

Tsukuba International Conference **on Memory**

Memory and Society

March, 8 - 10, 2002

Epochal Tsukuba
International Congress Center
Tsukuba, Japan

Organizers: **Nobuo Ohta** (University of Tsukuba)
Lars-Göran Nilsson (Stockholm University)

3rd Tsukuba International Conference on Memory

Memory and Society

March 8, Friday

- Douglas Herrmann (Indiana State University, U.S.A.)
- Kathy Pezdek (Claremont Graduate University, U.S.A.)
- Yukio Itsukushima (Nihon University, Japan)
- Jonathan Schooler (University of Pittsburgh, U.S.A.)
- Martin Conway (University of Durham, U.K.)
- D. Stephen Lindsay (University of Victoria, Canada)

March 9, Saturday

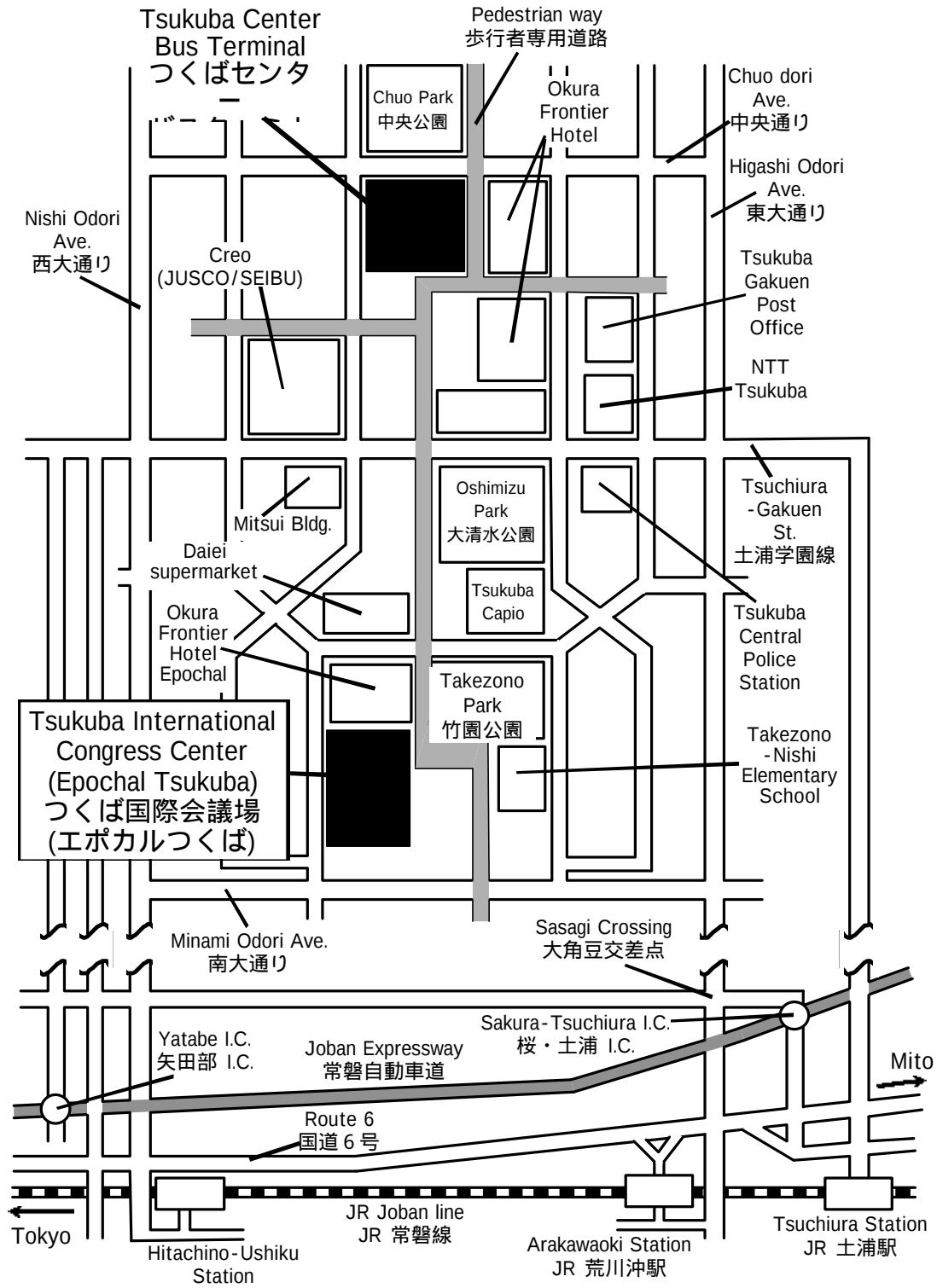
- Elizabeth L. Bjork (University of California, Los Angeles, U.S.A.)
- Fergus I. M. Craik
(The Rotman Research Institute of Baycrest Centre for Geriatric Care, Canada)
- Dietrich Albert (University of Graz, Austria and Hiroshima University, Japan)
- Robert A. Bjork (University of California, Los Angeles, U.S.A.)
- Poster session

March 10, Sunday

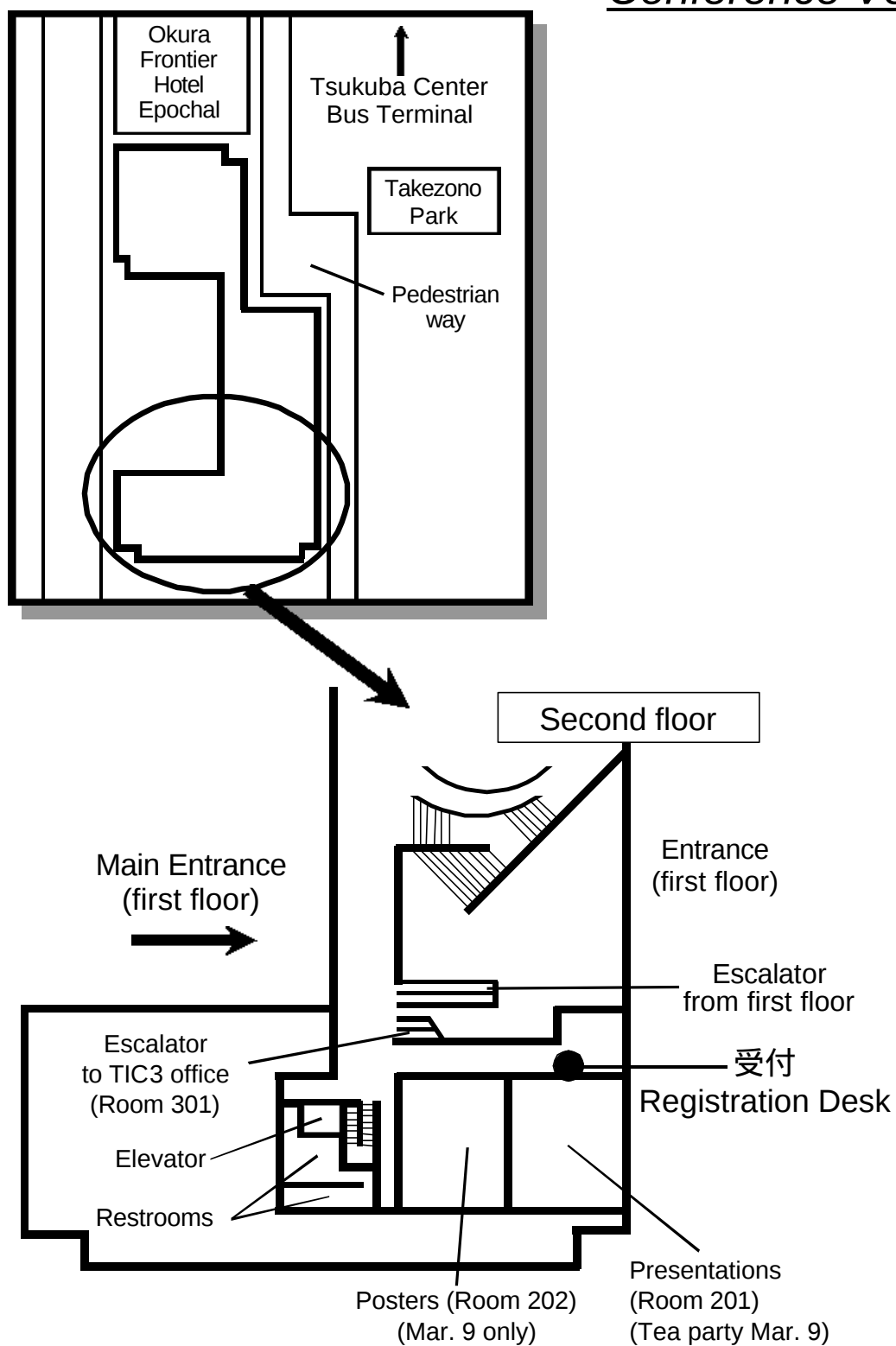
- Masaru Mimura (Showa University, Japan)
- Barbara A Wilson
(MRC-CBU, Cambridge and The Oliver Zangwill Centre, Ely, U.K.)
- Ingvar Lundberg (Göteborg University, Sweden)
- Robert H. Logie (University of Aberdeen, U. K.)

