Human Learning and Memory:

Advances in Theory and Application

January, 11 - 13, 2003

Epochal Tsukuba
International Congress Center
Tsukuba, Japan

Organizers: Nobuo Ohta (University of Tsukuba)
Chizuko Izawa (Tulane University)

4th

Tsukuba International Conference on Memory

Human Learning and Memory: Advances in Theory and Application

January 11, Saturday

- Jeroen Raaijmakers, University of Amsterdam, The Netherlands
  (Yayoi Miyaji, Kobe College　宮地弥生、神戸女学院大学)
- Chizuko Izawa, Tulane University, USA
- Charles Brainerd, University of Arizona, USA
  (Takafumi Terasawa, Okayama University　寺澤孝文、岡山大学
  Tazuko Aoki, Okayama University　青木多寿子、岡山大学)
- Valerie Reyna, University of Arizona, USA
  (Shigeru Ono, Tokyo Metropolitan University　小野滋、東京都立大学)

January 12, Sunday

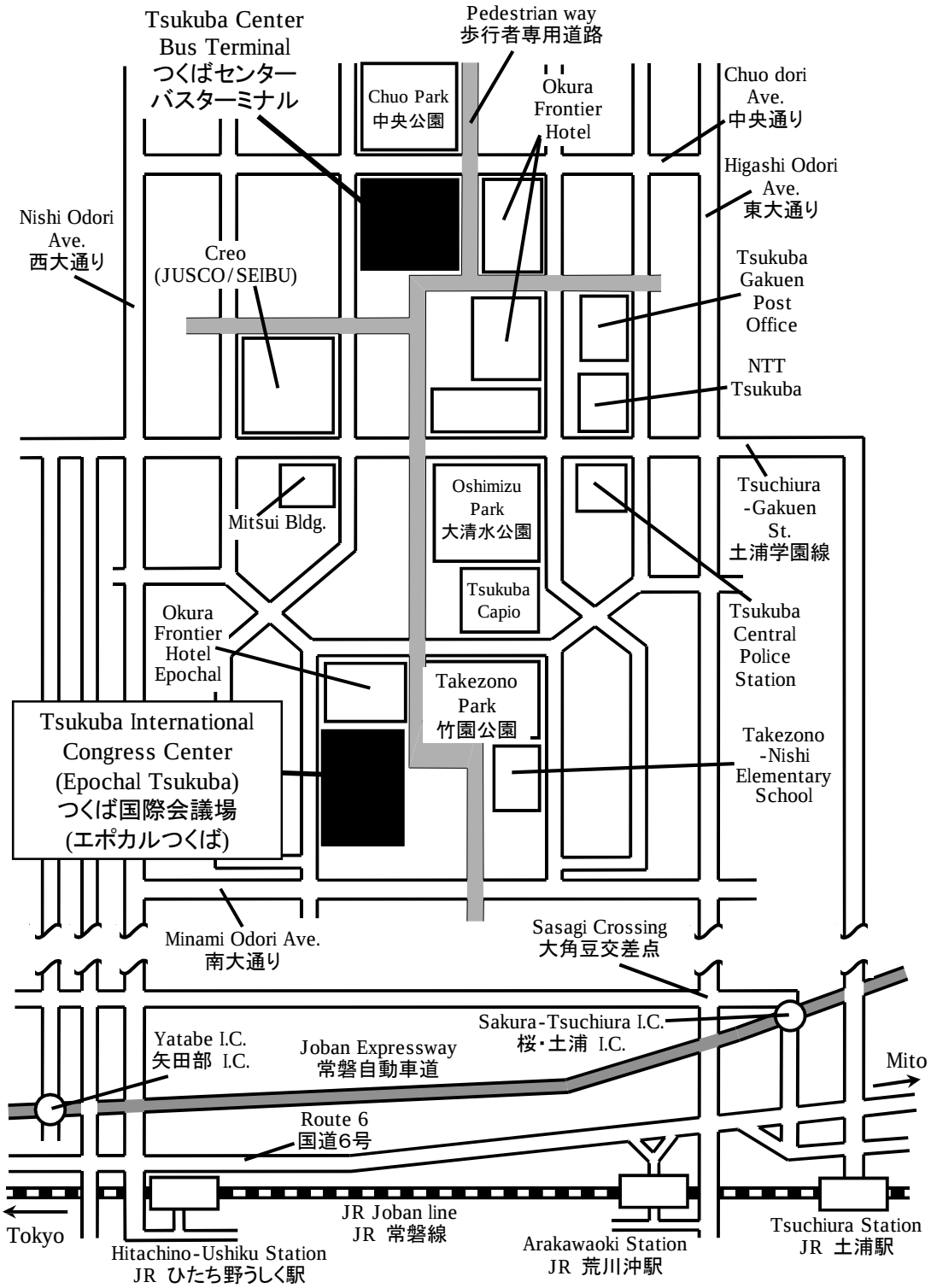
- Michael Humphreys, University of Queensland, Australia
  (Ryuta Iseki, University of Tsukuba　井関龍太、筑波大学)
- Richard M. Shiffrin, Indiana University, USA
  (Hideaki Shimada, University of Tsukuba　島田英昭、筑波大学)
- Jun Kawaguchi, Nagoya University, Japan
- Alice Healy, University of Colorado, USA
  (Hama Watanabe, Nagoya University　渡辺はま、名古屋大学)
- Poster session

