

기억력과 정신질환

홍 경 수* · 연 병 길**†

Memory and Psychiatric Disorders

Kyung Sue Hong, M.D., Ph.D.,* Byeong Kil Yeon, M.D., Ph.D.**†

ABSTRACT

Disturbances in memory are the most common problem in patients with an organic mental syndrome. Other patients with significant psychiatric disorders also often have difficulty with memory. So it is very important in the clinical practice of psychiatry to understand the biological and neurocognitive mechanisms of memory processing, and to develop the assessment tools with which memory function can be evaluated reliably and validly. Moreover, memory researches provide an important viewpoint from which we can understand the pathophysiological mechanisms of major neuropsychiatric illnesses. This article focuses on our understanding of memory functions in clinical and neurobiological aspects. The relevant material will be presented in four parts : 1) terminologies needed in defining major stages of various types of memory processing ; 2) neurochemical and neuroanatomical basis of memory processing ; 3) brief bed-side screening tests and more comprehensive neuropsychological tests for the evaluation of memory function ; 4) the characteristics of memory dysfunction in several major psychiatric illnesses.

KEY WORDS : Neurocognitive function · Neuropsychology · Psychiatric disorders · Memory.

가
가 , 가 , 가
가 ,
(Sq-
uire McKee 1995).

가
1997
Department of Psychiatry, Samsung Medical Center, College of Medicine, Sungkyunkwan University, Seoul, Korea
Department of Psychiatry, Kangdong Sacred Neart Hospital, College of Medicine, Hallym University, Seoul, Korea
† : 134 - 701 445 (storage) (Strub Black 1993). (registration), (consolidation), (retention), (recall) (retr - ieval), (short - term me -

mory) (long - term memory)
(Lezak 1995). (immediate memory), (recent memory),
(registartion) (remote memory),
(Hodges 1994 ; Strub Black
(Kaszniak 1986 ; Zaidel 1990). 1993).

1 (Lezak 1995). 가
(immediate memory) (short - (short - term memory)
term memory) , 가 (Hodges 1994).
(Lezak 1995 ; Strub
Black 1993). 가
(Strub Black 1993). (amnesia)

7 가 , 30
가 (Miller 1956). (Lezak 1995).
가 가 (anterog -
(working memory) . , (retrograde am -
nesia)
(Strub Black 1993). 가
(Zola 1997). 가 (explicit/declarative
memory) , 가 (implicit memory)
(long - term memory) , (procedural memory)
(storage) (retention) ,
(Hod -

nsolidation) (Mayes 1988 ; Parkin 1982). (co - ges 1994 ; Schachter 1988).
, (priming)
(Mayes 1988 ; Squire 1987). ,
(Squire 1987). (lear - 가
ning)

(Lezak 1995), (Hodges 1994). (episodic memory)
(incidental learning) (Cooper 1982). (semantic memory)
(recall) (retrieval) 가 ,
(Strub Black 1993). (,) ,
가 ,
(recognition) 가) (Mayes 1988 ; Scha -
(Lezak 1995). (Tulving 1982 ; Squire 1987).
가 , 가

(Hodges 1994).

Apl -

기억 기능의 신경생물학적 기전

ysia californica
(transcription) (translation)
(Squire Mckee 1995).

Hebb(1949)

가

(Joseph Gallag -

(reverbera - her 1980),

가 가

ting neural circuits)가

가 ,

(Diamond

가

1985 ; Greenough Chang 1988).

(neural network) 가

가

가

가

기억 기능과 관련된 해부학적 부위

Hebb 가 long - term potentiation(LTP)

, LTP 가

가 (plasticity)

가

(hippocampus), (dentate gyrus),
(entorhinal cortex), (parahippocampal cortex)

(Madison 1991 ; Squire Mckee 1995). LTP

(Victor Agamanolis
1990 ; Zola 1997). 가 (long - term
explicit memory)

NMDA

(Lynch 1983 ; Mal -

enka 1988).