Location

It is about a 10-minute walk to the Epochal Congress Center
from the Tsukuba Center bus terminal



Conference Venue



3rd Tsukuba International Conference on Memory

Friday March 8

Chairpersons:

Masanobu Takahashi (University of the Sacred Heart, Japan)

Osamu Ishihara (Tokyo Metropolitan Institute of Gerontology, Japan)

09:30 - 10:00	Registration	
10:00 - 10:20	Opening	Nobuo Ohta (University of Tsukuba)
10:20 - 11:20	Speaker 1	Douglas Herrmann (Indiana State University, U.S.A.) Accuracy of reports of memory failures and of their causes
11:20 - 12:20	Speaker 2	Kathy Pezdek (Claremont Graduate University, U.S.A.) Memory for the terrorists' attack on New York, 9/11/01
12:20 - 13:40	Lunch	
13:40 - 14:30	Speaker 3	Yukio Itsukushima (Nihon University, Japan) Response conformity formation in face recognition memory
14:30 - 15:30	Speaker 4	Jonathan Schooler (University of Pittsburgh, U.S.A.) Discovering memories in the light of meta-awareness
15:30 - 15:50	Refreshments	
15:50 - 16:50	Speaker 5	Martin Conway (University of Durham, U.K.) The self-memory system: Autobiographical memory and identity
16:50 - 17:50	Speaker 6	D. Stephen Lindsay (University of Victoria, Canada) Adults' recollections of long-past events

3rd Tsukuba International Conference on Memory

Saturday March 9

Chairpersons:

Toshiaki Mori (Hiroshima University, Japan)

Jun Kawaguchi (Nagoya University, Japan)

09:00 - 09:20	Registration	
09:20 - 10:20	Speaker 7	Elizabeth L. Bjork (University of California, Los Angeles, U.S.A.) Types and consequences of forgetting: Intended and unintended
10:20 - 11:20	Speaker 8	Fergus I. M. Craik (Rotman Research Institute of Baycrest Centre for Geriatric Care, Canada) Age-related changes in human memory: Practical consequences
11:20 - 12:40	Lunch	
12:40 - 13:40	Speaker 9	Dietrich Albert (University of Graz, Austria and Hiroshima University, Japan) Memory, knowledge and e-learning
13:40 - 14:40	Speaker 10	Robert A. Bjork (University of California, Los Angeles, U.S.A.) Optimizing treatment and training: Implications of a new theory of disuse
14:40 - 15:00	Refreshments and poster session preparation	
15:00 - 16:15	Poster session (odd numbers)	
16:15 - 17:30	Poster session (even numbers)	
17:30 - 19:00	Tea party (18:00 – 18:30 Entertainment)	

3rd Tsukuba International Conference on Memory

Sunday March 10

Chairpersons:

Hiroshi Toyota (Nara University of Education, Japan)

Takafumi Terasawa (Okayama University, Japan)

09:10 - 10:00	Speaker 11	Masaru Mimura (Showa University, Japan) Executive functions and prognosis of patients with memory disorders
10:00 - 11:00	Speaker 12	Barbara Wilson (MRC-CBU, Cambridge and The Oliver Zangwill Center, Ely, U.K.) Rehabilitation of memory for everyday life
11:00 - 11:10	Refreshments	
11:10 - 12:10	Speaker 13	Ingvar Lundberg (Göteborg University, Sweden) Working memory and reading disability
12:10 - 13:30	Lunch	
13:30 - 14:30	Speaker 14	Robert Logie (University of Aberdeen, U.K.) Working with memory in everyday cognition
14:30 - 15:00	Closing	Lars-Göran Nilsson (Stockholm University, Sweden)

Speaker 1: Douglas Herrmann

Friday March 8, 10:20 – 11:20

Accuracy of Reports of Memory Failures and of Their Causes

Douglas Herrmann

(Indiana State University, U.S.A)

Michael M. Gruneberg

(University of Wales at Swansea, U.K.)

Steve Fiore

(University of Pittsburgh, U.S.A)

Jonathan Schooler

(L.R.D.C. and University of Pittsburgh, U.S.A)

Tania Torres

(Indiana State University, U.S.A)

Memory failures happen to everyone. Sometimes we are called on to provide an explanation of the causes of these memory failures. For example, a person who forgets to pick up a much needed gallon of milk will be asked by a spouse or significant other why this failure occurred. The purpose of this paper is to examine the accuracy of the memory failures and their causes.

If it were shown that the memory failure report is not accurate, then the causes cannot be accurate as well because the causes would be based on fallacious data. On the other hand, an accurate recall of a memory failure at its causes does not guarantee an accurate report of the causes of the failure. Inaccurate recall of causes for accurately recalled memory failures may occur because people might have difficulty in making judgments about their cognitive processes. If both memory failures and the causes reported by people were shown to be accurate, then investigations into the nature of these reports would be useful to guide future research about memory in everyday life.

This paper presents the findings of several investigations into the accuracy of the recall of memory failures and of the causes of such failures. These findings indicate that the both reports of memory failures and of causes are accurate but that the reports of the memory failures appear to be more accurate than the reports of causes.

Speaker 2: Kathy Pezdek

Friday March 8, 11:20 - 12:20

Memory for the Terrorists' Attack on New York, 9/11/01

Kathy Pezdek

(Claremont Graduate University, U.S.A.)

Most Americans will never forget the horrific events of September 11, 2001, however, few will remember the events as clearly as they think they will. Cognitive psychologists have extensively studied memory for traumatic events and eyewitness memory more specifically. The events of 9/11 offered an unprecedented opportunity to study memory for a traumatic event that had a significant and immediate effect on all Americans. Seven weeks after 9/11, we had five samples complete a questionnaire on (a) memory for the events of 9/11 and (b) their autobiographical memory for 9/11. These five samples were (a) 277 college students from Manhattan, New York, (b) 167 college students from California, (c) 127 college students from Hawaii, (d) 53 fire fighters from California, and (e) 68 United and American Airlines flight attendants and pilots. In the first wave of this longitudinal study, the primary comparisons are across the three college samples who, because of differences in time zones, first heard of the terrorists' attack on average, one hour, 2.50 hours, or 4.10 hours after the first World Trade Center tower had been struck. It was predicted that people would remember the events quite differently as a function of how the events were perceived. Because it took some time to realize that the events of 9/11 constituted a coordinated terrorists' attack, comparisons across time zones avail a test of this prediction. By seven weeks after 9/11, already memory for the events had been telescoped in time. In answer to the question, "How much time passed between when the first tower was struck to when it collapsed?" the mean estimate was 62 minutes, with no differences among the five samples; the correct answer was 108 minutes. In general, the Manhattan students and the flight attendants and pilots reported the highest levels of distress and their accounts were most accurate.

Speaker 3: Yukio Itsukushima

Friday March 8, 13:40 - 14:30

Response conformity formation in face recognition memory

Yukio Itsukushima

(Nihon University, Japan)

Research suggests that the presence of one witness influences others. The present study examined the effect of conformity to another response in face recognition memory test. During the experiment, a target person, never seen by the subjects, came to the classroom and asked the subjects to answer a questionnaire, which was not concerned with this study. About four months later, the subjects were asked to rate the similarity between the face of target and the set of other's faces. In the experimental conditions subjects participated in pairs. However, only one was a real subject and another was a confederate of experimenters pretending to be a subject. The two were asked to report aloud a judged similarity between a face that was sequentially displayed by a slide projector and the target's face that was not displayed but remembered from memory. The set of faces displayed did not include the face of target. An experimenter always asked a confederate to respond first and then asked a real subject. The responses of confederates were under full experimental control. In control condition subjects were just asked to rate the similarity between the remembered target's face and a set of face displayed. One week later, all the subjects were again asked to rate similarities between the remembered target's face and a new set of smiling faces, consisting of the persons who were in the prior similarity rating task, new persons, and the target. The results showed that in the experimental condition the subjects showed strong conformity to the responses of another person, and the effect of conformity remained one week after the first rating task. In the second experiment the similarity values given by a confederate were changed to test the generality of the effect. The result again showed a strong conformity effect.

Speaker 4: Jonathan Schooler

Friday March 8, 14:30 - 15:30

Discovering memories in the light of meta-awareness

Jonathan Schooler

(University of Pittsburgh, U.S.A.)

Discovered memories of abuse are often viewed with marked skepticism due to the relative dearth of well-corroborated evidence for their occurrence and the absence of a compelling theory to explain them. This talk addresses these concerns by reviewing seven recovered (or, as will be explained, what I prefer to term "discovered") memory cases in which there was independent corroborative evidence for the alleged abuse. These cases are considered within the context of a theory of meta-awareness that assumes that experiential consciousness (i.e., the contents of phenomenological experience) can be distinct from meta-awareness (i.e., one's consciousness of their consciousness). In this context, discovered memories can be understood as involving changes in individuals' meta-awareness of the abuse. In some cases, discovered memories may involve *the gaining of a different meta-awareness* of the meaning of an experience. The discovery of this new meaning may become confused with the discovery of the memory itself, leading to the (sometimes erroneous) belief that the memory is just now being accessed for the first time. In other cases, the discovery may involve *the regaining of a prior meta-awareness* of the experience that either deliberately or non-deliberately may have been avoided for some time. In still other cases, the discovery may actually involve *the gaining of a previously non-existent meta-awareness* of the experience. A variety of factors ranging from the very straightforward (e.g., age, lack of discussion, stress) to the more esoteric (e.g., dissociation, nocturnal cognitive processing) may prevent incidents of abuse from being initially encoded with meta-awareness. Such non-reflected memories, particularly when they are aschematic and disjunctive with other experiences, may continue to elude meta-awareness until a specific (and potentially obscure) contextual retrieval cue is encountered. Once recalled in the alarming light of meta-awareness, individuals may understand what happened to them, and this discovery may fundamentally change their view of their personal histories.

Speaker 5: Martin Conway

Friday March 8, 15:50 - 16:50

The Self-Memory System: Autobiographical Memory & Identity

Martin Conway

(University of Durham, U.K.)

