

2023-08-24

A pilot examination of the validity of stylus and finger drawing on visuomotor-mediated tests on ACEmobile

Noad, R

<https://pearl.plymouth.ac.uk/handle/10026.1/21673>

10.1080/13803395.2023.2249167

Journal of Clinical and Experimental Neuropsychology

Taylor and Francis Group

All content in PEARL is protected by copyright law. Author manuscripts are made available in accordance with publisher policies. Please cite only the published version using the details provided on the item record or document. In the absence of an open licence (e.g. Creative Commons), permissions for further reuse of content should be sought from the publisher or author.

Table 1: Demographics Information of the AD and Control Groups

	Control (n = 23)	AD (n = 26)	Test Statistic
Age (y) – n, mean (SD) [min, max]	22, 71.7 (5.9) [60.9, 80.7]	26, 76.3 (6.7) [62.2, 89.1]	2.49 (p=0.016)
Gender, male	12 (52.0)	18 (69.2)	1.50 (p=0.22)
Dominant hand, right	21 (95.5)	18 (85.7)	1.21 (p=0.27)
Tablet experience – n, median (IQR) [min, max]	23, 3 (1, 8) [1, 10]	26, 1 (1, 4) [1, 10]	0.92 (p=0.36)
Degree, yes	7 (30.4)	11 (42.3)	0.74 (p=0.39)
ACE-III total score – n, median (IQR) [min, max]	23, 96 (91, 98) [79, 100]	26, 73.5 (59, 80) [37, 90]	5.56 (p<0.001)
Estimated FSIQ – n, mean (SD), [min, max]	23, 109.5 (10.75), [83.4, 122.5]	26, 110.3 (9.4), [88.3, 122.5]	0.28 (p=0.78)

Age, FSIQ – t-test

Gender, dominant hand, degree – chi-squared

Tablet experience, ACE-III total – Mann Whitney U

Table 2**Statistical Comparison between Methods of Test Administration**

	Mean	Median	SD	<i>r</i> (<i>p</i>)	Z	<i>p</i>
Pencil vs Stylus (n=39)						
Pencil	8.07	8	1.8	0.62	-0.96	0.34
Stylus	7.67	9	2.8	(<0.001)		
Pencil vs Finger (n=44)						
Pencil	8.14	8	1.84	0.55	-2.02	0.044
Finger	7.50	8	2.32	(<0.001)		

SD = standard deviation, *r* = correlation coefficient, Z = Wilcoxon signed rank test

Table 3**Performance of the stylus and finger against pencil - n (%)**

Test	Method	Matched Scores	Pencil performed worse	Pencil performed better
Infinity loop	Stylus (n = 40)	34 (85.0)	3 (7.5)	3 (7.5)
	Finger (n = 47)	38 (80.9)	3 (6.4)	6 (12.8)
Cube	Stylus (n = 40)	26 (65.0)	6 (15.0)	8 (20.0)
	Finger (n = 47)	31 (66.0)	4 (8.5)	12 (25.5)
Clock	Stylus (n = 40)	24 (60.0)	4 (10.0)	12 (30.0)
	Finger (n = 45)	26 (57.8)	5 (11.1)	14 (31.1)
Sentence writing	Stylus (n = 40)	21 (52.5)	10 (25.0)	9 (22.5)
	Finger (n = 45)	16 (35.6)	12 (26.7)	17 (37.8)