January 13, Monday

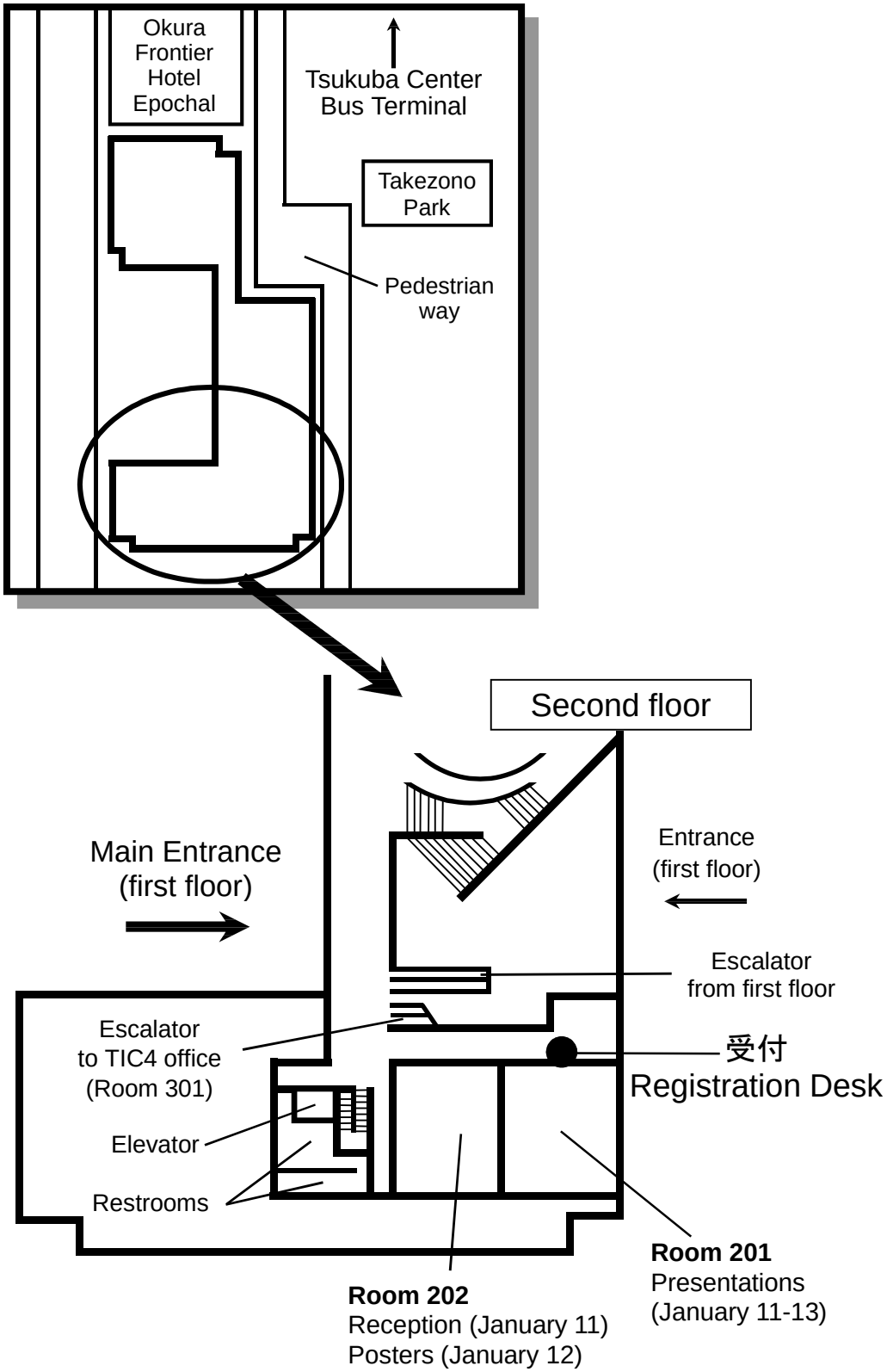
- Nelson Cowan, University of Missouri, USA
  (Satoru Saito, Kyoto University　齊藤智、京都大学)
- Douglas Nelson, University of South Florida, USA
  (Kazuo Mori, Shinshu University　守一雄、信州大学)
- Lynn Hasher, University of Toronto, Canada
  (Etsuko Harada, Hosei University　原田悦子、法政大学)

Location

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



Conference Venue



4th Tsukuba International Conference on Memory

Saturday January 11

Chairpersons:

Nobuo Ohta (University of Tsukuba, Japan)
Chizuko Izawa (Tulane University, USA)
Hiroshi Yama (Kobe College, Japan)

09:00 - 9:30	Registration	
9:30 - 9:50	Opening	**Nobuo Ohta,** University of Tsukuba
9:50 - 11:10	Speaker 1	**Jeroen Raaijmakers,** University of Amsterdam, The Netherlands (Yayoi Miyaji, Kobe College 宮地弥生、神戸女学院大学) Modeling implicit and explicit memory
11:10 - 12:30	Speaker 2	**Chizuko Izawa,** Tulane University, USA In search of optimum learning: Psycho-physiological similarities and differences between study (S) and test (T) trials and effects of study-test (S-T) presentation programs
12:30 - 14:00	Lunch	
14:00 - 15:20	Speaker 3	**Charles Brainerd,** University of Arizona, USA (Takafumi Terasawa, Tazuko Aoki, Okayama University 寺澤孝文、青木多寿子、岡山大学) Fuzzy-trace theory and memory
15:20 - 16:40	Speaker 4	**Valerie Reyna,** University of Arizona, USA (Shigeru Ono, Tokyo Metropolitan University 小野滋、東京都立大学) Fuzzy-trace theory, judgment, and decision making
17:00 - 19:00	Reception with Cash bar (Room 202)	

4th Tsukuba International Conference on Memory

Sunday January12

Chairpersons:

Nobuo Ohta (University of Tsukuba, Japan)

Chizuko Izawa (Tulane University, USA)

Hiroshi Yama (Kobe College, Japan)

09:00 -09:20	Registration	
09:20 - 10:40	Speaker 7	**Michael Humphreys,** University of Queensland, Australia (Ryuta Iseki, University of Tsukuba 井関龍太、筑波大学) Recollection and familiarity
10:40 - 12:00	Speaker 8	**Keynote Speech** **Richard M. Shiffrin,** Indiana University, USA (Hideaki Shimada, University of Tsukuba 島田英昭、筑波大学) Bayesian modeling of memory and perception
12:00 - 13:30	Lunch & Poster Preparation	
13:30 - 14:20	Speaker 9	**Jun Kawaguchi**, Nagoya University, Japan Interaction between memory and environment: Automatic and intentional processes
14:20 - 15:40	Speaker 10	**Alice Healy,** University of Colorado, U.S.A. (Hama Watanabe, Nagoya University 渡辺はま、名古屋大学) Optimizing the speed, durability, and transferability of training
16:00 - 17:15	**Poster session** – odd numbers (Room 202)	
17:15 - 18:30	**Poster session** – even numbers (Room 202)	