The Self-Memory System (SMS) consists of the autobiographical knowledge base and the working self. Specific autobiographical memories are transitory mental constructions created by the SMS. The working self maintains a complex pattern of accessibility to autobiographical knowledge, one feature of which is raised accessibility to highly goal-relevant autobiographical knowledge. Autobiographical knowledge constrains, in turn, what goals can be held by the working self and what sorts of self-images can be realistically maintained. This dynamic and complex memory system is distributed over networks that topographically are widely dispersed through cortical and limbic regions. Indeed, a particular pattern of brain activation encompassing anterior and posterior networks has been detected, and this may be the neurophysiological 'signature' of autobiographical memory formation. Finally, the SMS plays a critical role in individual, generational, and cultural identity, and this is reflected in the raised accessibility of memories from certain periods of life. New data illustrating this function of the SMS are reported

Speaker 6: D. Stephen Lindsay

Friday March 8, 16:50 - 17:50

Adults' Recollections of Long-past Events

D. Stephen Lindsay

(University of Victoria, Canada)

J. Don Read

(University of Victoria, Canada)

My lecture will review several interrelated lines of research my co-workers and I have conducted to explore adults' recollections of long-past events. One line of studies assessed adults' memories of events described in their own personal diaries, written years or decades earlier. Participants read parts of their old diaries and reported on various kinds of memory experiences that arose while doing so. The most striking aspect of the findings is that people very often reported that they had no memories of seemingly memorable events described in their own diaries. Another line of studies used questionnaires in which adults were asked about various childhood events (e.g., being bitten by a dog, winning a prize). For each event, respondents were asked whether or not they had experienced that event during childhood and, if so, whether or not they could recollect anything about the experience (as opposed to just knowing or believing that they had the experience). Respondents also rated the emotion of each event, from "very negative" to "very positive." Respondents quite often reported no memories of reportedly experienced events, and such no-memory reports were more common for events rated as negative than for those rated as positive. Interestingly, the rate of recollecting reportedly experienced events changed little with age. A third line of research used high-school year books and other archival materials to assess adults' recollections of high school. In general, participants remembered relatively few of the items on the test; interestingly, accuracy did not decline significantly with age, but confidence did decline with age. The fourth and final line of research to be summarized in my lecture uses photographs of childhood events in the context of suggestive procedures to create false memories of pseudoevents. Taken together, this research indicates that memory for long-past events is typically very incomplete and subject to distortion.

Types and consequences of forgetting:
Intended and unintended

Elizabeth L. Bjork

(University of California, Los Angeles, U.S.A.)

Robert A. Bjork

(University of California, Los Angeles, U.S.A.)

Malcolm D. MacLeod

(University of St. Andrews, U.K.)

For most of us, “forgetting things” is the biggest complaint we have about our memories. Forgetting, however, is a necessary and critical component of any efficient and adaptive memory system and, often, exactly what we need to do to keep our memories functioning optimally in a changing world. We need some means to set aside, suppress, or erase old information, such as a phone number that is no longer functional, or a password that is out of date. Without some such forgetting mechanism, we would soon become either incapable of retrieving the information we now need, or very slow to do so owing to the need to invoke decision processes to disentangle information that is current from information that is out of date.

In certain cases, the types of forgetting that serve our broader purposes are intentional, or at least not unintentional, as when we try to avoid retrieving uncomfortable memories, or try to learn a new phone number or password. In many other cases, however, forgetting is unintended and often not consistent with our current goals. Our primary focus in this paper is on one such type of forgetting, *retrieval-induced forgetting* (Anderson, Bjork, & Bjork, 1994), in which retrieving some of the items associated to a particular cue or configuration of cues results in subsequent impaired access to (i.e., forgetting of) other items associated to that cue or those cues. We argue that retrieval-induced forgetting is prevalent in our lives and that it plays a significant role not only in the updating of our memories, but also—and sometimes unintended—in stereotyping and other forms of impression formation, in the reliability of witness memory, and—possibly—in repression.

Speaker 8: Fergus I. M. Craik

Saturday March 9, 10:20 - 11:20

Age-related changes in human memory: Practical consequences

Fergus I. M. Craik

(The Rotman Research Institute of Baycrest Centre for Geriatric Care, Canada)

My research on aging is largely theoretical and experimental, but in this paper I will attempt to show how the results of laboratory studies of memory and aging have implications for human factors, design of housing for the elderly, and methods of rehabilitation. I will first present an overview of what is known about age-related changes in memory performance. Some functions decline very little with age whereas others decline substantially, so clearly a theoretical framework is needed to provide an adequate account of these different patterns. My own preferred framework is in terms of processes rather than structures; in my view older adults are less able to carry out self-initiated processing operations (perhaps mediated by a decline in frontal lobe functioning), so performance suffers unless the appropriate processes are bolstered by environmental support.

I will then describe some recent studies from my laboratory that illustrate aspects of the theoretical framework, and also point out the relevance of the findings for practical issues. The themes covered will include the effects of divided attention on encoding and retrieval processes. Older adults show greater performance losses on the secondary task, especially during retrieval. Division of attention in young adults is one manipulation that results in levels of memory performance that resemble those of older adults; other ways of “mimicking aging” include speeded performance and hearing in noisy conditions. Finally, some experiments will be described in which the memory performance of older adults is improved by various manipulations. The implications of the results for methods of memory rehabilitation in normal aging will be discussed.

Speaker 9: Dietrich Albert

Saturday March 9, 12:40 - 13:40

Memory, Knowledge, and E-Learning

Dietrich Albert

(University of Graz, Austria, and Hiroshima University, Japan)

The aims of my contribution are to stimulate research in the psychology of memory and that of knowledge, as well as stimulating the future development of e-learning systems. Starting with a variety of existing e-learning systems, I focus on two examples (ALEKS and RATH), and their theoretical background which is Knowledge Space Theory (e.g. Doignon and Falmagne, 1999; Albert and Lukas, 1999). Within this theoretical framework the models and results of memory psychology (e.g. Albert & Stapf, 1996; Bjork & Bjork, 1996; Herrmann, 1996; Neath, 1998; Tulving & Craik, 2000) can be used for specifying the knowledge models and improving the e-learning systems substantially. For instance, by implementing multi attribute fluctuation models, learning and relearning may be guided for optimising fast learning as well as long retention. On the other hand, research on memory can profit from the methodology in knowledge- and e-learning- research: Knowledge Space Theory provides tools which can be used for validating models of memory empirically by taking answer pattern and individual differences into account. Web-based e-learning technology provides methods of data collection under fairly controlled conditions. Thus, the first time in the history of memory psychology its models can be verified by controlled quasi experiments in an ecological setting. Finally, directions of future developments of research and development in memory, knowledge and e-learning are discussed.

Speaker 10: Robert A. Bjork

Saturday March 9, 13:40 - 14:40

Optimizing treatment and training: Implications of a new theory of disuse

Robert A. Bjork

(University of California, Los Angeles, U.S.A.)

Elizabeth L. Bjork

(University of California, Los Angeles, U.S.A.)

Treatment and training have a central goal in common—optimizing the long-term retention and transfer of the new learning that is the target of therapy or training. A variety of basic-research findings suggest, however, that optimizing such retention and transfer may require structuring the conditions of therapy or training in some unintuitive and nonstandard ways. Conditions that may appear optimal, as measured by desirable changes observed *during* treatment, or by rapid improvements in performance *during* training, may prove far from optimal—as measured by the actual carryover of those effects to real-world environments. Conversely, conditions that introduce certain difficulties, often slowing the apparent rate of progress and learning, may enhance long-term retention and transfer of desired changes or knowledge.

In this paper we discuss the implications of a particular theoretical framework—one we have labeled the *new theory of disuse* (Bjork & Bjork, 1992)—for how treatment and training should be structured. The theory distinguishes between *storage strength*, a measure of learning, and *retrieval strength*, a measure of current ease of access—a distinction that is consistent with the time-honored distinction between *learning* and *performance*. From the standpoint of the theory, programs of treatment and training are frequently far from optimal for two reasons: (a) Retrieval strength is confused with learning; and (b) manipulations that—according to the theory—optimize the gain of retrieval strength are *not* those that will optimize the gain of storage strength and, hence, support long-term retention and transfer.

Executive functions and prognosis of patients with memory disorders

Masaru Mimura

(Showa University, Japan)

In the context of memory and social functioning, three studies on prognosis of alcohol related problems were conducted, focusing on different aspects of memory and executive function.

[Study 1] This investigated what neuropsychological tests predict alcoholic patients' future outcome. We administered seven neuropsychological tests to 22 chronic alcoholics after 7 weeks of detoxification. Included in the tests were tasks for attention and working memory as well as a battery of tests called the Behavioral Assessment of the Dysexecutive Syndrome (BADS). Two functional outcome indices, i.e., resumption of drinking and occupation were evaluated 18 months after discharge. Alcoholics' performance on BADS predicted alcohol-nonspecific outcome (occupation) but not alcohol-specific (drinking) outcome. In contrast, other neuropsychological tests did not predict any of the two outcome indices. The results suggest that ecologically valid neuropsychological tests such as BADS are the better predictors of alcoholics' social outcome.

[Study 2] Long-term social outcome of 26 alcoholic Korsakoff amnesics was evaluated at 81.9 months after onset. Initial neuropsychological examination performed at 14.3 months after onset disclosed dense amnesia in contrast to normal intelligence and attention. The patients were also impaired in the Wisconsin Card Sorting Test (WCST). At approximate 7 years follow-up, three patients were dead and 11 patients were still institutionalized. Only three patients returned to work. The results suggest that Korsakoff amnesics have poorer social outcome than amnesics caused by other etiologies such as head injuries and encephalitis.

[Study 3] Among 26 Korsakoff patients in Study 2, eight received longitudinal neuropsychological assessment at two points (18.5 months and 84.3 months). Dense amnesia together with preserved intelligence and attention showed no interval change throughout assessments. In contrast, frontal executive impairment as indexed by WCST performance showed slight but steady improvement at follow-up. However, memory compensation including external aids and mnemonic strategies were only infrequently used even at follow-up. Patients with severe executive dysfunction administered less compensation.

These three studies may suggest that executive dysfunctions play a crucial role in the prognosis of alcoholic amnesic patients.

Speaker 12: Barbara Wilson

Sunday March 10, 10:00 - 11:00

Rehabilitation of memory for everyday life

Barbara Wilson

(MRC-CBU, Cambridge and The Oliver Zangwill Centre, Ely, U.K.)

