

Relationship between Intellectual Ability and Malingering on the LMT, WMT, and CARB

Otto Pedraza^{1,2}, Dawn Bowers^{1,2}, Michael Marsiske¹, Eileen B. Fennell¹,
and Russell M. Bauer¹

¹Department of Clinical & Health Psychology and ²Cognitive Neuroscience Lab, McKnight Brain Institute
University of Florida, Gainesville, Florida



ABSTRACT

Though extensive recent research has broadened our understanding of malingering during neuropsychological assessments, the relationship between intelligence and malingered performance remains to be systematically investigated. Prior studies have either matched participants on intellectual ability to control for confounding effects, or focused on participants' ability to feign impairment on intelligence tests. The current study evaluated participants with varying levels of intellectual ability on multiple malingering measures. It was hypothesized that intelligence would be significantly associated with malingered performance, such that participants with lower intellectual ability would exhibit a more easily discernible pattern of feigned performance. Participants were administered the Wechsler Abbreviated Scale of Intelligence (WASI) and then randomly assigned to an analogue malingering ($n = 95$) or control ($n = 32$) condition. Dependent measures included the Letter Memory Test (LMT), Word Memory Test (WMT), and Computerized Assessment of Response Bias (CARB). Results did not reveal significant relationships between Full Scale IQ (FSIQ; range = 83-128) and LMT ($r = -.09$), WMT Immediate Recall ($r = -.04$) and Delayed Recall ($r = -.02$) trials, or CARB ($r = .09$) in analogue participants. To evaluate malingering scores at the extreme ends of the intellectual ability distribution, analogue participants within the upper ($n = 34$) and lower ($n = 32$) thirds of FSIQ scores, and control participants, were then compared. Across malingering measures, analogue participants differed from controls ($p < .05$) but not each other. Results suggest that intellectual ability is not associated with malingering performance.

INTRODUCTION

Research on malingering of cognitive deficits has grown considerably over the past fifteen years. Numerous studies have included measures of intellectual ability, such as the Wechsler Adult Intelligence Scale-Third Edition (WAIS-III), for one of two primary purposes: To evaluate patterns of feigned performance and develop indices to detect such performance, or to match participants on intellectual ability to minimize the possible confounding influence of intelligence on test performance (e.g., Coleman et al., 1998; Greiffenstein et al., 1996; Grote et al., 2000; Mensch & Woods, 1986; Mittenberg et al., 1995; Rapport et al., 1998). While these studies have been highly informative, the specific relationship between intelligence and malingering performance remains to be investigated. The goal of the current study was to investigate whether individuals with low vs. high intellectual ability demonstrate different patterns of performance on effort/malingering measures. It was hypothesized that intelligence would be significantly associated with malingered performance, such that participants with lower intellectual ability would exhibit a more easily discernible pattern of feigned performance.

METHOD

Study participants ($N = 127$) were administered the Wechsler Abbreviated Scale of Intelligence (WASI) and then randomly assigned to an analogue malingering ($n = 95$) or control ($n = 32$) condition. Analogue malingering participants were: (a) provided with an accident scenario and brief description of symptoms commonly experienced after brain injury, (b) informed that a brief quiz about brain injury would immediately follow the description, and (c) asked to feign believable cognitive impairment on all measures. All participants were administered the test battery listed in Tables 3 and 4.

RESULTS

Table 1. Continuous demographic variables.

Variable	Malingering			Control			Statistic	p
	n	M	SD	n	M	SD		
Age	95	27.22	10.79	32	24.03	7.58	1282.00 ^a	.18
Education	95	15.22	1.77	32	15.13	1.74	.27 ^b	.79
GPA ^c	65	3.45	0.45	24	3.43	0.51	.20 ^b	.85
Employment (Years) ^d	29	15.42	10.60	7	8.79	7.04	1.57 ^b	.13

^aMann-Whitney U.

^bt-test.

^cGPA = Grade-point average of participants currently enrolled in college courses.

^dYears of employment of participants not attending college.

Table 2. Categorical demographic variables.

Variable	Malingering	Control	χ^2	p
Sex (% Male)	31.6	28.1	.13	.71
Race/ethnicity			2.17	.83
Caucasian	69.5	75.0		
African American	4.2	6.3		
Hispanic	6.3	3.1		
Native American	1.1	0		
Asian American	17.9	12.5		
Other	1.1	3.1		
TBI History ^a (%Yes)	14.7	15.6	.02	.90
Psychiatric History (%Yes)	12.8	12.9	.00	.98
Drug Use History ^b (%Yes)	8.4	6.3	.16	.69
Weekly Alcohol Use			4.70	.20
None	50.0	31.3		
1 to 3 drinks	40.4	50.0		
4 to 6 drinks	6.4	15.6		
7 or more drinks	3.2	3.1		

Note. Values represent percent within each group.

^aTBI = Traumatic brain injury.