4th Tsukuba International Conference on Memory

Monday January13

Chairpersons:

Nobuo Ohta (University of Tsukuba, Japan)

Chizuko Izawa(Tulane University, USA)

Hiroshi Yama (Kobe College, Japan)

09:00 - 9:10	Registration	
9:10 - 10:30	Speaker 11	**Nelson Cowan,** University of Missouri**,** USA (Satoru Saito, Kyoto University 齊藤智、京都大学) Working-memory capacity limits in a theoretical context
10:30 - 11:50	Speaker 12	**Douglas Nelson**, University of South Florida, USA (Kazuo Mori, Shinshu University 守一雄、信州大学) Implicitly activated memories, the missing links of remembering
11:50 - 13:20	Lunch	
13:20 - 14:40	Speaker 13	**Lynn Hasher,** University of Toronto, Canada (Etsuko Harada, Hosei University 原田悦子、法政大学) It's about time: Circadian rhythms, memory and aging
14:40 - 15:00	Closing	**Chizuko Izawa,** Tulane University, USA

Speaker 1: Jeroen G. W. Raaijmakers

(Yayoi Miyaji, Kobe College 宮地弥生、神戸女学院大学)

Saturday January 11, 9:50 – 11:10

Modeling implicit and explicit memory

Jeroen G.W. Raaijmakers
(University of Amsterdam, The Netherlands)

Over the past 25 years several quite successful models have been developed for episodic memory. An important characteristic of a number of these approaches is that they are general theories of memory rather models for specific experimental paradigms such as recognition or recall of paired associates. However, only a few of these theories have attempted to explain implicit memory phenomena although such phenomena have been the subject of many recent experiments. In this lecture I will discuss how explicit and implicit memory phenomena might be treated within a unified framework for human memory. I will argue that many implicit memory phenomena can be explained within a framework that does not rely on the assumption that implicit memory is based on a separate memory system (e.g., the perceptual representation system assumed by Schacter and many others). The framework that we have been working on in recent years is based on the assumption that implicit memory phenomena can be explained by a semantic-lexical memory system that is dynamic in nature and sensitive to contextual and perceptual aspects of the stimuli.

Speaker 2: Chizuko Izawa

Saturday January 11, 11:10 - 12:30

In search of optimum learning:Psychophysiological similarities and differences between study (S) and test (T) trials and effects of study-test (S-T) presentation programs

Chizuko Izawa
(Tulane University, U.S.A.)
Robert G. Hayden
(Tulane University, U.S.A.)
Michael Franklin
(Tulane University, U.S.A.)
Edward Katkin
(State University of New York at Stony Brook, U.S.A.)

To optimize learning, we examined general learning theories, total time (TTH), S (study) = T (test), and S-T-R(rest) presentation program hypotheses, via hitherto unexamined psychophysiological reactions to five S-T presentation programs: SSSSSSST, SSST, ST, STTT, and STTTTTTT repetitive patterns. Fifty college-freshmen learned a 20-pair list, while GSR (Galvanic Skin Responses) and HR (heart rates) were recorded. Learning curve analyses affirmed large differences among presentation programs. Each response measured differed significantly as a function of cycles/total time. HR and GSR revealed overall habituation from early to late acquisition stages.

New discoveries include: (a) S and T trials differed significantly in HR and GSR, respectively. Over both successive S and T trials (blocks), (b) HR remained stationary from the first to the last trial of each block, (c) while GSR declined significantly within the S or T block earlier in acquisition, it became asymptotic subsequently. (d) The main S-T program effects were very large for GSR, but smaller for HR. (e) However, S-T program effects interacted with S and T trial differentials significantly both in HR and GSR. (f) Alertness (HR) on S trials was greatest for the highest S density program but decreased generally as the T density increased. (g) The same interactions were more dramatic in GSR: A complete reversal occurred in nervous perspirations from the highest S density to the highest T density program. (h) The greater the T trial density, the more efficient learning per S trial, the higher the attention activation and comfort (less perspiration)! Izawa's S-T-R presentation program hypothesis is well supported, while its alternatives are rejected.

Criterion-run learning curve analyses supported all-or-none learning theory, but not incremental leaning theory. Most intriguingly, however, physiological data disclosed patterns, which shed new light on this classic controversy.

Speaker 3: Charles J. Brainerd

(Takafumi Terasawa, Tazuko Aoki, Okayama University
寺澤孝文、青木多寿子、岡山大学）

Saturday January 11, 14:00 – 15:20

Fuzzy-trace theory and memory

Charles J. Brainerd
(University of Arizona, U.S.A)

Fuzzy-trace theory (FTT) is a model of memory, higher reasoning processes, and the interface between the two. Early work on FTT was motivated by findings about how the validity of solutions to reasoning problems (e.g., decision making, deductive inference, quantitative judgment) is related to memory for background facts that determine which solutions are valid (e.g., the premises that authorize deductive inferences). An especially surprising datum was that reasoning accuracy proved to be largely independent of memory accuracy. Later work has focused on memory mechanisms, particularly memory falsification mechanisms, that would be needed to account for such findings. This later work will be sketched in the current presentation, whereas the reasoning side of FTT will be covered in the companion presentation by Reyna.

