

학습 장애아 진단 도구로 기초 학습 기능 검사의 유용성에 관한 연구

A USEFULNESS OF KEDI-INDIVIDUAL BASIC LEARNING SKILLS TEST AS A DIAGNOSTIC TOOL OF LEARNING DISORDERS

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요 약 :

(VLD : Verbal Learning Disorder) 34 , (NVLD : Nonverbal Learning Disorder) 14 48
Dysthymia 11 , 20
VLD , NVLD
VLD , VLD

서 론

(Hammill, 1990).
1962 Kirk가 (Learning difficulty)
(Clement 1966), Strauss
가 가
. Kirt DSM - IV(1994)
, 1988 NJCLD(The 가
National Joint Committee on Learning Disabilities)

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가 2 가

가 가

가 가 가

가 가 가

(가)

가 WRAT - 3

가 가

가 , Peabody Individual Achievement Test - Revised, Woodcock - Johnson Psycho-educational Battery - Revised : Test of Achievement, The Basic Achievement Skills Individual Screener, Kaufman Test of Educational Achievement

가 Key - math Diagnostic Arithmetic Test, Boder Test of Reading - Spelling Patterns

(Lezak 1995). 가

가 (Humphreys 1971). (1989) 가

(screening test)

(wide - range

test)

가

가 peaked test

가
가

.가

(phonological coding)

가

(Phoneme segmentation)
etc 1990).

(Van Ordon

2

가

가

가

DSM - IV(1994)

가 가

Dysthymia

가

(Rourke 1975). Rourke(1975, 1982)

1. 1

가 가

Rourke(1994)
(VLD)

(NVLD)

2.

가 가
가

3.

가

연구대상과 방법

가

1. 연구대상

1995 1 1 1996 12

Pennington(1991)

48 , Dysthymia
 11 , 20 79 (64 ,
 15)
 가
 (KEDI - WISC)
 ()
 6 12 1
 6 . KEDI - WISC
 (IQ 80)
 101.12(±
 14.11) IQ 80 101 .
 100.82(± 14.28), 93.07
 (± 4.95), Dysthymia 103.45(± 10.88),
 105.53(± 13.27) 4
 (F = 2.27).
 Table
 1 가
 2. 도 구
 1) KEDI-WISC(Korean Educational Development In-
 stitute-Wechsler Intelligence Scale for Children)
 가 KEDI - WISC
 6 6
 5 15 가
 , , 11
 가
 . 5 15 가
 .95, .85 , -
 .69 (, 1987).
 2) 기초 학습기능 검사(KEDI-Individual Basic Learning
 Skills Test : KEDI-IBLST)
 1 6 가 가
 , 5
 (information processing) ,
 (reading

Table 1. Demographic characteristics of subjects

	VLD	NVLD	Dysthymia	Normal
N	34	14	11	20
Sex				
Male	32	11	8	13
Female	2	3	3	7
Age(years) Mean(SD)	10.09(2.35)	9.57(2.10)	10.54(2.30)	10.20(1.58)

recognition)
 (word comprehension)
 (mathematics)
 (spelling recognition)
 .99
 .63
 (, 1987).

3. 자료분석

T -
 SPSS

ANOVA

Bonferroni

가

, KEDI - WISC

KEDI - WISC

Varimax Rotation

결 과

Table 2

VLD
 (F = 3.54, p<.05)
 NVLD
 (F = 3.58, p<.05) (F =

4.11, $p < .01$)

($F = 5.51, p < .01$), ($F = 4.93, p < .01$)
 ($F = 5.82, p < .01$)

VLD KEDI - WISC
 NVLD KEDI - WISC (F = 5.34, $p < .01$)
 Fig. 1 Table 3
 VLD 1 2, 3 79.80%,
 VLD 14.86%, 5.34%
 (F = 3.62, $p < .05$) Table 4 1
 NVLD VLD ()
 (F = 15.75, $p < .01$)
 (F = 13.5, $p < .01$) 2
 4 Fig. 2 3
 4 가 Table 5