The main goal of rehabilitation is to enable people disabled by injury or disease to return to their own, most appropriate environment. Memory rehabilitation should also follow this principle and focus on real life problems rather than experimental material. Although people with memory impairments and their families should not be led to believe that significant improvement in memory can occur once the period of natural recovery is over, they can, nevertheless, be helped to manage, cope with or bypass problems arising from such impairment. When planning for a memory therapy programme, results from a neuropsychological assessment should be combined with more direct assessment of everyday problems obtained by observation, interviewing and self report measures. Neuropsychological assessment will identify cognitive strengths and weaknesses while direct assessment will highlight everyday problems requiring treatment. Some general guidelines exist to improve learning and retention in people with memory problems but, in addition to these guidelines, we need to identify specific goals appropriate for individual patients and families. Achieving these goals may require environmental adaptations, teaching the use of external memory aids, helping people to use strategies to enhance learning and dealing with the emotional and psychosocial consequences of memory impairment. In addition to individual therapy, group treatments have certain advantages. They are useful in reducing anxiety and depression, in increasing social contacts, and in practising the use of aids and strategies. The teaching of generalisation from one setting to another or from one problem to another should be an integral part of a memory rehabilitation programme. This talk presents data to support these views and concludes with a case example of a successful memory programme for a man who sustained a severe head injury.

Speaker 13: Ingvar Lundberg

Monday December 20, 13:45 - 14:45

Working memory and reading disability

Ingvar Lundberg

(Göteborg University, Sweden)

As a cognitive tool the art of reading and writing has had a most profound impact on society and human cognitive functioning. Written language has the character of an external memory system where its spatial lay-out and its permanence permit inspection and repeated controls of the stream of thoughts, thereby considerably reducing the working load of the human memory. As all revolutionary inventions, however, written language has also had non-intended side effects. “Those who acquire it will cease to exercise their memory and become forgetful; they will rely on writing to bring things to their remembrance by external signs instead of on their own internal resources”, as the skeptical Egyptian king Thamus put it in Plato’s dialogue Phaedrus. And no doubt, nonliterate peoples are capable of astonishing feats of memory testified by ethnologists.

Although the art of verbatim long-term episodic memorization might have declined in literate societies, reading and writing seem to have put other demands on the memory system. In processing written text a reader must integrate moment-to-moment perceptions across time, rehearse them and combine them with simultaneous access to archival information about past experience, actions and knowledge. This is what working memory involves. In oral dialogues the working-memory load is normally considerably lower than in reading, as written discourse packs linguistic information differently. The absence of prosodic information further increases the working-memory load in reading. This point will be further elaborated in the paper. Even at the word level, especially in alphabetic scripts, and especially during the initial stages of reading acquisition, the decoding process involves considerable working-memory demands. A skilled reader processes many thousands of words each day, year after year. No doubt, this intense and extensive activity would be expected to have a profound impact on brain functions. And, in fact, recent studies have shown how literate adults have brain activity patterns as response to phonological memory tasks which are clearly different from the patterns of illiterate individuals from the same SES background (Ingvar, 1999). Also dyslexic individuals show lower activity or less integrated activity in brain areas of critical importance for phonological processing (Paulesu et al., 1998; Pugh et al. 1999).

A complex working-memory task is typically devised to mimic the competing cognitive demands involved in an activity such as reading. In the study to be reported in this paper the subject is orally presented with a consonant letter followed by a simple sentence verification task also orally presented (“trees can walk” yes-no). After two or more such presentations the subject is required to report the presented consonants in correct order. This is a task involving the phonological loop as well as the central executive (Baddeley & Gathercole, 1996).

This task and several other tasks were presented to 30 adults with a proven history of reading disability and to 30 normal readers matched on age, gender and educational level. The working memory capacity was significantly associated with a number of phonological tasks such as spoonerism, non-word reading, and phonological distinctness of vocabulary. Logistic regressions, however, demonstrated that working memory had the power of predicting group belonging over and above the other tasks. This finding supports the assumption of the critical role of complex working memory in reading. However, the causal direction is still an unsettled issue.

Speaker 14: Robert Logie

Sunday March 10, 13:30 - 14:30

Working with memory in everyday cognition

Robert Logie

(University of Aberdeen, U. K.)

Working memory refers to the capacity for retaining information on a temporary basis, and for manipulating, transforming, and reinterpreting that information during the performance of a wide range of everyday tasks. The multiple component model of working memory has been particularly successful in accounting for many aspects of everyday cognition from immediate verbal and visual memory tasks, through acquisition of vocabulary to mental arithmetic, reasoning and creative thinking. It provides not only an understanding of healthy adult cognition, but also offers insight into the cognitive impairments that arise from some forms of focal brain damage, as well as from brain diseases such as Alzheimer's disease. This paper will provide a broad overview of some of these applications of working memory research, and will then report the results of two lines of experimental research that illustrate how the multiple task working memory model has been particularly fruitful in the study of (a) mental imagery in healthy adults and in brain damaged individuals and (b) dual task performance impairments that arise in the early stages of Alzheimer's disease. Results offer insight into (i) some of the processes of mental discovery and creative thinking, (ii) the possibility that perception and mental imagery are rather more distinct than has been assumed hitherto (iii) some of the cognitive difficulties that brain damaged individuals might encounter in daily life with advice for carers, (iv) non-invasive methods for detecting and monitoring the impact of some forms of brain damage, (v) further theoretical development in the area of on-line cognition.

Presentation time for odd numbers, 15:00 - 16:15

Presentation time for even numbers, 16:15 - 17:30

(1)

Increased right temporo-parietal and middle frontal gyral activity with more associates, but fewer unique items during study in four paired recognition tasks

Steven Phillips (Neuroscience Research Institute, AIST)

Kazuhisa Niki (Neuroscience Research Institute, AIST)

Working memory is affected by items stored and the associations between them. However, separating these factors has been difficult, because increased items usually accompanies increased associations/relations. In this series of experiments, these two factors are varied independently. Subjects were given lists of study pairs and asked to make a recognition judgement. The number of unique items and maximum associations in three list conditions were: (1) AB, CD: four/one; (2) AB, CD, EF: six/one; and (3) AB, AD, CB: four/two, respectively. Japanese letters were used in Experiments 1 (ideograms) and 2 (phonograms); digits in Experiment 3; and shapes generated from Fourier Descriptors in Experiment 4. Across all materials, right temporo-parietal and middle frontal gyral activity was found with increased number of associates, but not items. Because this effect was common to all domains, and right inferior parietal lobule has been implicated in bilateral shifts of spatial attention, we suggest that encoding of overlapping pairs may be enhanced by repeatedly attending to component items. We also discuss domain-specific effects as possible indicators of chunking (i.e. interpreting pairs as single items) to reduce task difficulty.

(2)

Hippocampus's role in retrieval of task-related knowledge and memory: Flashing to the things you are looking for and solidifying them into long-term memory

Jing Luo (Laboratory of Mental Health, Institute of Psychology, Chinese Academy of Sciences)

Kazuhisa Niki (Neuroscience Research Institute, AIST)

A series of fMRI researches was conducted to investigate the role of hippocampus in higher cognitive function, we proved the activity of hippocampus increased when a), the availability of task-related knowledge (TRK) was increased; b), subjects suddenly got the correct answers of Japanese riddles; and c), subjects processed the semantic information they were looking for. Based on this, it was proposed that, through participating in retrieval of TRK and consolidation of episodic memory, hippocampus enabled the organism to keep the information that owned great survival values in mind for future usage.

Posters

Saturday March 9

Odd numbers, 15:00 - 16:15

Even numbers, 16:15 - 17:30

(3)

The left hippocampal region was specifically involved in the retrieval of facial identity. An event-related fMRI study

Tetsuya Iidaka (Nagoya University, Graduate School of Environmental Studies)

Tomohisa Okada (NIPS, Dept of Cerebral Research)

Norihiro Sadato (NIPS, Dept of Cerebral Research)

Yoshiharu Yonekura (Fukui Medical University, BIRC)

We investigated neural responses to retrieval of facial identity and emotion using an event-related fMRI and healthy subjects. Under the identity condition the subject performed recognition test for neutral face, and under the emotional condition they retrieved expression of target face. Under the identity condition, activation was found in the bilateral hippocampus and parahippocampal gyrus, whereas under the emotional condition the activation was right lateralized. The left hippocampus responded more greatly to the target faces than to the distracter faces under the identity condition, suggesting that this region was specifically involved in the mnemonic process of facial identity.

(4)

Cross-modal Comparison of Encoding and Retrieval of Recognition Memory and Source Memory: An fMRI study

Hikari Kinjo (School of Social Information Studies, Otsuma Women's University, Japan)

Izuru Nose (Department of Human Studies, Bunkyo Women's University, Japan)

Masato Taira (Department of Physiology, Nihon University, School of Medicine Tokyo, Japan)

The object of this functional MRI study was to identify cerebral activations involved in the general processes during encoding and retrieval of recognition and source memory. Although previous studies showed a various cerebral regions (e.g., right PFC and/or left PFC) associated with recognition and source memory, it remains to be demonstrated that the activations were not due to stimulus specific effects. This study compared the cortical activations between two stimulus conditions (Kanji words and line-drawings), in terms of encoding and retrieval during recognition and source memory tasks. Results and theoretical implications will be discussed.

(5)

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(6)

Impairment of story memory organization in patients with schizophrenia

Mie Matsui (Toyama Medical and Pharmaceutical University, Japan)

Tomiki Sumiyoshi (Toyama Medical and Pharmaceutical University, Japan)

Kanade Kato (Toyama Medical and Pharmaceutical University, Japan)

Sawako Sumiyoshi (Toyama Medical and Pharmaceutical University, Japan)

Yuko Kikura (Toyama Medical and Pharmaceutical University, Japan)

Masayoshi Kurachi (Toyama Medical and Pharmaceutical University, Japan)

Memory impairment is one of the most consistent findings among the neuropsychological deficits reported in patients with schizophrenia. The purpose of this study was to examine the relationship between psychopathology and the organization of story memory in patients with schizophrenia. The organization structure of memory was evaluated with the Logical Memory stories of the Wechsler Memory Scale-Revised. The results confirm previous findings that memory organization of story is impaired in patients with schizophrenia, and suggest that the memory organization deficits are related to the disorganized thought and behavior.