In false-memory research, FTT's emphasis is on exploiting a few explanatory principles, which are empirically well-grounded, to predict and control specific memory illusions, such as semantic intrusions in free recall or false recognition of implied inferences from narratives or the Deese/Roediger/McDermott illusion. Most of this work has revolved around five principles: (1) *parallel storage of verbatim traces* (exact surface form of experience) *and gist traces* (meanings, relations, patterns); (2) *dissociated retrieval of verbatim and gist trace*s; (3) *opposing effects of verbatim and gist retrieval on false-memory response*s; (4) *developmental variability in storage, retrieval, and retention of verbatim and gist trace*s; and (5) *the influence of verbatim and gist retrieval on remembering phenomenologies.*

These principles have been used to predict a series of false-memory effects, with counterintuitive effects being foci of attention. Experimental evidence on five such predicted effects will be presented: (1) experimental and statistical dissociations between true and false memories; (2) long-term persistence of false memories; (3) creation of false memories via mere memory testing; (4) age increases in false-memory illusions during childhood; and (5) illusory vivid phenomenology (phantom recollection) provoked by false-memory illusions.

Speaker 4: Valerie F. Reyna

(Shigeru Ono, Tokyo Metropolitan University 小野　滋、東京都立大学)

Saturday January 11, 15:20 - 16:40

Fuzzy-trace theory, judgment, and decision-making

Valerie F. Reyna
(University of Arizona, U.S.A.)

Fuzzy-trace theory is a framework for understanding memory, reasoning, and their relationships. In contrast to either heuristics-and-biases or adaptive-ecological approaches, fuzzy-trace theory embraces inconsistencies in human reasoning by assuming opposing dual processes: Intuitive gist-based processing and analytical verbatim-based reasoning are options in a cognitive menu from which children and adults make selections, depending on the task. However, unlike traditional dual-process approaches to reasoning, intuition is assumed to be an advanced mode of thought.

Recent advances in memory research are used to construct an integrative theory of judgment and decision-making, with illustrations from real-world contexts such as medicine. A common core of theoretical principles is used to explain decision-making involving genetic counseling, informed consent, cardiovascular risk, and reducing sexual risk taking. Key principles include: (1) Reasoners encode multiple gist and verbatim representations, which confer cognitive flexibility. (2) However, reasoning operates at the least precise level of gist that the task allows, increasingly so with the development of expertise. (3) This simplified, qualitative processing is not a result of computational complexity, but is the default mode of reasoning. (4) Although simplified, qualitative processing protects against many errors, it also leads to predictable pitfalls in reasoning, and these change with development.

Results indicate that more advanced reasoners (adults and older children compared to younger children; medical students and trainees compared to specialists) process fewer dimensions of information, and process them qualitatively rather than quantitatively in order to make decisions. Rather than classifying reasoning as rational or irrational, ***degrees of rationality*** are proposed based on the processing underlying different kinds of errors across many tasks (e.g., framing tasks, syllogistic reasoning, conjunctive and disjunctive probability judgment, base-rate neglect, and others). Therefore, rationality is not an immutable trait, but changes from task to task and from one stage of development to another.

Speaker 5: Michael Humphreys

(Ryuta Iseki, University of Tsukuba 井関龍太，筑波大学)

Sunday January 12, 9:20 - 10:40

Recollection and familiarity

Michael Humphreys
(University of Queensland, Australia.)

We consider evidence from a variety of sources in order to test the assumption that recollection and familiarity are present at the item level. A review of previous arguments reveals that they do not address independence at this level. Previous research also suggests that an implausible tradeoff is required if the independence assumption is to be maintained. An examination of conditional probabilities in a two test procedure reveals that words which support recollection under one set of test instructions support familiarity under other sets. Contextual reinstatement effects are also examined. However, a failure to replicate previous findings in spite of having more than twice as many observations prevented us from a definitive test of the independence assumption.

Speaker 6: Richard M. Shiffrin

(Hideaki Shimada, University of Tsukuba 島田英昭，筑波大学)
Sunday January 12, 10:40 - 12:00

Keynote Speech

Bayesian modeling of memory and perception

Richard M. Shiffrin
(Indiana University, U.S.A.)

I present a framework for modeling memory, retrieval, perception, and their interactions. The models are inspired by Bayesian induction to determine optimal decisions, in the face of a memory system with inherently noisy storage and retrieval. The original origins of the modeling enterprise precede the Bayesian approach: They begin with the Atkinson and Shiffrin article in the 1960s, emphasizing the distinction between short- and long-term memory, and the control processes of short term memory, and include the SAM modeling of Raaijmakers and Shiffrin at the start of the 1980s that highlighted retrieval from long-term memory. The starting point for the Bayesian modeling was the Retrieving Effectively from Memory (REM) model for episodic recognition (Shiffrin & Steyvers, 1997), but it should be noted that this model was a natural outgrowth of the earlier modeling efforts and remains largely consistent with them.

The general REM framework describes: 1) the storage of episodic traces, the accumulation of these into knowledge (e.g. lexical/semantic traces in the case of words), and the changes in knowledge caused by learning; 2) the retrieval of information from episodic memory and from general knowledge; 3) decisions concerning storage, retrieval and responding. I give examples of applications to episodic recognition, and episodic cued and free recall, perceptual identification (naming, yes-no and forced choice), lexical decision, and long-term and short-term priming.

Speaker 7: Jun Kawaguchi

Sunday January12, 13:30 - 14:20

Interaction between memory and environment: Automatic and intentional processes

Jun Kawaguchi
(Nagoya University, Japan)

People make use of a variety of strategies and tools in order to memorize ordinary things and events, so that they do everyday activities without any trouble. For example, people may try to keep the name of casual acquaintance by the method of voluntary imagery, or may write an important promise in their notebook. This implies that both internal and external memory may work well together in our cognitive activities. The purpose of this study is to elucidate the relationship between internal process (e.g., memory strategies) and external environment (e.g., memory tools). The first part of this talk will show how people use these kinds of strategies by questionnaire study. This survey shows people mainly depend on external memory strategies rather than internal memory strategies. Furthermore, the way of using these strategies may change as age. The second part of the talk shows the experiment on memory for schedule. This suggested the retrieval of schedule was influenced by the condition of encoding environment (calendar format). Because this was an incident memory experiment, the encoding of environment (calendar) might be automatic. I will close my talk to show some comments on the interaction between internal memory processes and external environment.

