tests. Tests were completed within one testing session.

PROFOKS scores were obtained, in addition to WASI Verbal IQ, Performance IQ, Full Scale IQ primary scale scores, along with Vocabulary, Block Design, Similarities and Matrix subscale scores.

## DATA ANALYSIS

We correlated PROFOKS score to Verbal, Performance and Full Scale IQ as well as to Vocabulary, Block Design, Similarities and Matrix subscales of the WASI. We also correlated PROFOKS score with age and Axis V Global Assessment of Functioning (GAF) score.

## RESULTS

PROFOKS scores varied from 0 to 13, with a mean score of 3.3 and a standard deviation of 3.3. 20

**PROFOKS****FUND OF KNOWLEDGE**

	Correct	Incorrect
1. Who is the president of the United States?	0	1
2. Can you name the last five presidents, starting with the current president?	0	1
3. Can you name five big cities in the United States?	0	1
4. What is the capitol of (state of residence)	0	1

*Fund of Knowledge Subtotal* \_\_\_\_\_

**SIMILARITIES**

	Complete	Remote	Incorrect
1. How is an apple like a banana?	0	1	2
2. How is an eye like an ear?	0	1	2
3. How is a telephone like a letter?	0	1	2

*Similarities Subtotal* \_\_\_\_\_

**PROVERBS** – Ask the subject, “What do people mean when they say...

	Complete	Remote	No Sense
1. “Don’t cry over spilled milk?” (or, “The horse is out of the barn?”)	0	1	2
2. “You can’t tell a book by its cover?” (or, “All that shines is not Gold?”)	0	1	2
3. “Don’t count your chickens before they hatch?” (or, “Look before you leap?”)	0	1	2

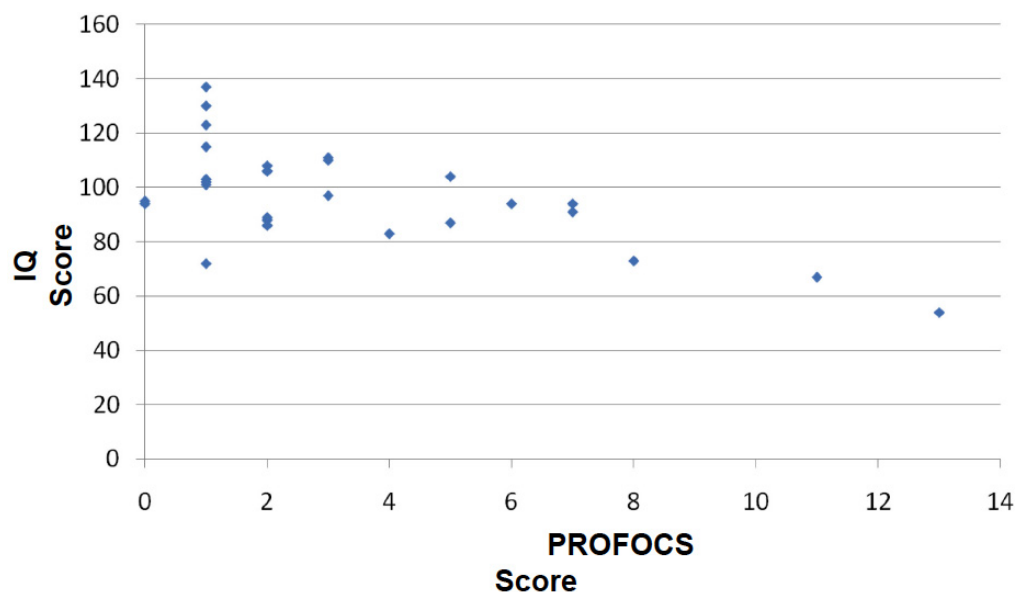
*Proverbs Subtotal* \_\_\_\_\_

**PROFOKS TOTAL SCORE** \_\_\_\_\_

**Figure 1:**

participants (69 %) achieved scores of three or below on PROFOKS. Two subjects (7%) scored greater than ten. The two subjects with scores greater than ten also scored less than 70 full scale IQ on the WASI. Figure 2 shows the relationship between PROFOKS and Full Scale IQ:

The PROFOKS score correlated with WAIS Verbal IQ, Performance IQ and Full Scale IQ. WAIS subscales including the Vocabulary, Block Design, Similarities and Matrix subscales also correlated strongly with PROFOKS. Age and Axis V were not related to performance on PROFOKS (Table 1). The correlation



**Figure 2:** Performance on the PROFOKS: WASI full Scale IQ by PROFOKS Score.

was stronger for Verbal than for performance IQ and stronger for the Vocabulary and Similarity subscales than for the Block Design and Matrix Subscales.

**Table 1: Correlation of PROFOKS to other Measures**

	Pearson Correlation Coefficient (r)	Sig
Verbal IQ	-0.694	0.000
Performance IQ	-0.492	0.007
Full Scale IQ	-0.653	0.000
Subscale Vocabulary	-0.760	0.000
Subscale Block Design	-0.431	0.019
Subscale Similarities	-0.666	0.000
Matrix	-0.478	0.010
Age	0.058	0.771
Axis V	-0.097	0.712

## DISCUSSION

This study utilized a small sample of forensic psychiatric patients. Within this sample, PROFOKS performance correlated with performance on WAIS Full scale IQ, Verbal and Performance IQ and WAIS subscales. A relatively high percentage (7%) of this small sample of participants had low IQ as measured by WASI, compared to the typical rate of intellectual disabilities in community samples of approximately 1% [34]. This result is not inconsistent with data suggesting higher rates of intellectual disabilities in forensic settings and a forensic psychiatric hospital may be expected to have an especially elevated proportion of patients with low IQ.

Malingering is an issue of interest in forensic settings; we did not specifically assess participants to determine this behavior. Neither PROFOKS nor WASI are effective tools for screening for malingering and neither is recommended for this purpose. One participant's diagnosis included a rule-out diagnosis of malingering. Malingering, if present, could have been expected to reduce overall scores and affect the consistency of responses among participants and thus could have reduced the concordance of WAIS and PROFOKS scores. The participant with a diagnosis of possible malingering did not perform poorly on either PROFOKS or WASI and no participants demonstrated inconsistent performance across the measures, thus suggesting that Malingering did not confound the study's results.

This study's demonstrable correlation between PROFOKS scores and WASI scales and subscale results, along with previous studies showing that PROFOKS performance correlates with intellectual disabilities in community and clinical samples, indicate that the PROFOKS instrument could prove to be useful in forensic settings. Because PROFOKS is quick and easy to administer, and does not require specialized psychological testing expertise, it could be a useful tool for forensic psychiatrists, either as a gross assessment of intellectual abilities or as a screening instrument to determine which patients would benefit from more intensive psychological testing. This instrument is not sufficient to supplant psychological testing for assessing intellectual ability, and it does not assess adaptive functioning. To further assess the correlation between PROFOKS and WASI, additional study with a larger sample size would be useful. Further study is necessary to determine if performance on PROFOKS can be useful for quantifying intellectual impairment beyond its utility as a screening tool.

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