

주의력 결핍/과잉행동장애 아동의 실행 능력*

EXECUTIVE FUNCTIONS OF ATTENTION
DEFICIT/HYPERACTIVITY DISORDER

김 지 혜** · 홍 성 도**†

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요 약 :

방 법 : DSM - ADHD , 6 16
87 (77 , 10) , 19
(14 , 5) 1 : 1 WCST
, Heaton(1981) computer version WCST
(2 - way ANOVA) t - test

결 과 : ADHD Neurosis WCST , WCST

결 론 : ADHD , feedback 가
가 가

중심 단어 : / · WCST ·

서 론 ADHD) -
· ADHD

DSM - IV¹⁾ / (, ,

1998

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가
 ADHD
 coordination sequencing ²⁾
 span mental computation ³⁾
 planning anticipation ⁴⁾
 fluency confrontation communication ⁵⁾
 , internalization of self - directed speech ²⁾
⁶⁾ , self - regulation of emotional
 arousal ²⁾

feedback
 , ADHD
⁴⁾ ADHD WCST
 , ADHD
 , WCST가
 ,
 ,
 ,

(executive function)
 metacognition
 ADHD
⁷⁾

WCST ADHD
 ADHD
 ADHD
 가

(working memory) , (reconsti-
 tution), (planning) ⁷⁾
⁸⁾ orbital - prefrontal region
 가
 (prepotent response)
 dorsolateral prefrontal
 cortex가 ⁹⁾

연구대상 및 방법
 1. 연구대상
 1996 1998
 DSM -
 가 ADHD
 6 16
 87 (77 , 10)
 19 (14 , 5)

¹⁰⁾ Wisconsin Card Sorting Test(
 WCST)¹¹⁾
¹²⁾
 가 feedback
 가
¹³⁾ ADHD WCST
 ADHD

WCST
 , WCST
 10 12%
¹³⁾
 Levin¹⁴⁾
 feedback , , ,
 , 7 8 , 9 12 ,
 13 15
 , ADHD
 WCST

(t = - 1.69, n.s.),

Table 1

(KEDI - WISC) ADHD
(t = -.99, p>.05)
(F = 1.03, p>.05).

2. 연구 방법

1 : 1 WCST, Heaton(1981) computer version WCST (total number of trials), (total number of correct responses), (total number of perseverative responses), (perseverative errors), (trials to complete first category), (failure to maintain set), (number of

Table 1. Number of cases, age and intelligence of ADHD and Neurotics

| | ADHD | Neurotics | Mean of I.Q. (SD) |
|-------------------|----------------|----------------|-------------------|
| A. 7 8 years | n = 41 | n = 6 | 104.63(14.18) |
| B. 9 12 years | n = 36 | n = 9 | 101.11(10.64) |
| C. 13 15 years | n = 10 | n = 4 | 101.67(12.57) |
| Total | n = 87 | n = 19 | |
| Mean of AGE (SD) | 9.20 (2.25) | 10.16 (2.39) | |
| Mean of I.Q. (SD) | 102.10 (12.17) | 105.26 (14.39) | |

Table 2. WCST results of ADHD and Neurotics

| Test variables | ADHD | | Neurotics | | t |
|-----------------------------------|--------|-------|-----------|-------|---------|
| | M | SD | M | SD | |
| Total number of trials | 121.96 | 13.73 | 115.78 | 19.43 | 1.18 |
| Total n. of correct responses | 68.95 | 17.56 | 78.58 | 10.81 | - 2.29* |
| Total number of errors | 52.00 | 22.98 | 36.42 | 15.46 | 2.81** |
| Perseverative responses | 29.99 | 19.77 | 22.74 | 13.16 | 1.52 |
| Perseverative errors | 25.97 | 15.41 | 19.79 | 10.78 | 1.66 |
| Nonperseverative errors | 25.77 | 15.63 | 16.63 | 7.00 | 2.48* |
| Conceptual level responses | 54.90 | 23.08 | 68.79 | 13.86 | - 2.52* |
| Categories completed | 3.55 | 1.90 | 4.63 | 1.67 | - 2.29* |
| Trials to complete 1st categories | 27.43 | 29.72 | 16.89 | 7.42 | 1.53 |
| Failure to maintain set | 1.51 | 1.85 | 1.79 | 1.51 | - 0.62 |
| Learning to learn | - 6.57 | 10.54 | - 2.06 | 4.37 | - 1.67 |

categories completed)

(2 - way ANOVA) t -

test

연구 결과

1. ADHD

(t₁₀₄ = - 2.9, p<.05),
(t₁₀₄ = 2.48, p<.05),
p<.05),

WCST

Table 2

(t₁₀₄ = 2.81, p<.01),
(t₁₀₄ = - 2.52,
(t₁₀₄ = - 2.29, p<.05)

2. WCST

(F_{2,60} = 9.40, p<.001), (F_{2,103} = 7.85, p<.001),
(F_{2,103} = 5.64, p<.01), (F_{2,103} =
5.98, p<.01), (F_{2,103} = 3.28, p<.05),
(F_{2,103} = 7.93, p<.001),
(F_{2,103} = 4.80, p<.05)
(Table 3).