Speaker 8: Alice Healy

(Hama Watanabe, Nagoya University 渡辺はま、名古屋大学)

Sunday January 12, 14:20 - 15:40

Optimizing the speed, durability, and transferability of training

Alice F. Healy
(University of Colorado, U.S.A.)

Our research program aims to develop principles that optimize simultaneously all three characteristics of training--speed, durability, and transferability. Such simultaneous optimization would not necessarily optimize any one characteristic individually but would require instead a balanced consideration of all three characteristics. The balance of the three aspects of training is not fixed across tasks or even within a given task but rather may depend on a variety of external factors, such as stress, frustration, fatigue, rapid presentation of information, and information load, that can change from time to time. Variations in any one of these factors can affect the interaction of these aspects of training. Although many of our studies have overlapping goals, we have divided them into several major groups. The first is concerned with managing factual overload, rapidly presented information, stress, frustration, and fatigue, with an emphasis on tasks involving perceptual and motoric processing. The second is addressed to a consideration of optimizing the balance of the three major aspects of training. The studies I will summarize illustrate our current work in these two groups. The experiments I will report from the first group involve a data entry task. They focus on the specific issue of initiating and executing response components under fatigue produced by prolonged work. These experiments demonstrate that prolonged work affects the component cognitive and motoric processes of data entry differentially and at different points in time. The experiments I will report from the second group involve a duration estimation task which is in some cases coupled with a secondary articulatory suppression task. They focus on the specific issue of ways to promote transfer of training. These experiments demonstrate that learning how to estimate durations is highly specific to the conditions of training and critically depends on whether or not a secondary task is required.

Speaker 9: Nelson Cowan

(Satoru Saito, Kyoto University 齊藤智、京都大学)

Monday January 13, 9:10 – 10:30

Working－memory capacity limits in a theoretical context

Nelson Cowan
(University of Missouri, U.S.A.)

Almost every cognitive task relies upon some version of what is commonly called working memory, which can be described as the limited amount of information that can be retained temporarily in a state that is more quickly and reliably accessible than other information in the memory system. Sentence comprehension requires that information from the first part of the sentence remain available in memory for integration with the next part, mental addition requires that the partial sums be held in mind until the problem is completed, and so on. Therefore, limitations in the capacity of working memory are of special importance in carrying out analyses of task demands and in assessing individual differences in cognitive capabilities.

I will argue that there has been very little consensus on how working-memory capacity should be measured. George Miller (1956) noted that adult humans can recall about 7 items in the correct serial order but his reference to that as a "magical" number was tongue-in-cheek as, for example, an autobiographical essay that he published clearly indicates. It was known even in 1956 that other tasks yield different estimates. In running memory span, for example, in which the end-point of the list is unpredictable, people typically recall only about 4 items.

I will sketch out conditions in which one critically important component of working-memory capacity, the contents of the focus of attention, might be measured. The conditions are those in which (1) stimulus items are familiar, (2) task demands prevent the grouping of stimulus items into higher-level units, and (3) task demands prevent rehearsal or passive memory storage faculties from augmenting performance. Under a wide variety of such circumstances, it can be shown that adults recall about 4 items Special measures of memory capacity will be proposed and relationships between those measures and other, more conventionally-used measures of working memory will be described.

Speaker 10: Douglas Nelson

(Kazuo Mori, Shinshu University 守　一雄、信州大学)

Monday January　13, 10:30 – 11:50

Implicitly activated memories, the missing links of remembering

Douglas Nelson
(University of South Florida, U.S.A.)

Scientists in many disciplines are mapping information in their domains. Like these scientists, we have been mapping word knowledge that reveals the associative structure of specific words. We can build such a map because words remind the brain of associated words, as reading Planet reminds it of the associated word Earth. By using free association procedures, we can learn what these words are and how they are linked. Our work to date indicates that the associative structures of known words vary systematically in terms of three different features: Resonance, connectivity and set size. Resonance refers to the probability that a word's associates produce it as an associate. Connectivity refers to links among a word's associates, and set size refers to how many relatively strong associates there are in its set. Our interest lies not in constructing word maps, but in determining how the pre-existing associative structure of a word affects its recognition and cued recall. The broader issue lies in understanding how pre-existing knowledge influences recent episodic memory. With this issue in mind, we select words having different structures and include them in lists of similar words that participants study under varying conditions. Words with high levels of resonance and connectivity are more likely to be recognized and recalled when given related words as test cues. The size of the associative set affects cued recall, but not recognition. In cued recall, the relationship between a test cue and its related studied word is determined by pre-existing links that vary in strength, direction and directness. Recognition and cued recall processes are best understood as the result of an interaction between known and new information. Our model assumes that processing a familiar word activates related words in long-term working memory, and that disrupting attention causes forgetting by reducing access to what has been activated.

Speaker 11: Lynn Hasher

(Etsuko Harada, Hosei University 原田悦子，法政大学)

Monday January 13, 13:20 – 14:40

It's about time: Circadian rhythms, memory and aging

Lynn Hasher
(University of Toronto, Canada)

Circadian rhythms have been studied by biologists and largely ignored by psychologists, except for those interested in topics such as adjustment to shift work and to travel across time zones. As it happens, however, circadian rhythms play a substantial role in human cognition and attention to rhythms can inform questions from the applied (when should the school day start? when should neuropsychological assessments be done?), to basic empirical findings (how much does cognitive performance really decline as people age?), to theory (what are the differences between explicit and implicit memory?). The work reported here will focus on basic empirical findings in attention and memory and will raise surprising questions about the role of explicit retrieval in implicit memory performance.

