

Appendix I

Comparison of the major features of 10 cognitive ability tests

	Cognitive ability test									
	Stanford- Binet Intelligence Scale, Fifth Edition (SBIS-V)	Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV)	Wechsler Adult Intelligence Scale, Fourth Edition (WAIS-IV)	Cognitive Assessment System (CAS)	Comprehensive Test of Nonverbal Intelligence, Second Edition (CTONI-2)	The Test of Nonverbal Intelligence, Fourth Edition (TONI-4)	Universal Nonverbal Intelligence Test (UNIT)	Cognitive Abilities Test, Form 6 (CogAT)	Naglieri Nonverbal Reasoning Test-Second Edition (NNAT2)	Raven's Advanced Progressive Matrices (APM)
Purpose	To assess fluid reasoning, knowledge, quantitative reasoning, visual-spatial processing, working memory	To assess working memory, perceptual reasoning, and processing speed	To assess verbal comprehension, perceptual organisation, working memory, and processing speed	To assess planning, attention, simultaneous and successive cognitive processes.	To assess analogical reasoning, categorical classification and sequential reasoning	To assess intelligence, aptitude, abstract reasoning, and problem solving	To assess general intelligence, measured nonverbally	To assess figure analysis, equation building, and quantitative relationships	To assess pattern completion, reasoning by analogy, serial reasoning and spatial visualization	To assess high-level observation skills, clear thinking ability, and intellectual capacity
Publication date	2003	2003	2008	1997	2009	2010	1998	2005	2007	1998
Features										
Details of the norm	<ul style="list-style-type: none"> Standardised on a US representative sample of 4,800 individuals (ages 2-0 to 85+) Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a US representative sample of 2,200 children (ages 6-0 to 16-11) Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a US representative sample of 2,200 individuals (ages 16 to 90) Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a US representative sample of 2,200 children and adolescents (ages 5-0 to 17-11) Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a US representative sample of 2,827 individuals (ages 6-0 to 89-11) Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a US representative sample of 2,272 individuals (ages 6-0 to 89-11) Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a US representative sample of 2,100 children and adolescents (ages 5-0 to 17-11) Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a representative sample of >180,000 students in the US Mean = 100, SD = 16 	<ul style="list-style-type: none"> Standardised on a representative sample of 57,000 students in the US Mean = 100, SD = 15 	<ul style="list-style-type: none"> Standardised on a sample of 929 individuals Mean = 100, SD = 15
Availability of HK Norm?	No	Yes	No	No	No	No	No	No	No	No
A culture-reduced test?	No	No	No	No	Yes	Yes	Yes	No	Yes	Yes
Availability of Chinese version?	No	Yes	No	No	No	Yes	No	No	No	No
Age/grade range	2 – 90+	6 – 16	16 - 90	5 – 17 Based on 2 levels	6 – 90	6 – 90 Based on 2 levels	5 – 17	K–12 grade Based on 8 levels	K -12th grade Based on 7 levels	11+
Reliability and validity for the full scale										
Average reliability coefficients	.98	.97	.97 – .98	.96	.95	.96	.78 – .89	.90	.80 – .83	.85
Validity	Concurrent validity – correlations with full scale scores of Wechsler scales (e.g., WICS-III, WAIS-III) ranging from .82 to .84	Convergent validity – correlations with general intelligence measures from other Wechsler scales ranging from .86 to .89	Convergent validity – correlations with tests that measure similar constructs were in the .80 range	Predictive validity for academic achievement – correlations with the Woodcock-Johnson Revised Tests of Achievement clusters was .73	Construct validity – correlations with scores on other intelligence tests ranged from .60 to .90	Construct validity – correlations with CTONI-2 full scale and TONI-3 were .79 and .74 respectively	Concurrent validity – correlations with scores on other intelligence tests were in the .80s range	Concurrent validity – correlations with WISC-III and the Woodcock- Johnson General Intellectual Ability score were .90 and .68 respectively	Predictive validity– median correlations with SAT-9 was .61	Convergent validity – correlations with SAT and Watson- Glaser Critical Thinking Appraisal were .48 and .54 respectively

Comparison of the major features of 10 cognitive ability tests (cont'd)

	Cognitive ability test									
	SBIS-V	WISC-IV	WAIS-IV	CAS	CTONI-2	TONI-4	UNIT	CogAT	NNAT2	APM
Administration details										
Administration	<ul style="list-style-type: none"> Individually administered by trained psychologists / professionals Scored by hand or specific software 	<ul style="list-style-type: none"> Individually administered by trained psychologists / professionals Scored by hand or specific software 	<ul style="list-style-type: none"> Individually administered by trained psychologists / professionals Scored by hand or specific software 	<ul style="list-style-type: none"> Individually administered Scored by hand or specific software 	<ul style="list-style-type: none"> Individually administered Hand scored 	<ul style="list-style-type: none"> Individually administered Hand scored 	<ul style="list-style-type: none"> Individually administered Score by hand or specific software 	<ul style="list-style-type: none"> Individually or group administered Hand scored 	<ul style="list-style-type: none"> Individually or group administered Online administration with computerized scoring system within 24 hours 	<ul style="list-style-type: none"> Individually or group administered Online administration with computerized scoring system
Time required to administer	60 minutes	60-90 minutes	60-90 minutes	40-60 minutes	60 minutes	20 minutes	90 minutes	30 minutes (kindergarten) to 60 minutes (higher levels)	30 minutes	42 minutes
Cost (USD)	SB5 Complete Kit with 25 test records: \$1,087	WISC-IV Basic Kit with 25 test records: \$1,035	WAIS-IV Basic Kit with 25 test records: \$1,120	CAS Kit with 5 response book in each level: \$835	CTONI-2 Kit with 25 test records: \$457	TONI-4 Complete Kit with 50 test records in both level: \$376	UNIT Complete Test Kit with 25 test records: \$657	Reusable Test Booklets (package of 25): \$124.44 per level	\$9.95 per administration	\$22 per administration

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