Table 2. Means and difference scores in VLD, NVLD, Dysthymia, Normal Group

	VLD	NVLD	Dysthymia	Normal	F	post hoc com.
KEDI-WISC						
information	9.50 (2.00)	12.29 (3.87)	9.73 (2.87)	10.40 (2.48)	3.73*	2>1
comprehension	9.37 (2.43)	8.82 (1.89)	10.00 (2.05)	10.25 (2.54)	1.02	
arithmetic	8.96 (2.46)	8.57 (2.93)	10.27 (2.28)	10.45 (2.58)	2.33	
similarity	10.50 (2.47)	11.50 (2.50)	10.60 (2.80)	10.95 (2.53)	.54	
vocabulary	9.18 (2.43)	11.64 (3.69)	10.40 (2.12)	10.95 (2.34)	3.53*	2>1
digit span	7.42 (2.29)	8.36 (3.84)	8.55 (2.62)	10.42 (2.23)	3.54*	4>1
coding	9.72 (3.48)	8.00 (3.35)	10.27 (2.90)	12.10 (3.71)	4.11**	4>2
picture completion	10.16 (3.16)	7.21 (2.83)	10.55 (2.25)	10.40 (2.06)	4.93**	1,4,3>2
block design	11.24 (2.62)	7.64 (4.65)	11.91 (2.70)	11.35 (2.94)	5.51**	1,3,4>2
picture arrangement	10.78 (3.06)	7.57 (1.99)	10.27 (2.20)	10.50 (2.26)	5.34**	1,4>2
object assembly	10.86 (2.68)	6.80 (2.25)	11.00 (3.25)	10.38 (2.94)	5.82**	4,1,3>2
KEDI-PIQ	98.88 (25.20)	84.00 (15.59)	104.82 (11.4)	104.70 (14.73)	3.58*	4>2
KEDI-VIQ	95.28 (13.96)	103.79 (15.60)	100.82 (10.93)	104.75 (11.15)	2.61	
KEDI-TIQ	100.59 (14.28)	93.07 (4.95)	103.45 (10.88)	105.53 (13.27)	2.27	
KEDI-Individual Basic Learning Skills Test (KEDI-HBLST)						
information processing	58.72 (35.3)	42.29 (33.6)	69.50 (42.1)	62.01 (28.4)	.74	
reading recognition	16.8 (11.8)	37.3 (23.3)	41.1 (24.9)	54.4 (24.9)	15.75**	4,3,2>1
reading comprehension	35.20 (24.2)	50.57 (34.9)	56.80 (28.0)	60.31 (26.2)	2.16	
mathematics	42.64 (32.0)	50.48 (36.2)	54.30 (30.7)	71.05 (23.7)	3.62*	4>1
spelling recognition	19.10 (18.1)	51.12 (37.1)	56.91 (29.6)	64.21 (26.7)	13.5**	4,3,2>1

3

Table 6

64.56% 가가 VLD
(43%)

KEDI - WISC VLD 61.8%
NVLD 71.4%, Dysthymia 72.7%,
60.0%

KEDI - WISC

가 Table 7

2가 (p<.001, p<.05), 1

53.99%, 2 40.03%, 3 5.98%

Table 8

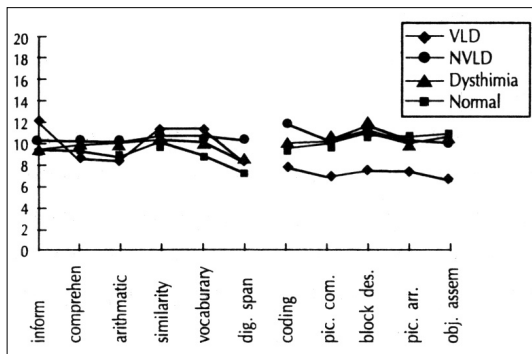


Fig. 1. Profile of KEDI-WISC.

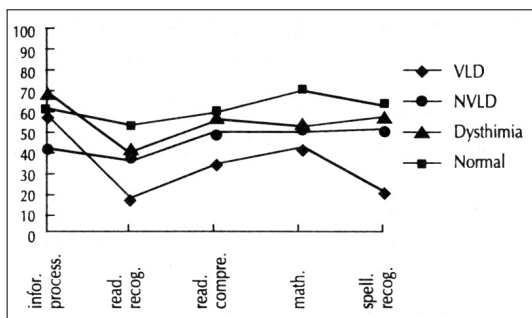


Fig. 2. Profile of KEDI-Individual Basic Learning Skills Test.