As an overview, I will report data showing substantial age and individual differences in circadian arousal patterns across childhood, young adulthood and old age. Data will be reported from a series of studies comparing younger and older adults on a variety of attention and memory tasks, all of which show several important findings: First, both younger and older adults show better performance at their optimal than at their nonoptimal times of day. This is seen in the degree to which distraction can be ignored, in the degree to which details can be remembered, in the degree to which there are schema-based errors in memory, and in the degree to which error tendencies can be controlled. A second important finding that can be seen throughout the data I report here is that the difference in performance between older and younger adults is likely exaggerated in the cognitive gerontology literature since like most others in cognition, it ignores the basic fact that older and younger adults are on different circadian arousal cycles. A third important finding is that there are major differences in the circadian effects on explicit and implicit learning and memory. Whereas explicit performance is better at optimal than at nonoptimal times of day, implicit performance (both learning and memory) is better at nonoptimal times of day! These findings suggest the possibility that automatic processes are functioning at high levels even when more controlled, deliberate ones are not.

Invited Posters

Laura Ciccarelli (University of Rome, Italy), **Remo Job**(University of Padova, Italy)
Phonological information and working memory in preschool children

William E. Hockley (Wilfrid Laurier University, Canada), **Melissa Wells** (Wilfrid Laurier University, Canada)
The influence of study presentation on criterion changes and the revelation effect for words versus nonwords in recognition memory

Maria Stylianou Korsnes (Stanford University, USA), **Svein Magnussen** (Stanford University, USA)
Fast perceptual priming in the left and right hemispheres

Benise S. K. Mak (University of Hong Kong, China), **Connie L. Y. Lo** (University of Hong Kong, China)
A developmental change in facial recognition between preschool children and adults

Timo Mantyla (Umea University, Sweden)
Future-oriented metamemory: Prospective memory complaint and impairment in middle-aged adults

Andre Mayers(Universite de Sherbrooke, Canada)
Utility of episodic knowledge in MIACE architecture

Cathy L. McEvoy (University of South Florida, USA)
Indirect activation: Preserving semantic priming in older adults?

Martijn Meeter (University of Amsterdam, The Netherlands) **J. M. J. Murre** (University of Amsterdam and University of Maastricht, The Netherlands), **S. M. J. Janssen** (University of Amsterdam, The Netherlands)
Fitting a patient's remote memory: Tests, models, outcomes

Debra Sue Pate (State University of New York, Potsdam, USA)
Implicit memory: A critical history of the concept

Vivian I. Schneider (University of Colorado, USA), **Alice F. Healy** (University of Colorado, USA.), **James A. Kole** (University of Colorado, USA), **Immanuel Barshi** (University of Colorado, USA)
The verbal representation of navigation instructions depends on the spatial representation

Salvatore A. Soraci (Tufts University, USA), **Kimiyo Murata-Soraci** (Emerson College, USA)
Generative learning and human memory: Projective understanding

Eric-Jan Wagenmakers (Northwestern University, USA), **Roger Ratcliff** (Northwestern University, USA), **Pablo Gomez** (Northwestern University, USA), **Gail McKoon** (Northwestern University, USA)
A diffusion model for strategy effects in visual word recognition

Michael J. Wenger (University of Notre Dame, USA)
On the possibility of parallel retrievals: Modeling and testing the alternatives

Poster session

Sunday January 12

Presentation time for odd numbers, 16:00 - 17:15
Presentation time for even numbers, 17:15 - 18:30

(1)

Negative words as attention grabbers in task switching

Fumiko Gotoh (University of Tsukuba, Japan)

Do negative words capture more attention than positive or neutral ones during task-switching? The current study investigated the effect of valence by means of a word recognition and a calculation task. Participants were asked to switch word recognition and calculation in a trial. Results show that mean solution times in the calculation task were greater for negative than for positive or neutral words. This finding is discussed in terms of attention capture in WM by negative valenced words.

(2)

Phonological information and working memory in preschool children

Laura Ciccarelli (University of Roma, Italy)
Remo Job (University of Padova and University of Trento, Italy)

In children, the possibility to maintain phonological information in working memory has a direct relation with various aspects of language acquisition: vocabulary acquisition, learning of reading, language comprehension, output production.

The aim of this study was to investigate the different functions of phonological working memory that are related to language comprehension. The performance of 60 Italian preschool children (aged between 4 and 5 years) was evaluated on five working memory tests. The tests were: Word Repetition, Nonword Repetition, Forward Span, Backward Span and an Inhibition Test. The latter is a memory test which aimed at detecting the ability to inhibit irrelevant information which has initially been processed.

Results show a strong correlation among the working memory tests created for this study, and a major improvement in performance (from 4 to 5 years) especially on more complex tests, that require higher cognitive resources (Backward Span and Inhibition Test). A series of exploratory and confirmatory factor analyses were performed. They showed the opportunity to describe the working memory tests by a two-factor model, where the two factors can be interpreted as a "storage/process" distinction. In this model we find that Repetition Tests and Word Span load the first factor (storage, or passive dimension), while Backward Span and Inhibition Test load the second one (process, or active dimension). In conclusion, different phonological memory tests can evaluate different working memory functions in children.

(3)

The role of working memory capacity and vocabulary in processing gardenpath sentences

Yuki Kobayashi (Kawamura Gakuen Woman's University, Japan)
Eriko Kawasaki (Kawamura Gakuen Woman's University, Japan)

I investigated whether working memory capacity and vocabulary affect the performance of processing gardenpath sentences including homonyms. After the gardenpath sentence or non-gardenpath sentence was presented for 3000ms, participants had to judge whether the target kanji was presented in the sentence. We manipulated the SOAs between sentences and target kanji (250ms, 500ms, 1000ms). Lower working memory capacity or lower vocabulary participants took more time to response the target in SOA 500ms condition than higher capacity or higher vocabulary participants. This result showed that both working memory capacity and vocabulary affect the speed of processing the gardenpath.