(7)

Self-referential mental activity: An event-related functional magnetic resonance imaging study

Takashi Horiuchi (Tokai Women's College, Japan)

Michio Nomura (Nagoya University, Japan)

Tetsuya Iidaka (Nagoya University, Japan)

Norihiro Sadato (National Institute for Physiological Sciences, Japan)

Tomohisa Okada (National Institute for Physiological Sciences, Japan)

Yoshiharu Yonekura (Fukui Medical University, Biomedical Imaging Research Center, Japan)

The self-referent encoding facilitates the recall performance. The purpose of present study is to investigate the difference between self-referent encoding and other encodings by event-related functional magnetic resonance imaging. In the learning phase, six right-handed subjects judged trait adjectives under three separate fMRI scan conditions: (a) self-reference, (b) semantic, (c) physical. After the learning phase, they were given the surprise free recall task, and self-reference effect was confirmed. The analysis of fMRI data showed that the self-referent encoding yielded specific activations in the thalamus.

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(8)

The role of semantic information in Japanese sentence comprehension

Miki Uetsuki (Dept. of Psychology, Grad. School of Humanities and Sociology, University of Tokyo)

Kenji Itoh (Graduate School of Medicine, University of Tokyo)

Akira Iwanami (Graduate School of Medicine, University of Tokyo)

Ichiro Koshida (Faculty of Engineering, Tokyo Engineering University)

In order to examine the role of semantic information in Japanese sentence comprehension, we presented the garden-path sentences with the different two semantic biases, and investigated Event-Related Potential (ERP) components elicited by these sentences. The result shows that the ERP components were no significant difference between two semantic biases. Parser builds the syntactic structure without reference to semantic information in the garden-path theory, on the other hand parser builds the syntactic structure using not only syntactic information but also semantic information in the constraint-based model. Therefore this result suggests that the garden-path theory is more suitable for Japanese sentence comprehension model than the constraint-based model.

(9)

The interaction of on-line inferences: The effects of predictive inferences on bridging inferences

Ryuta Iseki (University of Tsukuba, Japan)

This study investigated whether bridging inferences are affected by predictive inferences or not, using meaningfulness-decision task, in which participants decided as fast and as accurate as possible whether the target sentence is meaningful or not. In experiment 1, prediction-consistent bridging inferences were compared with prediction-inconsistent bridging inferences. The former had greater priming effect than the latter. In Experiment 2, predictive inferences were compared with prediction-consistent bridging inferences. The latter had greater priming effect than the former. Thus, prediction-consistent bridging inferences were more activated than predictive inferences and prediction-inconsistent bridging inferences, perhaps because of additional activations from predictive inferences.

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(10)

Word processing in two languages sharing the same Chinese character: The case of more and less fluent bilinguals in Chinese and Japanese

Naoko Kotake (Graduate School of Hiroshima University, Japan)

Chie Kawamura (Graduate School of Hiroshima University, Japan)

Norie Nakashima (Graduate School of Hiroshima University, Japan)

Suh Hyerin (Graduate School of Hiroshima University, Japan)

Yoshiko Habuchi (Graduate School of Hiroshima University, Japan)

Norio Matsumi (Graduate School of Hiroshima University, Japan)

Researches on second language acquisition suggest a progression from reliance on word form to reliance on meaning with increasing proficiency in the second language. An experiment was carried out to investigate whether the progression was observed in Chinese-Japanese bilinguals. More and less fluent bilinguals in Chinese and Japanese performed a translation recognition task in which they decided whether the second of two words was the correct translation of the first. In the experiment the words were not correct translation equivalents, but related by lexical form (e.g., 会社—公共 (public) instead of 会社—公司 (company)) or meaning (e.g., 整理—打掃 (sweeping) instead of 整理—收拾 (keeping tidy)). The results showed that both bilinguals suffer from semantically related words in the experiment.

(11)

Study on the structure of lexical memory of Japanese characters

Michiko S. Nakayama (Osaka City University)

It is assumed that there is a certain structure in lexical memory of Kanji because there are so many Kanji in Japanese writing system. The properties of Kanji are assumed to affect the structure of memory. This study focused on the lexicality of single Kanji characters. A total of 991 Kanji characters were examined by the questionnaire to evaluate the lexicality with five-point scale and the experiment with lexical decision task. The relationship between the evaluations and the reaction times were analyzed. The results will be discussed in terms of the structure of lexical memory of Japanese.

(12)

Which kind of representation underlying Kanji clarification test

Chen Bai (Graduate School of Information Sciences, Tohoku University)

The present study was conducted to investigate perceptual attributes of Kanji-character that influence priming effects in the Kanji clarification test. In the experiment, the perceptual shapes of study Kanji-characters were shown either in their upright or mirror-reversed orientation in the study phase. Kanji clarification test was later presented to measure the amount of priming under these different study conditions. The results showed that the amount of priming was independent to previous manipulation of the shapes of kanji-character. It is implied that an abstract, orientation-invariant representation of Kanji-character may attribute to the equivalent priming effects obtained in the Kanji clarification test.

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(13)

Context effect on processing of two-kanji compound word in priming situation

Aiko Morita (Faculty of Education, Hiroshima University)

The present study examined the context effect on processing two-kanji compound words primed by a sentence with a blank. Participants responded slower when targets were pseudo-homophone, orthographically similar nonwords, and semantically similar nonwords than when targets were control nonwords. These patterns of results were not different from the previous study using lexical decision task without prime. These results suggested that the essential factor of context effect on word recognition in sentence is not only the prediction from semantic information, but also the situation of on-line reading.

(14)

Whole-to-part repetition priming of novel stimulus

Hisato Imai (Tokyo Woman's Christian University, Japan)

Three experiments are reported in which participants' performance to identify briefly presented 3 by 3 dot matrices with five connected lines were compared for matrices primed by previously seeing the same 3 by 3 matrices or 4 by 4 matrices with eight lines which included the tested 3 by 3 matrices. The results showed that 3 by 3 matrices primed the same 3 by 3 matrices but that 4 by 4 matrices didn't prime their components of tested 3 by 3 matrices (Experiment 1). Same results were found even when participants attended automatically (Experiment 2) nor intentionally (Experiment 3) to the critical components. These results indicate that no whole-to-part priming would occur regardless of participants' attention to the critical component of the stimulus.

(15)

Developmental Changes in the Self-Choice Elaboration Effects on Incidental Memory

Hiroshi Toyota (Nara University of Education, Japan)

Tomoko Tatsumi (Sahogawa Elementary School, Japan)

A self-choice elaboration of targets in bizarre sentences produced a better incidental free recall of sixth graders than an experimenter-provided elaboration. A difference was not observed for second graders. In cued recall a self-choice elaboration led to a better performance of sixth graders for targets, in both bizarre and common sentence frames, than an experimenter-provided elaboration. Again, a different elaboration did not alter the recall performance of second graders. The results indicate that the effectiveness of a self-choice elaboration depends on the subject's age and the type of sentence.

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(16)

The self-choice effect on memory: Influence of presentation method

Tetsuji Hirano (Kwansei Gakuin University, Japan)

The self-choice effect is that people who select TBR items they want to learn perform better than those who are not given a choice. In a recall test, it has been demonstrated that the effect depends upon organizational processing of chosen TBR items (The encoding strategy hypothesis, Takahashi, 1997). In this study, organizational processing was manipulated by presentation method, list presentation and word pair presentation. The result showed that the self-choice effect was found in list presentation but not in word pair presentation. No effect in word pair presentation was interpreted in terms of restriction of organizational processing, consistent with the encoding strategy hypothesis.

(17)

Verification of the superiority of auditory information in interpersonal cognitive process: influence of delay derived from voice attributions.

Natsuko Yamada (Kyushu University, Japan)

Yuji Hakoda (Kyushu University, Japan)

Emiko Yuda (Kyushu University, Japan)

Based on the results from the previous studies by (Yamada, Hakoda & Yuda), the superiority the effect of auditory stimuli on interpersonal cognitive process under face/voice personality incongruent conditions were observed. The present study examined whether the possibility of the latency effect derived from the timing of the presentations of auditory stimuli by changing the orders of the face stimuli and voice stimuli. The result revealed that the superiority of auditory information under the cognitively incongruent conditions was robust, and the superiority of the auditory informational effect on interpersonal-cognitive process was not derived from the differences of the timings when presenting face/voice stimuli.

(18)

Social contagion of memory: Analysis of “Remember-Know” and source monitoring measures

Jun Kawaguchi (Nagoya University)

Keisuke Ogura (Nagoya University)

Hama Watanabe (Nagoya University)

Erina Saeki (Nagoya University)

This study examined the influence of response by another person on false recognition memory for visual objects. Subjects were presented with seven common scenes followed by the collaborative recall phase. Finally in the recognition phase, they were asked to decide whether an object presented on a screen was included in the studied scene or not. Subjects recognized the critical item suggested by the confederate better than in control condition. Their recognition to the critical item likely belonged to ‘know’ response rather than ‘remember’, besides many of their source were attributed to the confederate. The underlying social contagion process is discussed.

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(19)

Response biases of time and quality in source judgment.

Eriko Sugimori (Kyoto University , Japan)

Takashi Kusumi (Kyoto University , Japan)

We investigated source-monitoring errors of time and quality. We showed participants photographs or asked them to imagine items on both the first day and the second day. In a source-monitoring test immediately after the presentation of all lists, they tended to attribute the source to the first day rather than to the second. In the source-monitoring test after 7-day delays, despite they remembered the photographs better than the images, they remembered the source of the images better than that of the photographs. Multinomial modeling analyses showed that when participants don't remember the source very much, they use the metacognitive knowledge.