Table 3. Canonical Discriminant Functions-KEDI-WISC

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	Wilks' Lambda	²	df	Sig
1*	2.9357	79.80	79.80	.8637	.137303	85.379	42	.0001
2*	.5466	14.86	94.66	.5945	.540382	26.466	26	.4378
3*	.1966	5.34	100.00	.4053	.835730	7.716	12	.8069

*Marks the 3 canonical discriminant functions remaining in the analysis

1

2

3

Table 9

Table 10

73.42% KEDI - WISC

(64.56%) VLD

82.4%, NVLD 78.6%, Dysthymia

45.5%, 70.0%
, KEDI - WISC

KEDI - WISC

NVLD

VLD

가

가

가

Table 11

4

1 37.6%

2 16.1%

5.9%

3 9.9%

논 의

Table 4. Pooled within-groups correlations between discriminating variables and canonical discriminant functions(KEDI-WISC)

	Func 1	Func 2	Func 3
KEDI-PIQ	-.42113*	.34520	.15795
KEDI-object assembly	-.37336*	.29160	-.02702
KEDI-picture arrangement	-.31985*	.20338	-.00546
KEDI-information	.31691*	.15096	.10552
KEDI-block design	-.22634*	.19984	-.08937
KEDI-picture completion	-.22519*	.22496	-.15574
KEDI-similarity	.18321*	.15127	.05338
KEDI-arithmetic	-.04069	.46102*	-.11641
KEDI-VIQ	.16934	.45161*	.04926
KEDI-TIQ	.04926	.45068*	.07665
KEDI-digit span	.17181	.44996*	.13636
KEDI-comprehension	-.10651	.43644*	.04339
KEDI-vocabulary	.29247	.38468*	.05965
KEDI-coding	-.20391	.29966	.39797*

*denotes largest absolute correlation between each variable and any discriminant function

Table 5. Canonical discriminant functions evaluated at group means(group centroid) : KEDI-WISC

Group	Func 1	Func 2	Func 3
1	-1.05873	-.52075	.12703
2	3.17924	-.21159	.03164
3	-.52505	.52378	-.95135
4	-.40552	1.45959	.49500

Table 7. Canonical Discriminant Functions(KEDI-WISC and KEDI-IBLST)

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	Wilks' Lambda	Chi-square	df	Sig
1*	4.6855	53.99	53.99	.9078	0 .025876	100.497	57	.0003
2*	3.4741	40.03	94.02	.8812	1 .147115	52.705	36	.0357
3*	.5193	5.98	100.00	.5846	2 .658202	11.502	17	.8293

*Marks the 3 canonical discriminant functions remaining in the analysis.

가
가
가가
NVLD
NVLD
(Denkla 1983, Semrud - Clikeman & Hynd 1990).
가

Table 6. Classification results-(KEDI-WISC)

Actual Group	Cases	No. of Predicted group membership			
		1	2	3	4
VLD	34	21 61.8%	0 .0%	9 26.5%	4 11.8%
NVLD	14	0 .0%	10 71.4%	4 28.6%	0 .0%
Dysthymia	11	3 27.3%	0 .0%	8 72.7%	0 .0%
Normal	20	3 15.0%	1 5.0%	4 20.0%	12 60.0%

Percent of "grouped" cases correctly classified : 64.56%

Table 8. Pooled within-groups correlations between discriminating variables and canonical discriminant functions(KEDI-WISC and KEDI-IBLST)

	Func 1	Func 2	Func 3
spelling recognition	.34573*	.04815	.24915
KEDI-vocabulary	.20555*	-.18472	.05825
KEDI-digit span	.19035*	-.07990	-.04034
reading recognition	.18385*	.06824	.07461
KEDI-VIQ	.15953*	-.01701	.06139
KEDI-object assem.	-.07691	.43410*	.08826
KEDI-PIQ	-.08617	.42842*	-.01771
KEDI-pic. arrange.	-.05954	.31074*	.02453
KEDI-coding	-.02883	.26345*	-.08882
KEDI-TIQ	.03841	.24327*	.06315
KEDI-information	.17806	-.21416*	.09296
KEDI-pic. comple.	-.00705	.21161*	.11710
KEDI-block design	-.04034	.20835*	.06345
KEDI-comprehension	.06080	.19782*	-.13865
KEDI-similarity	.06909	-.14948*	.07338
KEDI-arithmetic	.10701	.14261*	.13221
Information processing	.04047	.10359	.18192*
mathematics	.04714	.10014	.16776*
reading comprehension	.12555	.05514	.15418*

*denotes largest absolute correlation between each variable and anydiscriminant function

Table 9. Canonical discriminant functions evaluated at group means(group centroids) (KEDI-WISC and KEDI-IBLST)