가

(visuo - spatial)

(Joseph 1990 ; Squire 1992).

가 LTP가

(Madison

(mammillary nuclei), (dorsal medial nucleus
of thalamus), (internal medullary lamina),)

1991 ; Squire Mckee 1995). LTP

(hippocam -

(mammillothalamic tract) (medial dience -
phalon) 가 (Alvarez Squire
1994 ; Zola - Morgan Squire 1993),

pus)

(Joseph 1996 ; Lynch 1986 ; Squire

, 가

Mckee 1995).

LTP

(Strub Black 1993).

(neuronal circuits) 가

(Joseph

(Joseph 1982).

1996),

가

(Alvarez Squire 1994 ; Hodges 1994).

(sylvian fissure)

(Joseph 1996).

(Strub Black 1993).

LTP가 가 ,

(frontal lobe)

(Joseph 1996).

(Squire 1992 ; Victor 1989),

LTP

(Squire Mckee 1995).

(reverberating neural circuits)

가

(Joseph 1996).

(Squire Mckee 1995).

가 (Jetter 1986 ; Joseph 1996). (anterior thalamus)가 가 (mental set) 가 가 , (perseveration) (confabulation) (Joseph 1996 ; Vikki 1989).

(implicit) 가 (Squire 1992 ; Zola - Morgan Squire 1985), (basal ganglia) (cerebellum), (inferior parietal lobule), (supplementary motor area) (motor area) (Joseph 1990 ; Wang 1990). (amygdala) (Halgren 1992 ; LeDoux 1992).

가 (Joseph 1996). 가 (Davis 1992 ; LeDoux 1992).

effect) (floor effect)가 (Strub Black 1993). (immediate recall) (digit span - forward, backward) 가 (recognition) 가 (Lezak 1995). 가 (active recall) 가 가 (Strub Black 1993).

Auditory - Verbal Learning Test(AVLT)(Spren Strauss 1991a), California Verbal Learning Test(CVLT)(Delis 1987), Hopkins Verbal Learning Test(Brandt 1991) 10

기억 기능의 평가

가 (Mayes Warburg 1995 ; Strub Black 1993). Mayes Warburg(1992) 가 (normative data) 가 (practice effect)가 (ceiling

(delayed recall) 가 Paired - Associate Word Learning Test(Wechsler 1987) Wechsler Memory Scale - Revised Logical Memory(LM - R)가 (Wechsler 1987). Continuous Recognition Memory Test(CRMT)(Hannay 1979), Continuous Visual Memory Test(CVMT)(Trahan Larrabee 1988), Figural Memory(Wechsler 1987)

(recognition) , (recall) - , ,
(reproduction) Visual Paired Associates . Alzheimer
(Wechsler 1987), Visual Reproduction Test(Wechsler 1987 ; 가 가
Benton 1974), Rey - Osterrieth Complex Figure Test(Rey
1941) Co -
rsi Block - Tapping Test (Milner 1971). (rem 가
ote memory) 가 가
가 ,
가 (Lezak 1995). Alzheimer 가 (Miller 1971,
1972).
(Hamsher Roberts 1985). Alzheimer
가 (battery) (en -
, 가 Wechsler Memory Scale coding) Alzheimer
(Wechsler 1945) Wechsler Memory Scale - Revised(Wechsler 1987) , Rivermead Behavioural Memory Test(Wilson 1985) 가
가 가 (Sah -
가 가 akian 1988).
가 가 (Batty
(Hickox Sunderland 1992). 1988b ; Sagar 1988a). (pnocedural memory)
Inventory of Memory Experiences(Herrmann (Eslinger Damasio 1986).
Neisser 1978), Subjective Memory Questionnaire(Bennett - Alzheimer
Levy 1980), Everyday Memory Questionnaire(Sunderland 1984), Memory Functioning Questionnaire(Gilewski
1990)

기억과 정신질환

가 (Tomlinson 1970).
5 “ patch distribution ”
(American Psychiatric Association,
1987).
1. Alzheimer형 치매 (profile)
Alzheimer Alzheimer
Damasio(1985)
가

가 (recognition)

(, thalamus, fornix,) (Akiuchi 1987) (Ross 1980).