(4)

Effect of non-target words on reading span task performance

Tsukasa Sano (University of Tsukuba, Japan)

In many articles on what factors determine performance on working memory span task, it is suggested that individual differences in ability to inhibit irrelevant information affect the performance on that task. In this study, recognition method was applied to reading span task (Japanese version: RST-J) and target words were manipulated by using the characteristic of RST-J which were chosen the target words randomly. Participants required to reject non-target words which were target words in previous series of sentences. From the findings, relation between an individual's working memory span and their ability to suppress non-target words is discussed

(5)

On the working memory interference in the categorization task

Takashi Ueda (Waseda University, Japan)

Recent categorization theories assume categorization is mediated by distinct multiple systems. One of the component systems is related to the frontal cortical area believed to play the central role for working memory functions. Waldron & Ashby (2001) confirmed their multiple- systems account by examining how the concurrent task affects categorization performance. In this presentation the author both theoretically and empirically investigated their arguments. Partially consistent with the previous study, the analyzed data suggested that working-memory loads give strong interference with the rule-based categorization. The results were discussed with respect to the role of working memory in hybrid models of categorization.

(6)

Phonological loop contribution to task switching performance: Evidence from an articulatory suppression technique

Erina Saeki (Nagoya University, Japan)
Satoru Saito (Kyoto University, Japan and University of Bristol, UK)

In three experiments, we investigate an effect of articulatory suppression on task switching performance. The results showed that switch costs in the articulatory suppression condition were constantly larger than those in the control and tapping conditions when the switching cues were not provided. On the other hand, articulatory suppression did not have any effect on switch costs when the switching cues were provided. These data indicate that the phonological loop in working memory might contribute to the performance in task switching at least in situations where the external task cues were not available.

(7)

Effects of memory load and sentence order in a reasoning span test: Testing a task switching hypothesis of working memory span performance

Satoru Saito (Kyoto University, Japan and University of Bristol, UK)
Christopher Jarrold (University of Bristol, UK)
Deborah M. Gunn (University of Stirling, UK)

In order to evaluate a task switching hypothesis of working memory span performance, we developed a reasoning span test in which participants are required to solve a series of verbal reasoning problems while remembering unrelated words. In Experiment 1, we found that reasoning speed was slower at the final position than at the first position within a span list, indicating a significant memory load effect on processing speed. Furthermore, Span scores were greater when lists began with a complex sentence and ended with a simple sentence compared to when this sentence order was reversed. In Experiment 2, this sentence order effect was found even when sentence complexity was varied while processing duration was held constant using a moving window presentation paradigm. These data contradict the predictions of the task switching hypothesis.

(8)

Fast perceptual priming in the left and right hemispheres

Maria Stylianou Korsnes(Stanford University, USA)
Svein Magnussen(Stanford University, USA)

Visual field differences in fast perceptual priming of possible and impossible object decisions were investigated in a go-no go task. Each participant (n = 74) was tested in two blocks of trials, each block containing 128 combinations of same-field and cross-field presentations of prime (blank) and target stimuli. Fast perceptual priming of object-decisions was demonstrated for both possible and impossible objects, in terms of both reaction times and accuracy within each block of trials. The priming effect was larger for possible than for impossible objects, there were no systematic visual-field differences in overall performance or in the magnitude of priming. It is concluded that fast perceptual priming of object decisions recruits processes that involves both cerebral hemispheres.

(9)

Increased bilateral occipito-parietal activity for retention of binary versus unary indexed lists in pair recognition

Steven Phillips (National Institute of Industrial Science and Technology, Japan)
Kazuhisa Niki (National Institute of Industrial Science and Technology, Japan)

Previous research [Phillips & Niki (2002). NeuroImage, 17, 1031-1055] identified the parietal lobes with increased relational, but not item information in pair recognition memory tasks. This result was due to either increased item associates, or pair overlap. With items and associates held constant, pair overlap was contrasted for binary (e.g., AB AD CB) versus unary (e.g., AB BC CD) indexed lists. Increased occipital and parietal activity was observed bilaterally for the retention period. This result is not explained by item load or item fan effects, because the numbers of items and associates were the same for both types of lists. Binary indexed lists require both paired items to maintain the integrity of the memory trace. Hence, this result is interpreted in terms of increased shifts of attention, a function often attributed to the inferior parietal lobes.

(10)

Hi-level cognition and hippocampus

Kazuhisa Niki (National Institute of Advanced Industrial Science and Technology, Japan)
Luo Jing (National Institute of Advanced Industrial Science and Technology, Japan)

A study on relationships between the hippocampus and high-level cognition of human being is not progressing, because there is serious misunderstanding about this study and a study with an animal is not directly connected with a study of humans. We introduced results of our series of brain imaging studies on the hippocampus: detection of changing memories; detection of retrieval activity from semantic memory; detection of hippocampal activity by insight. These results suggested that the hippocampus that is the nucleus of episode memory makes itself a key brain location of human high-level cognition, because the hippocampus is indispensable for realizing the high-level cognition like a problem solving.

(11)

Evidence for functional dissociation of striatal and hippocampal cholinergic systems in spatial localization

Takefumi Kobayashi (University of Tsukuba, Japan)

In the present study, behavioral results on the two cognitively dissociated tasks following the cholinergic neurotoxin AF64A into the rats' striatum/hippocampus are introduced. The results demonstrate the functional dissociation of the striatal and hippocampal cholinergic systems in spatially organized behavior. Possibility of parallel information processing between the striatal and hippocampal systems is also discussed.

(12）

Disinhibitional associative priming found in a left anterior temporal lobe damaged patient

Chiharu Niki (Kyoto University, Japan)
Yoshitaka Ohigashi (Kyoto University, Japan)

In previous study, associative priming between pictures was found only in the right hemisphere (RH), and it was suggested that the associative priming of RH reflected not conceptual semantic memory but visual memory of objects (Niki, 2002). We examined a left anterior temporal lobe damaged patient to investigate visual memory of objects using priming paradigm. In Experiment 1, object decision task was dominant in the right hemisphere (RH). This result of the patient was opposite to that of normal subjects. Experiment 2 was associative priming task, and associative priming effects were found both in RH and LH. The results suggested that associative priming of RH reflected visual memory of objects, and that of LH reflected disinhibitional activation.