Fig. 1

3. ADHD Neurosis

가 ADHD

Table 3. WCST results of Age group

| Test variables | 7 - 8 years | | 9 - 12 years | | 13 - 15 years | | F | Post hoc |
|-----------------------------------|-------------|-------|--------------|-------|---------------|-------|---------|--------------|
| | M | SD | M | SD | M | SD | | |
| Total administered | 125.74 | 7.70 | 121.71 | 14.59 | 103.13 | 20.14 | 9.40*** | A > C, B > C |
| Total correct | 68.04 | 18.88 | 73.40 | 16.44 | 70.79 | 16.92 | 1.15 | |
| Total errors | 56.62 | 20.68 | 46.89 | 21.63 | 31.79 | 21.78 | 7.85*** | A > C |
| Perseverative responses | 34.91 | 21.37 | 25.24 | 14.94 | 18.86 | 15.24 | 5.64** | A > B, A > C |
| Perseverative errors | 29.81 | 16.26 | 22.24 | 12.03 | 16.64 | 12.92 | 5.98** | A > B, A > C |
| Nonperseverative errors | 26.47 | 14.52 | 24.49 | 15.66 | 15.14 | 10.12 | 3.28* | A > C |
| Conceptual level responses | 51.87 | 23.10 | 61.51 | 22.62 | 61.64 | 14.25 | 2.68 | |
| Categories completed | 3.06 | 1.76 | 4.04 | 1.86 | 5.07 | 1.59 | 7.93*** | A < B, A < C |
| Trials to complete 1st categories | 34.00 | 33.79 | 20.67 | 20.91 | 12.79 | 4.08 | 4.80* | A > B, A > C |
| Failure to maintain set | 1.46 | 1.56 | 1.82 | 2.14 | 1.00 | 1.79 | 1.23 | |
| Learning to learn | - 5.69 | 10.45 | - 5.55 | 9.67 | - 6.23 | 9.24 | 0.02 | |

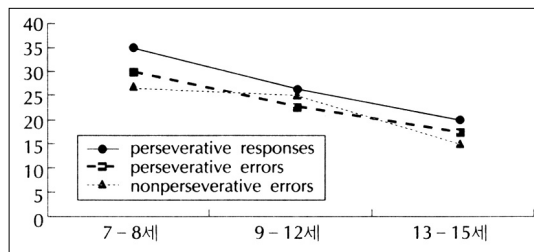


Fig. 1. WCST comparisons of Age group.

($F_{2,57} = 3.66, p < .05$).

논 의

ADHD

WCST

ADHD

WCST

($t_{104} = -2.9, p < .05$),

($t_{104} = 2.81, p < .01$),

($t_{104} = 2.48,$

, behavioral inflexibility

$p < .05$), ($t_{104} = -2.52, p < .05$),

($t_{104} = -2.29, p < .05$)

5)

ADHD

WCST

가

가

가

WCST

($F_{2,60} = 9.40, p < .001$), ($F_{2,103} = 7.85, p < .001$),
 ($F_{2,103} = 5.64, p < .01$), ($F_{2,103} =$
 5.98, $p < .01$), ($F_{2,103} = 3.28, p < .05$),
 ($F_{2,103} = 7.93, p < .001$),
 ($F_{2,103} = 4.80, p < .05$) ,

7
 , 7 8 9 12 , 13 15
 ,
 가 , 14)
 . 9 12 , 13 15 가
 , Fig. 1
 가 ,
 ADHD
 ,
 가 ADHD
 ,
 가 ADHD

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Objective : This study was designed to investigate the difference between executive function of Attention Deficit/Hyperactivity Disorder (ADHD) group and that of neurotics, and to investigate the developmental aspects of ADHD group's executive function.

Method : Executive function between ADHD (N = 87) and Neurotics (N = 19) was evaluated through their performance on the Wisconsin Card Sorting Test. The results were analyzed by 2-way ANOVA and t-test.

Results : The results revealed group difference between ADHD and neurotics in total correct responses, total error responses, nonperseverative errors, number of categories completed, conceptual level responses. There was no significant difference between the performance of 8 -12 aged group and 13 -15 aged group. But 7 -8 aged group showed significantly poor performance than 8 -12 aged in total responses, total error responses, perseverative responses, perseverative error responses, nonperseverative error responses.

Conclusions : In comparison to the neurotics group, the children of ADHD group are suggested to be lacking the ability to correct their responses according to the external feedback and they probably respond randomly without self-control. However, as there is no difference between perseverative errors and perseverative responses, the interpretation of this finding warrants caution. It also suggests that the developmental aspects should be considered in the studies of executive functions because there are differences in the performance of executive functions by ages.

KEY WORDS : Attention deficit/hyperactivity disorder · WCST · Executive function.