Group	Func 1	Func 2	Func 3
VLD	- 1.86251	.46477	-.07810
NVLD	1.28761	- 2.85274	.04332
dysthymia	2.13128	2.02826	2.15540
normal	3.30713	2.11373	-.87657

Table 10. Classification results-(KEDI-WISC and KEDI-IBLST)

Actual Group	Cases	No. of Predicted group membership			
		VLD	NVLD	Dysthymia	Normal
VLD	34	28 82.4%	0 .0%	3 8.8%	3 8.8%
NVLD	14	0 .0%	11 78.6	3 21.4%	0 .0%
Dysthymia	11	2 18.2%	0 .0%	5 45.5%	4 36.4%
Normal	20	4 20.0%	0 .0%	2 10.0%	14 70.0%

Percent of "grouped" cases correctly classified : 73.42%

(Kinsbourne 1991),

(Lawson

& Inglis 1989)

VLD KEDI - WISC

VLD

NVLD

VLD

KEDI - WISC

VLD

NVLD

Rouke(1995)

NVLD

VLD 가

(Pennington 1991).

가

가

가

가

NVLD

VLD

가

VLD

가 가

(Siegel 1989),

가

가

VLD

(pseudoword)

가

Table 11. Rotated Factor Matrix :

	Factor 1	Factor 2	Factor 3	Factor 4
KEDI-Individual Basic Learning Skills Test				
Mathematics	.23065	.26387	.75373*	.14447
Information Processing	.23600	.52288*	.53384*	.06901
Reading Recognition	.08530	.08788	.84377*	.13087
Reading Comprehension	.39348	.20035	.63000*	.06100
Spelling Recognition	.21853	-.09813	.79990*	-.02837
KEDI				
KEDI-information	.82307*	.03786	.29250	-.14796
KEDI-arithmetic	.55833*	.43343*	.22835	.09540
KEDI-comprehension	.27345	.74995*	-.00959	-.05356
KEDI-similarity	.87131*	.06321	.03317	.00075
KEDI-digit span	.62852*	.06433	.35402	-.21689
KEDI-vocabulary	.87800*	.04649	.18756	-.03690
KEDI-VIQ	.77707*	.30450	.25713	.18443
KEDI-coding	-.06751	-.07638	.10588	.83828*
KEDI-block design	.17073	.77246*	.14603	.11971
KEDI-pic. arrangement	-.03862	.59348*	.33656	.42128*
KEDI-pic. completion	.03921	.79713*	.06641	-.12229
KEDI-object assembly	-.06403	.59202*	.00143	.57160*
KEDI-PIQ	.08485	.66884*	.25315	.59648*
KEDI-TIQ	.53392*	.49591*	-.03546	.37742
Eigenvalue	7.15	3.05	1.88	1.13
Pct of Var	37.6	16.1	9.9	5.9

*Factor Loading > .40

VLD KEDI - WISC 가

VLD , 가

(Pennington, 1991) , VLD ,

NVLD KEDI - WISC 가

4가 , 1 가

2 가

3 가

4 가

가 VLD
가
가
(pseudo - word reading) 가 가
(Siegel 1989),
가
가
가

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A USEFULNESS OF KEDI-INDIVIDUAL BASIC LEARNING SKILLS TEST AS A DIAGNOSTIC TOOL OF LEARNING DISORDERS

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The purpose of this study was to examine usefulness of KEDI-Individual Basic Learning Skills Test as a diagnostic tool of learning disorders(LD). Learning disorder group consisted of two subgroups, verbal learning disorder group(VLD, n = 34) and nonverbal learning disorder group(NVLD, n = 14). Comparison group consisted of Dysthymia Disorder subgroup(n = 11) and Normal subgroup(n = 20). Performance of intelligence test and achievement test was examined in all 4 subgroups. In KEDI-WISC, VLD subgroup revealed primary problems in vocabulary, information and verbal-auditory attention test. NVLD group revealed primary problems in almost all performance tests such as visual acuity, psycho-motor coordination speed and visual-spatial organizations ability subtest. In KEDI-Individual Basic Learning Test, VLD group revealed primary problems in phonological coding process, word recognition and mathematics. For successful classification of LD children, the importance of achievement test and intelligence test was discussed by discriminant analysis and factor analysis. The results indicate that KEDI-Individual Basic Learning Skills is of considerable usefulness in diagnosing LD, but must be used in subtests, and additional tests must be conducted for thorough exploration of LD.

KEY WORDS : KEDI-Individual Basic Learning Skills Test · Verbal learning disorder · Nonverbal learning disorder.