가 (Warrington McCarthy 1987). (Saykin 1991).

가 (ideomotor apraxia) (procedural learning) 가 . Pursuit rotor, Relaxation time, Tower of Hanoi

Hachinski (1975) (Granholm 1993 ; Goldberg 1990 ; Schmand 1992).

(postmortem study) cotextual cue(semantic category)

(imaging study)

3. 알코올성 치매

가 가 Korsakoff 가

3% 가 5. 우울증

7%가 가 , Alzheimer , Parkinos

가 (Lishman 1981). 가 가 AI-

(verbal fluency) (Carlen zheimer 가

1981). (Goldstein 1985).) (Sahakian 1996). Robbins

Korsakkoff Alzheimer 가 (1996) Alzheimer

(Goldstein 1985).

4. 정신분열증 (explicit memory) (Sabe 1996),

가 (Gjer - (Beats 1996) Goddard (1996)

de 1983). 가 가

Alzheimer
가 (Ellison 1994).

중심 단어 :

참고문헌

- Akiguchi I, Ino T, Nabatame H(1987) : Acute-onset amnesic syndrome with localize infarct on thecominant side- comparison between anteromedial thalamus lesion and posterior cerebral artery territory lesions. *Jpn J Med* 26 : 15-20
- Alvarez P Squire LR(1994) : Memory consolidation and the medial temporal lobe : A simple network model. *Proc Acad Sci USA* 91 : 7041-7045
- American Psychiatric Association(1987) : Diagnostic and statistical manual of mental disorders. 3rd ed. American Psychiatric Press, Waxhington DC, 1980
- Beatty WW, Salmon DP, Butters N, Heindel WC, Granholm EL (1988) : Retrograde amnesia in patients with Alzheimer's disease or Huntington's disease. *Neurobiol Aging* 9 : 181-186
- Bennett-Levy J, Polkey CE, Powell GE(1980) : Self-report of memory skills after temporal lobectomy : The effect of clinical variables. *Cortex* 16 : 543-557
- Benton A, Levin HS, Van Allen MW(1974) : Geographic orientation in patients with unilateral cerebral disease. *Neuropsychologia* 12 : 183-191
- Brandt J(1991) : The Hopkins Verbal Learning Test : Development of a new verbal memory test with six equivalent forms. *The Clinical Neuropsychologist* 5 : 125-142
- Carlen PL, Wilkinson A, Wortzman G(1981) : Cerebral atrophy and functional deficits in alcoholics without clinically apparent liver disease. *Neurology* 31 : 377-385
- Cooper S(1982) : The post-Wechsler memory scale. *Journal of Clinical Psychology* 38 : 380-387
- Cutting J(1978) : The relationship between Korsakoff's syndrome and alcoholic dementia. *Br J Psychiatry* 132 : 240-251
- Damasio AR, Graff-Radford NR, Eslinger PJ, Damasio H, Kassel N(1985) : Amnesia following basal forebrain lesions. *Arch Neurol* 42 : 263-271
- Davis M(1992) : The amygdala and conditioned fear. In 'The amygdala' ed by Aggleton JP. New York, Wiley-Liss
- Delis DC, Kramer JH, Kaplan E, Ober BA(1987) : California Verbal Learning Test : Adult Version. San Antonio, TX, The Psychological Corporation
- Diamond MC(1985) : Rat forebrain morphology : Right-left ; male-female ; young-old ; enriched-impoverished. In : Glick SD, ed. Cerebral lateralization in nonhuman primates. Orlando : Academic Press
- Ellicott R, Sahakian ER, McKay AP, Herrod JJ, Robbins TW, Paykel ES(1996) : Neuropsychological impairments in unipolar depression : The influence of perceived failure on subsequent performance. *Psychol Med* 26 : 975-89