(20)

Effects of additions versus deletions on recognition memory for scenes

Yashio Uchino (Kyushu University, Japan)

Yuji Hakoda (Kyushu University, Japan)

Mariko Shibata (Kyushu University, Japan)

This study examined the effect of alterations made to pictures, i.e., addition or deletion of picture elements, on recognition memory. In the study phase, 20 participants viewed 20 line drawings of scenes for 5 s each. In the immediate recognition test, participants judged whether each test picture was altered from the studied one or not. The results showed that additions were more easily detected than deletions when the major information was altered. This result suggests that superiority of additions over deletions might occur when the alteration made to pictures distorts the meaning of the scenes.

(21)

The Influence of Resemblance between Target and Distractors in Verbal Overshadowing

Shinji Kitagami, (Kyoto University, Japan)

Wataru Sato (Kyoto University, Japan)

Sakiko Yoshikawa (Kyoto University, Japan)

The purpose of this study is to investigate how the resemblance between a target and distractors influences the verbal overshadowing effect, that is, the phenomenon that describing a previously seen face impairs its recognition. As a result, the verbal overshadowing effect was not obtained when a target and seven distractors highly resembled one another, although the effect was obtained when the similarity was not so high. The results are discussed in terms of the relation between the difficulty in the recognition test and the quality of the representation about the target face.

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(22)

Time course of retrieval-induced forgetting

Katsuya Tandoh (Tokyo Metropolitan University, Japan)

Makiko Naka (Tokyo Metropolitan University, Japan)

The very act of recalling information often impairs the recall of related information. This phenomenon is known as retrieval-induced forgetting. Retrieval-induced forgetting is considered to be caused by inhibitory mechanism and produce a long-lasting effect. In order to investigate the time course of inhibitory effect, we manipulated retention intervals between the retrieval-practice and final recall tests (i.e., immediate, 10 min., 1 hr., 1 week). Results showed that retrieval-induced forgetting occurred at every retention interval, even after 1 week and the magnitude of effect did not change across the retention intervals.

(23)

Indirect cuing in free recall

Tomoyuki Watanabe (Sendai Shirayuri Women's College)

Effects of indirect retrieval cues on free recall were examined. 45 female college students learned 36 mutually related cue-target word pairs. After a 90 s interpolated task, participants were engaged in a pseudo-LDT (lexical decision task), in which the learned cues, new words related to the pairs, or no related words were presented. Subsequent free recall for the targets was enhanced by the prior presentation of the cues. Note that there was no direct access to the cues during recall, and that explicit references to the cues were not made in advance of the LDT or free recall. Theoretical and methodological implications are presented.

(24)

Two weeks hypermnesia

Mitsuko Hayashi (Doctoral Program in Psychology, University of Tsukuba, Japan)

Hypermnesia (improvements across tests without re-study) was examined in the immediate testing condition and 2 weeks later testing condition. With category or uncategorized list, the items to generate or copy that participant remembered was tested three times. In the immediate condition, hypermnesia was all occurred. The 2 weeks later, just generation with uncategorized list produced hypermnesia. Is the relational item-specific hypothesis able to account for this phenomenon?

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(25)

Decreased Performance in Collaborative Remembering

Sachiko Kenmotsu (Nihon university, Japan)

Masahiro Sakamoto (Nihon university, Japan)

This study examined collaborative remembering using word stimuli. Two types of word lists were used — with high- and low- association. Sixty participants were asked to recall the word lists twice: first, individually, and later either individually or collaboratively. In accordance with the results of Meudell, Hitch, & Boyle (1995), the number recalled during collaborative remembering did not reach the expected number of items recalled by both collaborators, if they had recalled the materials individually. It was attempted in this study to investigate the decrease in collaborative performance by analyzing the transcripts of the recollection phase.

(26)

Effects of reminiscence on students' mood

Michiyo Ando (Shujitus Junior College)

The purpose of this study was to examine the effects of reminiscence (life review) on mood (Tension arousal, Energetic arousal). Seventy seven college students reviewed their life for two hours in pairs and they filled out the Japanese UWIST Mood Adjective Check List (JUMACL) before and after reminiscence. Results showed that 1) arousal of before reminiscence was higher than that of after and 2) Energetic arousal after reminiscence was higher than that of before reminiscence although there was no difference in Tension arousal. These results suggest that reminiscence is useful to support humans' mood for good condition.

(27)

Memory conjunction errors for words and faces: The role of awareness

Mark Tippens Reinitz (University of Puget Sound, USA)

Sharon L. Hannigan (Bard College, USA)

Memory conjunction errors occur when subjects falsely recognize new stimuli comprised entirely of parts of separately experienced “parent” stimuli. For faces these errors are especially likely when the parents were studied simultaneously. In two experiments we tested whether similar conjunction error patterns occur for compound words. The results show that when people are simultaneously aware of two parent words or faces, they are especially likely to later falsely recognize conjunction test items comprised of features of those parents. In a third experiment we show that people have a tendency to falsely recall conjunctions of simultaneously studied parent words.

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(28)

Think before you do: does this work for memory? Object permanence beliefs and memory failures in children and adults

Eugene Subbotsky (Lancaster University, United Kingdom)

Olga Chesnokova (Moscow University, Russia)

In four experiments, 6-, 8- and 10-year-old children and adults observed a mysterious transformation of a physical object in an apparently empty box and their recollections of the order of the events preceding the phenomenon were obtained. In order to conserve their strong beliefs in object permanence, adults (but not children) systematically distorted the temporal succession of events preceding the phenomenon. The frequency of the distortions depended on the salience of the nonpermanence phenomenon ('disappearance' versus 'appearance' of the physical object) and on the time interval between the events whose temporal order was reversed. The age differences are interpreted in terms of Vygotsky's thesis of the increasing impact of logical thinking on memory with age.

(29)

When were details of false memory created?

Yayoi Miyaji (Kobe College, Japan)

Hiroshi Yama (Kobe College, Japan)

This experiment was conducted to investigate when details of false memory were created. To set match and mis-match conditions between encoding and retrieval, lists of DRM paradigm were presented in blue or red within participants, and all items in recognition test were printed in blue or red between participants. Furthermore CNWs were printed at first or last between participants to see the influence of list items' color at test. Neither the color matching nor the order of CNWs had effects on CNWs' recognition and on color attribution. Hence we concluded the details of false memory were created at encoding.

(30)

False Memories Produced on Implicit and Explicit Memory Tests: Effects of Imagery Instructions

Hidetsugu Tajika (Aichi University of Education)

Hideki Hamajima (Nagoya University)

Akihiko Iwahara (Nagoya University)

We investigated whether the Deese-Roediger-McDermott paradigm using implicit and explicit memory tests would produce critical nonpresented (CL) words. Participants studied lists of semantic associate (e.g., newspaper, book, write, ...) to induce memories for CL words (e.g., read). Half of the participants were instructed to image the interword relation on each list and to write down each word on a list while studying. After studying the lists, participants received implicit and explicit memory tests. The level of priming of the CL words was very high when participants were instructed to image the interword relation on lists. The participants explicitly recognized many CL words as having been presented on the lists. The results are discussed in light of activation of associative responses.

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(31)

Source Monitoring, False Memories and Aging

Hedwige Dehon (University of Liège, Belgium)

Serge Brédart (University of Liège, Belgium)

In this study, we evaluated two different explanations for the absence of false memories in the DRM Paradigm (non activation of the critical lure vs efficient source memory) in younger and older participants. In experiment I, we explored participants' source monitoring abilities in both groups. Results showed that older subjects recalled fewer studied items, made more false memories and showed poorer source monitoring relative to younger participants. However, elderly participants were still able to correctly monitor the lure in some cases. In experiment II, we explored the influence of warning and study-strategy on the rates of false recall.

(32)

False recall when association from study items converges on two strongly related people

Akira Mukai (University of Liège, Belgium)

A recent false memory study (DRM paradigm) used proper names as critical lures (CL) (Bredart, 2000). Following this study, we used lists containing 10 words: the name of person (critical study item: CSI) strongly associated with the CL and 9 other study items that are all close associates of the both people ("Both" lists). These lists were compared with lists contained the same CSI, but other study items were related only to a CL ("Only" lists). The "Both" lists produced less false recall than the "Only" lists. This result could be explained by the difference of amount of activation that a CL and a CSI received.

(33)

Dissociation and Flashbulb Memory

Keita Ochi (Tokyo Kasei University, Japan)

Yoichiro Sagara (Teikyo University, Japan)

The present study, focusing on the murder and injury of children at Ikeda Elementary School in Osaka as materials, examined the relationship between the Dissociative Experiences Scale (DES) and the flashbulb memory. As results, it was found that the memory of the Ikeda stabbing incident had constituted flashbulb memories, but the scores of DES showed almost no correlation with the amount of flashbulb memory, the vividness of flashbulb memory, the amount of knowledge about the incident, and the amount of rehearsals. The results suggest the possibility that individual differences in dissociative tendency measured by DES are independent of the flashbulb memory phenomenon.

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Absent-mindedness while driving and poor memory performance

Rozmi Ismail (Universiti Kebangsaan Malaysia, Malaysia)

Peter Chapman (University of Nottingham, U.K.)

Geoffrey Underwood (University of Nottingham, U.K.)