^bExcludes alcohol, tobacco, or prescribed medications.

Table 3. Performance on clinical measures (scores are T-scores except where indicated).

Variable ^a	Malingering		Control		t	p
	M	SD	M	SD		
Stroop Trial 1	23.64	14.83	48.59	9.91	-8.87	.00
Stroop Trial 2	26.63	14.86	52.00	6.97	-9.30	.00
Stroop Trial 3	29.37	15.16	58.53	10.09	-10.14	.00
Stroop Interference	51.49	7.64	57.60	9.82	-3.64	.00
Trails A	28.58 ^b	15.57	54.34	7.59	-8.98	.00
Trails B	32.28 ^b	13.71	56.38	7.25	-9.48	.00
WAIS-III Digit Span (SS)	5.81	2.91	11.06	2.51	-9.11	.00
CVLT-II Trials 1-5	38.72	12.30	58.22	9.51	-8.18	.00
CVLT-II SDFR (Std. Score)	-1.37	1.33	.16	1.39	-5.57	.00
CVLT-II SDCR (Std. Score)	-1.41	1.37	.03	1.28	-5.21	.00
CVLT-II LDFR (Std. Score)	-1.75	1.41	.27	1.02	-7.43	.00
CVLT-II LDCR (Std. Score)	-1.76	1.59	.05	1.09	-5.97	.00
CVLT-II Hits (Std. Score)	-2.23	1.96	-.36	.76	-5.26	.00
CVLT-II F. Positives (Std. Score)	1.70	1.77	-.05	.74	5.42	.00
Controlled Oral Word Association	46.17	10.63	55.40	10.13	-4.30	.00
Boston Naming Test	32.54	17.25	38.19	11.41	-1.73	.09

^aWAIS = Wechsler Adult Intelligence Scale; SS = Scaled Score; CVLT = California Verbal Learning Test; Std. Score = Standard Score; SDFR = Short-Delay Free Recall; SDCR = Short-Delay Cued Recall; LDFR = Long-Delay Free Recall; LDCR = Long-Delay Cued Recall; F. Positives = False Positive errors.

^b $n = 93$.

RESULTS (cont.)

Table 4. Performance on malingering measures.

Variable ^a	Malingering		Control		Statistic	p
	M	SD	M	SD		
Letter Memory Test	57.15	22.61	99.59	1.04	84.00 ^b	.00
Word Memory Test – IR	65.24	17.39	98.20	3.77	98.50 ^b	.00
Word Memory Test – DR	61.63	17.64	98.28	3.67	41.50 ^b	.00
CARB	61.50	20.90	99.53	1.07	62.00 ^b	.00

^aIR = Immediate Recall trial; DR = Delayed Recall trial; CARB = Computerized Assessment of Response Bias.

^bMann-Whitney U.

Intellectual Functioning and Malingering:

There was no significant difference in intellectual functioning between participants assigned to an analogue malingering or control condition (Table 5). Among analogue malingering participants, there was no significant relationship between Full Scale IQ (FSIQ) and performance on the LMT ($r = -.09$), WMT Immediate Recall ($r = -.04$) and Delayed Recall ($r = -.02$) trials, or CARB ($r = .09$).

Table 5. Performance on the Wechsler Abbreviated Scale of Intelligence.

Variable	Malingering		Control		t	p
	M	SD	M	SD		
VIQ	109.02	10.52	110.47	11.66	-.66	.51
PIQ	109.01	10.59	112.78	10.55	-1.74	.08
FSIQ	110.31	10.20	113.09	10.89	-1.32	.19

VIQ = Verbal IQ; PIQ = Performance IQ; FSIQ = Full-Scale IQ.

To evaluate malingering scores at the extreme ends of the intellectual ability distribution, analogue participants within the upper ($n = 34$) and lower ($n = 32$) thirds of FSIQ scores, and control participants, were then compared. Across malingering measures, analogue participants differed from controls ($p < .05$) but not each other (Table 6).

Table 6. Performance of malingering participants with low and high Full Scale IQ.

Variable ^a	Low FSIQ ($n=32$)		High FSIQ ($n=34$)		t	p
	M	SD	M	SD		
Letter Memory Test	56.94	25.67	54.18	19.72	.49	.62
Word Memory Test – IR	65.44	20.10	66.10	14.57	-.16	.88
Word Memory Test – DR	61.91	21.13	61.32	16.37	.13	.90
CARB	59.08	23.43	65.13	17.50	-1.21	.23

^aCARB = Computerized Assessment of Response Bias.

CONCLUSION

Analogue malingering and control participants were matched on demographic variables and demonstrated comparable intellectual ability. Analogue malingerers obtained significantly lower scores than controls on clinical and effort measures, as expected. The primary hypothesis suggesting a relationship between intellectual ability and performance on effort/malingering measures was not supported. Analogue participants with low or high IQ were not statistically different in their performance on the LMT, WMT, and CARB.