- Ellison JM, Weinstein CS, Hodel-Malnofsky(1994) : The psychotherapeutic guide to neuropsychiatry. Diagnostic and Treatment Issues. American Psychiatric Press, Washington DC.
- Eslinger PJ, Damasio AR(1986) : Preserved motor learning in Alzheimer's disease : Implications for anatomy and behavior. *J Neurosci* 6 : 3006-3009
- Gilewski MJ, Zelinski EM, Schaie KW(1990) : The memory functioning questionnaire for assessment of memory complaints in adulthood and old age. *Psychology and Aging* 5 : 482-490
- Gjerde PF(1983) : Attentional capacity dysfunction and arousal in schizophrenia. *Psychol Bull* 93 : 57-72
- Goddard L, Dritschel B, Burton A(1996) : Role of autobiographical memory in social problem solving and depression. *Abnorm Psychol* 105 : 609-16
- Goldberg TE, Saint-Cyr JA, Weinberger DR(1990) : Assessment of procedural learning and problem solving in schizophrenia patients by Tower of Hanoi type tasks. *J Neuropsychiatry* 2 : 165-173
- Grandholm E, Bartzokis G, Asarnow RF, Marder SR(1993) : Preliminary association between motor procedural learning, basal ganglia T2 Relaxation times and tardive dyskinesia in schizophrenia. *Psychiatry Research Neuroimaging* 50 : 33-44
- Greenough W, Chang F-LF(1988) : Plasticity of synapse structure and pattern in the cerebral cortex. In 'Cerebral Cortex', Vol. 7, ed. by Peters A, Jones EG. New York, Plenum
- Hachinski VC, Lassen NA, Marshall J(1974) : Multi-infarct dementia. A cause of mental deterioration in the elderly. *Lancet* 2 : 207-210
- Halgren E(1992) : Emotional neurophysiology of the amygdala within the context of human cognition. In 'The amygdala' ed by Aggleton JP. New York, Wiley-Liss
- Hamsher KdeS, Roberts RJ(1985) : Memory for recent U.S. presidents in patients with cerebral disease. *Journal of Clinical and Experimental Neuropsychology* 7 : 1-13
- Hannay HJ, Levin HS, Grossman RG(1979) : Impaired recognition memory after head injury. *Cortex* 15 : 269-283
- Herrmann DJ, Neisser U(1978) : An inventory of everyday memory experiences. In 'Practical Aspects of Memory' ed by Gruneberg MM, Morris PE, Sykes RN. New York, Academic Press
- Hebb DO(1949) : The organization of behavior. New York : Wiley
- Hickox A, Sunderland A(1992) : Questionnaire and checklist approaches to assessment of everyday memory problems. In 'Handbook of Neuropsychological Assessment' ed by Crawford JR, Parker DM, McKinlay W. Hove (UK), Lawrence Erlbaum Associates, Publishers, pp103-113
- Hodges JR(1994) : Cognitive assessment for clinicians. Oxford University Press, Oxford, pp5-19
- Jetter W, Poser U, Freeman RB, Markowitsch JH(1986) : A verbal long term memory deficit in frontal damaged patients. *Cortex* 22 : 229-242
- Joseph R(1982) : The neuropsychology of development : Hemispheric laterality, limbic language, and the origin of thought. *J Clin Psychol* 44 : 3-34
- Joseph R(1990) : The limbic system. In 'Neuropsychology, Neuropsychiatry, Behavioral Neurology. ed by Puente AE, Reynolds CR. New York, Plenum Press