The study aimed to explore the consequences of absent-mindedness while driving. The most common experience of absent-mindedness while driving is the 'time-gap' experience. For example, when motorist reaches some point in the drive they reported feeling of "waking-up" and find themselves with no conscious recollection of recovered-driven miles or the last spot passed by. This experience is best explained in terms of people's failure to be consciously aware of what was going on during the drive. It is hypothesis that such experiences associated with poor memory for driving. This experiment used computer game-driving tasks where the frequency of 'time-gap' and driving performance were monitored under predictable and less predictable conditions. In experiment 1, the subjects were asked to report Task Unrelated Images and Thoughts (TUITs) as a manifestation of 'time-gap' experiences and subjects had to detect unpredictable infrequent events. Data showed that frequency of TUITs reported correlated with poor memory for speed signs. In experiment 2, the performance of two groups of subjects were compared, one group of subject were the control group, in which they were asked not to report TUITs. The results confirmed of this study confirmed that driving performance and memory for driving situations under time-gap reported were significantly less than those in subjects who did not report time-gap. Subject's memory for the specific events (i.e., detecting the last car in the scene) was poor, less than half of the questions being correctly answered. Two main characteristics of the nature of time-gap were found. Firstly, it indicates a state of poor attention control where less attention is being given to the driving task. Secondly, it is a sign of poor memory since under such conditions no conscious awareness was involved and the occurrence of TUITs interfered with encoding processes.

(35)

Effects of cognitive load and retention interval in time- and event-based prospective memory task on amnesic patients

Koji Yamashita (Synsophy Project, Communications Research Laboratory, Japan)

Masayuki Shirakawa (Section of Clinical Psychology, Hyogo Rehabilitation Center, Japan)

Examined effects of cognitive load and retention interval, and two types of prospective memory (time- and event-based task) on amnesic patients. Prospective memory task was to deliver a message while searching Japanese Hiragana letters for the story in the high cognitive load condition, whereas for the number array in the low condition. In time-based task, participants were required to respond on either 2 or 7 minutes, whereas, in event-based task, to respond for alarm. Results showed that in the time-based task, as retention interval was long, participant's performance was worse in the high load condition than in the low condition, but in the event-based task, there were no effects on cognitive load and retention interval. These findings were discussed in terms of the relationship between frontal lobe function and environmental support.

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(36)

Predictive planning of pending goals

Hama Watanabe (Nagoya University)

Pending goals are intentions that are postponed by a planner because they do not fit into the current, ongoing activity. Recognizing later opportunities to achieve pending goals is an important cognitive ability because it allows one to defer work on a goal until one is in a better position to achieve it. This study focuses on how pending goal are recognized in everyday planning situations and offers a predictive encoding model of goal representation.

(37)

Do patterns of task shift make an effect on duration-estimation?

Yuko Suzuki (University of Tsukuba, Japan)

This study investigated the effects of context on estimation of the remembered duration. Subjects added and/or subtracted 1- or 2-digit numbers for 220 seconds. The combination of addition and subtraction was manipulated in 4 conditions, constant addition, constant subtraction, random, and regular switching for every 3 lines. After calculations, subjects estimated the remembered duration and were asked some introspection. Results of estimated times of random condition were longer than switching condition. As subjective speed and estimated time didn't covariate, it was proposed that subjects estimated time by modifying with their boredom.

(38)

How long does it take to master 1,000 words in a second language perfectly?

Takafumi Terasawa (Okayama University, Japan)

Tetsuya Yoshida (University of Tsukuba)

Nobuo Ohta (University of Tsukuba)

Yuko Iwai (Namiki High School)

Shigeru Koyama (Namiki High School)

We are conducting a long-term learning study on second-language acquisition using a new experimental design. It enables researchers to obtain exact data for vast amounts of study-contents covering long study-periods. Additionally, it inserts a long interval between studies and tests, and measures substantial or implicit lexical ability for the words in the second language. A 6-month learning study was conducted, in which the number and the density of study repetitions were controlled, with a one-month study-test interval in all study conditions. The data analysis showed that the effects of even slight word learning were accumulated unconsciously. Furthermore, it provided detailed predictions about how long it would take for each learner to master 1,000 words in a second language.

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(39)

Memory recognized as important factor in the Internet

Yukihiro Itoigawa (Nihon Unisys, Ltd.)

Long-term memory was recognized well in mental and physical rehabilitation for sport challenge. The author thought that developing ability in sport was recognized about memory of excellent scene for inner energy. But result showed variety response from descriptive subjects. Also the author discovered bumped facts in man machine communication, the Internet and real world. Memory of words, sentences and images were important factors to understand bumped scene. So applied theory was confirmed in private communication, advertising and homepage building. Emotion of friendliness, families and amusing caused from memory were considered as important factors in the Internet culture. Excellent product was brought in memorizing recall. It had meaning to remake classic Japanese culture. As result the author had defined memory research related with emotion is important theme for make break through to build up new communication in the Internet.

(40)

Interaction between memory for a moving and a static stimuli

Masayoshi Nagai (Kyoto University, Japan)

Jun Saiki (Kyoto University, Japan)

Ryota Nakai (Kwansei Gakuin University, Japan)

Akihiro Yagi (Kwansei Gakuin University, Japan)

When a moving or a static stimulus is presented in isolation, memory for the final position of the moving stimulus is displaced forward in the direction of its motion (Forward Memory Displacement: FMD) but memory for the position of the static stimulus is correct. What occurs in the case that both stimuli are presented? Results showed that FMD decreased with the static and memory for the static was incorrect with the moving. It was suggested that the static served as the reference point for the moving and memory for the static was attracted to the final position of the moving.

(41)

Learning complete versus partial linear orders

Eriko Kawasaki (Kawamura Gakuen Woman's University)

My hypothesis was that partially-ordered lattices ($A > B$, $A > C$, $B > D$) would be more difficult to learn than the comparable fully-ordered linear structures ($A > B$, $B > C$, $C > D$). The full order should be easier to learn because it permits subjects to use transitive inferences to fully order all elements along a unified line. In contrast, the partial order blocks a number of inferences involving the indeterminate case, and it thus prevents unification of the objects into one dimension. However, the result showed that the partial order was easy to learn probably because subjects neglected the indeterminate cases.

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(42)

The Relationship between Category Learning and Verbal Coding

Daisuke Tanaka (Dept. of Psychology, Grad. Sch. of Humanities and Sociologies, Uni. of Tokyo)

This study examined the relationship between category learning and verbal coding. Previous researches have shown that objects in the same category become more similar to each other and objects in different categories become increasingly dissimilar through category learning. Using letter matrices as exemplars of two arbitrary categories, similarity between two matrices was rated at three conditions, before category learning and after category learning with or without articulatory suppression. The result suggests subjects store learned categories using verbal coding.

(43)

Prototype abstraction in memory and the course categorization process

Takashi Ueda (Waseda University, Japan)

The exemplar view of categorization assumes we calculate the similarities between a target item and retrieved exemplars in memory, rather than category prototypes. Though numbers of evidences support the theory, prototype abstraction per se is not ruled out, and other evidences also suggest the use of prototypes. Then how do we think of the relationships between two types of representations in our memory system? In this presentation, the author proposed a “moving average prototype model” in which the use of exemplars is limited and updated through the learning process. The model was evaluated with ordinary prototype and exemplar models.

(44)

Why does the tie effect occur?: Structural interference approach to single-digit addition and multiplication

Hideaki Shimada (University of Tsukuba)

Arithmetic tie problems like $3 + 3 = ?$ or $6 \times 6 = ?$ can be solved faster than non-ties. The present experiment, in which participants solved a simple verification task, showed that while tie-mul-add condition problems (tie multiplication problems with addition answers, e.g., $3 \times 3 = 6$) were rejected faster than non-tie-mul-adds (e.g., $3 \times 4 = 7$), tie-add-muls (e.g., $3 + 3 = 9$) were rejected as fast as nontie-add-muls (e.g., $3 + 4 = 12$). This results suggest that automatic activation for tie problems is stronger than for nontie problems in addition, but not in multiplication. According to structural interference model, in the case of addition, the tie effect occur because of the difference of strength of automatic activation. Whereas, in multiplication, the tie effect occur because of the difference of the number of false-candidate answers, which interfere with true answer.

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The effect of articulatory suppression in the Tower of London task

Jun Ishikawa (University of Tokyo)

Yohtaro Takano (University of Tokyo)

The Tower of London task was used to investigate the interference of articulatory suppression. The dual task condition and the difficulty of the phase were manipulated as independent variable. As was observed in the previous study, the interference of articulatory suppression was not observed in the EASY phase condition. In the DIFFICULT phase condition, although the interference of articulatory suppression was observed in the Experiment 1, this pattern of result was not observed in the subsequent experiments.

(46)

The Enactment Effect in Alzheimer's Disease Patients

Kouhei Masumoto (Osaka University, Japan)

Tsuneo Takai (Yodogawa Christian Hospital)

Tetsuo Kashiwagi (Osaka University, Japan)

Satoru Tsuneto (Osaka University, Japan)

We examined four tasks: verbal tasks (VTs), verbal tasks/object (VTs/O), subject-performed tasks (SPTs) and experimenter-performed tasks (EPTs), in 15 young adults, 13 normal older adults and 10 the mild to moderately impaired Alzheimer's disease (AD) patients. Consequently, in every group, enactment effect and object presentation enhanced recall performance. Moreover, it also became clear that the enactment effect reduced the error in recall for every group. These results indicate AD patients can benefit from enactment at encoding no less than young adults and normal older adults. (This study was the Sasakawa Scientific Research Grant from The Japan Science Society.)

(47)

The effects of recency on the short-term serial memory for subject-performed tasks

Hiroyuki Kanashiki (Research Fellow of the Japan Society for the Promotion of Science (Kansai University), Japan)

In subject-performed tasks (SPTs) the participants are usually presented with verbal action phrases, such as "raise your arm", and then they are required to perform the denoted actions. Compared to verbal tasks (VTs), with standard verbal learning conditions, SPTs show a greatly enhanced memory performance. Moreover, Zimmer, Helstrup, and Engelkamp (2000) suggested that the recency effects was more extended in SPTs than VTs in the free recall task. The aim of this paper was to examine such recency effects on SPTs in the serial recall task. In two experiments, each participant learned nine action phrases, and recalled forward order (Experiment 1), or recalled backward order (Experiment 2). These results indicated that SPTs enhanced the memory of recency items than VTs in the forward recall task.