- Joseph R (1996)** : *Neuropsychiatry, Neuropsychology, and Clinical Neuroscience*, 2nd ed. Baltimore, Williams & Wilkins, pp206-234
- Joseph R, Gallagher RE (1980)** : *Gender and early environmental influences on activity, overresponsiveness, and exploration. Devel Psychobiol 13* : 527-544
- Kaszniak AW, Poon LW, Riege W (1986)** : *Assessing memory deficits : An information-processing approach. In 'Handbook for clinical memory assessment of older adults' ed by Poon LW. Washington DC, American Psychological Association*
- LeDoux JE (1992)** : *Emotion and the amygdala. In 'The amygdala' ed by Aggleton JP. New York, Wiley-Liss.*
- Lishman WA (1981)** : *Cerebral disorder in alcoholism. Syndromes of impairment. Brain 104* : 1-20
- Lezak MD (1995)** : *Neuropsychological assessment, 3rd ed. Oxford University Press, Oxford, pp27-34*
- Lynch G (1986)** : *Synapses, circuits, and the beginnings of memory. Cambridge, MA, MIT Press*
- Lynch G, Larson L, Kelso S, Barrionuevo G, Schottler F (1983)** : *Intracellular injections of EGTA block induction of hippocampal long-term potentiation. Nature 305* : 719-721
- Madison DV, Malenka RC, Nicoll RA (1991)** : *Mechanisms underlying long-term potentiation of synaptic transmission. Annu Rev Neurosci 14* : 379-397
- Malenka RC, Kauer JA, Zucker RJ, Nicoll RA (1988)** : *Postsynaptic calcium is sufficient for potentiation of hippocampal synaptic transmission. Science 242* : 81-84
- Mayes AR (1988)** : *Human organic memory disorders. New York, Cambridge University Press*
- Mayes A, Warburg R (1992)** : *Memory assessment in clinical practice and research. In 'Handbook of Neuropsychological Assessment' ed by Crawford JR, Parker DM, McKinlay W. Hove (UK), Lawrence Erlbaum Associates, Publishers, pp73-101*
- Miller E (1971)** : *On the nature of the memory disorder in presenile dementia. Neuropsychology 9* : 75-81
- Miller E (1972)** : *Efficiency of coding and the short-term memory defect in presenile dementia. Neuropsychology 10* : 133-136
- Milner B (1971)** : *Interhemispheric difference in the localization of psychological processes in man. British Medical Bulletin 27* : 272-277
- Parkin AJ (1982)** : *Residual learning capability in organic amnesia. Cortex 18* : 417
- Rey A (1941)** : *Psychological examination of traumatic encephalopathy. Archives de Psychologie, 28* : 286-340 ; sections translated by Corwin J & Bylsma FW, *The Clinical Neuropsychologist*, 1993, 4-9
- Robbins TW, Elliott R, Sahakian BJ (1996)** : *Neuropsychology-dementia and affective disorders. Br Med Bull 52* : 627-43
- Ross ED (1980)** : *Sensory-specific and fractional disorders of recent memory in man. I. Isolated loss of visual recent memory. Arch Neurol 37* : 193-200
- Sabe L, Jason L, Juejati M, Leiguarda R, Starkstein SE (1995)** : *Dissociation between declarative and procedural learning in dementia and depression. J Clin Exp Neuropsychol 17* : 841-8
- Sagar HJ, Cohen EV, Sullivan EV, Corkin S, Growdon JH (1988)** : *Remote memory function in Alzheimer's disease and Parkinson's disease. Brain 111* : 185-206
- Sahakian BJ, Morris RG, Everden JL, Heald A, Levy R, Philpot M, Robbins TW (1988)** : *A comparative study of visuospatial memory and learning in Alzheimer-type dementia and Parkinson's disease. Brain 111* : 695-718N
- Saykin AJ, Gur RC, Gur RE, Mozley PD, Mozley LH, Resnick SM, Kester B, Stafiniak P (1991)** : *Neuropsychological function in schizophrenia : Selective impairment in memory and learning. Arch Gen Psychiatry 48* : 618-624
- Schachter DL, Mc Andrews MP, Moscovitch M (1988)** : *Access to consciousness : Dissociations between implicit and explicit knowledge in neuropsychological syndromes. In 'Thought without language' ed by Weiskrantz L. Oxford, Clarendon Press*
- Schachter DL, Tulving E (1982)** : *Memory, amnesia, and the episodic/semantic distinction. In 'Expression of knowledge' ed by Isaacson R, Spear N. New York, Plenum Press*
- Schmand B, Brand N, Kuipers T (1992)** : *Procedural learning of cognitive and motor skills in psychotic patients. Schizophr Res 8* : 157-170
- Spreen O, Strauss E (1991)** : *A compendium of neuropsychological tests. New York, Oxford University Press, pp149-157*
- Squire LR (1987)** : *Memory and brain. New York, Oxford University Press*
- Squire LR (1992)** : *Memory and the hippocampus : A synthesis from findings with rats, monkey, and humans. Psychol Rev 99* : 195-231
- Squire LR, Mckee RD (1995)** : *Biology of memory. In Comprehensive Textbook of Psychiatry, 6th ed. Ed by Kaplan HI and Sadock BJ. Baltimore, Williams & Wilkins, pp317-328*
- Strub RL, Black FW (1993)** : *The mental status examination in neurology, 3rd ed. F.A. Davis Company, Philadelphia, pp74-98*
- Sunderland A, Harris JE, Gleave J (1984)** : *Memory failures in everyday life following severe head injury. Journal of Clinical Neuropsychology 6* : 127-142
- Tomlinson BE, Blessed G, Roth M (1970)** : *Observations on the brains of demented old people. J Neurol Sci 11* : 205-242
- Trahan DE, Larrabee GJ (1988)** : *Continuous Visual Memory Test. Odessa, FL, Psychological Assessment Resources*
- Victor M, Adams RD, Collins GH (1989)** : *The Wernicke-Korsakoff syndrome and related neurological disorders due to alcoholism and malnutrition. Philadelphia, FA Davis*
- Victor M, Agamanolis D (1990)** : *Amnesia due to lesions confined to the hippocampus : A clinico-pathologic study. J Cogn Neurosci 2* : 246-257
- Vikki J (1989)** : *Perseveration in memory for figures after frontal lobe lesion. 27* : 1101-1104
- Wang J, Aigner T, Mishkin M (1990)** : *Effects of neostriatal lesions on visual habit formation in rhesus monkey. Proc Soc Neurosci 16* : 617
- Warrington EK, McCarthy RA (1987)** : *Categories of knowledge : further fraction and an attempted integration. Brain 110* : 1273-1296
- Wechsler D (1945)** : *A standardized memory scale for clinical use. Journal of Psychology 19* : 87-95
- Wechsler D (1987)** : *Wechsler Memory Scale-Revised manual. San Antonio, TX, The Psychological Corporation*
- Wilson BA, Cockburn J, Baddeley AD (1985)** : *The Rivermead Behavioural Memory Test. Reading, England : Thames Valley Test Co.*

Zaidel DW (1990) : *Long-term semantic memory in the two cerebral hemisphere. In 'Brain circuits and functions of the mind' ed by Trevarthen C. New York, Cambridge University Press*

Zola S (1997) : *Amnesia : Neuroanatomic and clinical aspects. In 'Behavioral Neurology and Neuropsychology' ed by Feinberg TE & Farah MJ. New York, MCgGraw-Hill Companies, pp447-461*

Zola-Morgan S, Squire LR (1985) : *Medial temporal lesions in monkeys impair memory on a variety of tasks sensitive to human amnesia. Behav Neurosci 99 : 22-34*

Zola-Morgan S, Squire LR (1993) : *Neuroanatomy of memory. Annu Rev Neurosci 16 : 547-563*