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Working memory for speech pitch

Akihiro Tanaka (University of Tokyo, Japan)

In Baddeley's working memory model, auditory-verbal information is considered to be held in the phonological loop. However, previous studies have focused mainly on segmental information of verbal memory. In this study, working memory for suprasegmental information, especially for pitch, in speech was examined. A dual-task experiment was conducted, in which subject was required to articulate irrelevant verbal material during short-term retention of auditory-verbal stimuli which include phonological or non-phonological pitch change. The results suggest that phonological and non-phonological pitch informations are retained separately.

(49)

Role of working memory in text comprehension: Individual differences in storage and retrieval

Yukiko Nishizaki (Osaka University of Foreign Studies, Japan)

Mariko Osaka (Osaka University of Foreign Studies, Japan)

This study addressed the relationship between the reading span test (RST) and the text comprehension performances from the view of storage and retrieval systems. The effects of the serial recall task (Experiment 1) and the word fluency task (Experiment 2) on the performances of the text comprehension between high and low RST groups were investigated with a dual-task method. The results showed that the text comprehension of low RST group was influenced by the serial recall task, in contrast that of high RST group by the word fluency task.

(50)

What Kind of Visuo-Spatial Task is Affected by Affective Valence in Working Memory?

Fumiko Gotoh (Doctoral Program in Psychology, University of Tsukuba, Japan)

Nobuo Ohta (University of Tsukuba, Japan)

The effect of affective valenced words for visuo-spatial tasks was investigated. In the present study two kinds of visuo-spatial tasks were examined: a locational relation task between 2 letters, and a one-letter rotation task. Participants were asked to perform these tasks and to process affective valenced kanji words at the same time. Affective valence was manipulated by affective kanji words that were negative, positive or neutral. Results showed that there were more errors for locational tasks with negative valenced words than for neutral words of marginal significance. In the rotation task, however, no differences were shown for errors of task in terms of affective valenced words. These results suggest that tasks that involved more work were most affected by affective valence in working memory.

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Preschoolers' Text Comprehension as Indicated by Listening Ability: The Influence of Working Memory and Prior Knowledge

Keiko Kosaka (Hiroshima University, Japan)

This study examined the effects of working memory (WM) capacity on text comprehension in preschoolers. Based on the results of Listening Span Test, fifty-eight 5-6-year-olds were divided into low- or high-WM group. Sentence Verification Technique tests (SVT) and local/global inference questions were used to assess the text comprehension. High-WM children gave more correct responses to questions than low-WM children. Low-WM children were more often able to respond correctly when they talked with experimenter about text before presenting it. The results of this study suggest that both WM capacity and prior knowledge affect listening comprehension.

(52)

Measuring individual differences in memory interference during reading span tasks.

Tsukasa Sano (University of Tsukuba)

Recent studies indicate that performance on working memory span test correlate with wide variety of language comprehension tasks. One explanation of the correlation between working memory span score and language comprehension is that individuals differ in level of susceptibility to interference. In this study, participants practiced reading span tasks (Japanese version: RST-J) three times. For each set of RST-J, same sentences were presented and the participants required remembering different target words, causing memory interference. From effects on the span scores when operating the target words, the author proposed the modified RST-J that could assess simultaneously working memory abilities, related to short-term maintenance and susceptibility to interference.

(53)

Lie and memory: strategies of "hiding a small fact" in an eye witness testimony, its effects on memory, and aging.

Etsuko T. Harada (Hosei Univ, Japan)

From testimonies' viewpoint, it is natural that they might have some facts in their mind which they do not refer in their testimonies. How do they cover up their "holes" in their testimonies, and what is the effects on memories of these "cover-up" telling. Two eyewitness experiments with video-clips were executed: in Exp. 1, older and young adults participated an individual experiment of testimonies, and showed varieties of strategies how to cover the holes. In Exp. 2, participants did a paper-and-pencil type testimonies and memory tests, and indicated effects of "lies" in testimonies on the memory, especially on memory confidence.

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How does the emotional stress of the witnessed event affect the ability of source monitoring ?

Natsuko Onuma (Graduate School of Human-Environment Studies Kyushu University)

Yuji Hakoda (Graduate School of Human-Environment Studies Kyushu University)

Wataru Oue (Forensic Science Laboratory Saga Prefectural Police Headquarters)

This study investigated whether emotional stress affects the occurrence of source misattribution, which seems to be most valid mechanism of misinformation effect. A half of 120 participants saw emotionally stressful videotaped movie, and the other half neutral one. Then, they answered the questionnaire, which included misinformation about the details of the movie. After 15 minutes or 2 days, they answered the source monitoring test, which required them to select the source of the memory of details that had been presented in the movie and/or in the questionnaire, or had not been presented. Several patterns of differences in test performance between emotional condition and neutral condition appeared. These differences suggest that in emotional condition, the ability for source monitoring declined more saliently with time, and memories about visually central details are more robust to misinformation effect at 15 minutes delay than in neutral condition.

(55)

The Effect of Familiarity of Faces on Eyewitness Identification

Chie Asai (University of Chiba, Japan)

Makiko Naka (University of Tokyo Metropolitan, Japan)

Eyewitness identification is said to be more accurate when a suspect is familiar to the witness than is a stranger. We studied the effect in terms of both Hit and Correct Rejection rates. First, subjects took an experiment where they rated photos, which were to make them familiar with the faces. Then they participated in another experiment where they saw some familiar faces (shown in the first experiment) and new ones, and took a recognition test which included the rest of familiar faces as distracters. Familiar faces were chosen more often resulting in high Hit but low Correct Rejection rates.

(56)

The different photographs effects on the identification of face

Sayako Masuda (Keio University)

We examined the degree to which different photographs effected the identification of. Forty college students (18-21 yrs) learned female faces (18-20 yrs) presented in 3 different photographs or the same (1 or 3 times repeatedly) photographs conditions. Immediately, Ss were asked to identify photographs of the same female faces (15yrs) with learned faces (18-20yrs). Results show that photographs presented in the different condition were more rapidly identified than those presented in the same photograph conditions.

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Manipulation of Overlapping Rivalrous Images by Polarizing Filters: A New Technique for Experimental Research in Memory Distortion of Eyewitnesses

Kazuo Mori (Shinshu University)

Hideko Mori (Shinshu University)

Hitoshi Kanematsu (Shinshu University)

Misaki Yamaguchi (Shinshu University)

Hiromi Shizuyama (Shinshu University)

Tsuyoshi Fujisawa (Shinshu University)

Eriko Matsuno (Kwansei Gakuin University)

Akane Yamazaki (Shinshu University)

In this new technique, two different images presented on the same screen can be seen separately by two groups of viewers without noticing that there are two different overlapping images. Therefore, it can artificially create 'conflicts' among eyewitnesses of the same event. Six experiments were carried out using this technique with eyewitnesses of various group sizes and different sex pairings. The experimental results are to be presented along with a demonstration of the technique.

(58)

Longitudinal Case Studies on Episodic Memory: An Investigation of Infantile Amnesia

Izumi Uehara (University of Tokyo, Japan)

What causes 'infantile amnesia'? To investigate this, I conducted longitudinal case studies on episodic memory in a few children. When the child was around 2 to 3 years, she reported fragments of episodes. However, the same child hardly recalled them when she grew up to 5 to 6 years. In contrast, she, who is now 8 years, can report several episodes experienced around 5 years. The mechanism for 'infantile amnesia' is discussed in relation to the passage of time, the abilities of reporting episodes and recognition, and the acquisition of memory verbs, such as 'remember' and 'forget'.

(59)

Cultural beliefs and the reminiscence bump

Shamsul Haque (University of Dhaka)

To explore the impact of cultural beliefs and societal expectations on the formation of reminiscence bump, autobiographical memories of senior Chinese participants from China and Malaysia were investigated. Although either group of participants showed reminiscence bumps approximately for the age between 10-30 years, Malaysian Chinese participants showed increased remembering of personal events from the 2nd decade of life, which appeared to be somewhat similar to the bump for local Malay participants who were taken as a control group. The overall findings of the study will be explained in terms of the cultural factors that might have distinct influence on shaping reminiscence bump.

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Changes in the temporal structure of autobiographical memories.

Koichi Sato (Gunma University, Japan)

Temporal structure of autobiographical memories was examined with “event-cueing” technique. Subjects were presented a word indicating a life-time period. They were asked to recall an autobiographical event which happened during that period. Then they responded to this event (cueing event) by recalling a second event (cued event) which was associated with the cueing event. In this way, subjects recalled ten autobiographical events sequentially. Temporal relations between cueing and cued events were examined. It was suggested that recent autobiographical memories were clustered temporally, but remote autobiographical memories were organized according to their contents, people, or life theme.

(61)

The influences of positive and negative moods on explicit and implicit memories: Investigating dissociation between the data-driven and the conceptually driven tests

Mika Itoh (Graduate School of Education, Kyoto University, Japan)

Mood-congruent memory effect (MCM) was investigated using 4 different memory tests: crossing the factor memory type (explicit vs. implicit) and the factor processing type (data-driven vs. conceptually driven). Participants were induced with music into either of positive, negative, or neutral mood states. They were sequentially presented a list of pleasant and unpleasant trait adjectives and then asked to judge whether each word described themselves or not. After the judgment task, they were given either of two types of explicit memory test.

(62)

A mere exposure effect for the concept formation: The effect of typicality and the number of exposures on affect and recognition judgment

Ken Matsuda (Kyoto University, Japan)

Takashi Kusumi (Kyoto University, Japan)

We examined how typicality of stimuli and exposure frequency influence the mere exposure effect. Participants studied unfamiliar fish pictures composed of 10 dimensions 0, 1, 3, 5 times, and formed the concept incidentally. After an inserted interruption task, participants judged typicality, liking and recognition for each picture, using a 9-point scale. The result indicated that as compared with the high- and low- typical stimuli, the stimuli with medium typicality produced a significantly stronger mere exposure effect. These results also indicated that participants prefer the prototypical stimuli integrated high - frequency value of each individual.

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