(13)

Fitting a patient's remote memory: Tests, models, outcomes

Martijn Meeter (University. of Amsterdam, The Netherlands),
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S.M.J. Janssen (University. of Amsterdam, The Netherlands)

Most tests of retrograde amnesia have as their unit of measurement of time a decade. Though this is appropriate for many patient groups, it does contain the risk of missing retrograde amnesia in some patients. We therefore designed a test for amnesia for shorter periods, the Daily News Memory Test-retrograde amnesia (DNMT-ra). The DNMT-ra is constructed via a script made feasible via internet. First, normal controls answer random samples of questions about the news via an Internet test, the DNMT-control. Data generated in this way is then fitted with a mathematical model of retention (the Memory Chain Model, or MCM), allowing appropriate questions to be selected from our database and to be assembled in a test by an automated script. The resulting test, the DNMT-ra, is made accessible via Internet.

To diagnose a single participant in the test, variants of the MCM are fitted to that participant's data. These variants incorporate specific assumptions about the deficit a participant may have, allowing these hypotheses to be tested against one-another. To investigate the sensitivity and specificity of this procedure, we performed Monte Carlo simulations and did a pilot study with normal controls. Results suggested a moderately good specificity and sensitivity.

(14)

The nature of memory impairments in patients with schizophrenia spectrum disorder

Mie Matsui (Toyama Medical & Pharmaceutical University) , Japan)
Hiromi Yuuki (Toyama Medical & Pharmaceutical University, Japan)
Kanade Kato (Toyama Medical & Pharmaceutical University, Japan)
Masayoshi Kurachi (Toyama Medical & Pharmaceutical University, Japan)

Previous research suggests that patients with schizophrenia have greater impairments in memory than in other cognitive functions. The purpose of this study was to investigate organizational strategies in patients with schizophrenia or schizotypal disorder and normal controls divided by age. Participants were administered the Japanese Verbal Learning Test (JVLT). The unblocked list in the JVLT contained for examplers from each of four taxonomic categories that were constructed so that related items never appeared consecutively. This result suggests patients show failure to use semantic information to aid free recall when the information is not packaged in a highly salient fashion.

(15)

Automatic- plus intentional attention enables whole-to-part repetition priming

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

Imai (2002) reported at TIC3 that 4 by 4 dot matrices with eight connected lines did not prime their parts (3 by 3 dot matrices with five lines) regardless of participants' automatic or intentional attention at the study phase. This experiment was replicated except that participants attended automatically plus intentionally to the to-be-tested 3 by 3 matrices in the studied 4 by 4 matrices at the study phase. As there found small but significant priming effects, it is suggested that the whole-to-part repetition priming occurs only when participants attended automatically AND intentionally to the to-be-tested parts of the whole stimuli at the study phase.

(16)

Does the Stroop interference depends on stimulus exposure-duration?

Takashi Ideno (Waseda University, Japan)

In comparison with the situation in which target (color) and distractor (word) are presented until response, the Stroop interference substantially decrease when the distractor removed from the display 120ms after stimulus onset, and also when the target removed from the display after stimulus on set (La Heij, W., van der Heiden, A.H.C., & Plooij, P., 2001). A within-subject analysis for four conditions of stumulus exposure-duration indicated that this exposure-duration effect in the Stroop interference was robust, as shown by La Heiji, et al. The present findings suggest that stimulus exposure-duration affects automatic process in the Stroop Task.

(17)

The mere exposure effect on sweet taste

Rie Kawano (University of Tsukuba, Japan)
Saho Ayabe-Kanamura (University of Tsukuba, Japan)
Nobuo Ohta (University of Tsukuba, Japan)

In the present study, we investigated whether mere exposure effect was applicable to taste stimuli. Twenty-four participants were asked to judge the intensity, familiarity and preference for the taste of six kinds of sugars. Before the judgment, they took in each of the six sugar solutions (20ml) every three minutes. One of the six sugars was presented three times and the remainders once. As results, they showed no difference in the judgment of intensity and familiarity for sugars between three times-presentation and once-presentation prior to the judgment. In the judgment for the sugar presented three times, however, participants showed significantly higher preference to the sugar presented once. Therefore it is concluded that the mere exposure effect was also observed in gustation.

(18)

Implicit memory for novel melody

Shinobu Ikoma (University of Tsukuba, Japan)

This study investigated whether novel melody is retained in implicit memory system by heard once. The experiment consisted of two sessions, in both twelve participants rated the 6-tone melodies made randomly in terms of their goodness of the impressions. Half of the melodies presented in the second session were ones presented already in the first. On the second, the participants rated the repeated melodies better than did the others (the mere exposure effect). It was suggested the melodies heard once are retained in implicit memory system. The properties of the system on such nonverbal representations are discussed.

(19)

Implicit memory: A critical history of the concept

Debra Sue Pate (State University of New York, Potsdam, USA)

Memory long has been demonstrated by such phenomena as improved performance after practice as well as by responses to explicit requests to remember. According to one contemporary school of thought, such phenomena implicate implicit memory systems different from those involved in such tasks as free recall. According to another, implicit is properly applied to measures, not to systems, of memory; implicit and explicit measures of memory provide alternate means of access to memory rather than means of access to different memory systems. I will describe the development of these interpretations of implicit memory measures and the frequent confusions between them.

(20)

Hypermnesia in implicit memory on maze tasks

Mitsuko Hayashi (University of Tsukuba, Japan)
Minori Ohwada (University of Tsukuba, Japan)
Mika Eto (University of Tsukuba, Japan)

Using 2 difficulty levels of maze tasks, we investigated whether hypermnesia would occur in implicit memory. In one trial participants solved 32 printed mazes that consisted of 16 repeated mazes and 16 new ones, drawing lines from a start point to a goal. Trials were repeated 3 times. Participants were divided into an explicit or implicit condition by instructions. The speed and errors were measured and analyzed. In easy maze tasks, participants only in explicit condition quicken up to solve them each trials. In difficult maze tasks, participants who reported aware that some mazes were previously encountered in implicit condition quicken. Regardless of difficulty levels, participants who unaware of repeated mazes in implicit condition didn't change the speed statistically. Therefore the results showed that no hypermnesia occurred in implicit memory at least in terms of speed.

(21)

Effect of viewing orientation on implicit memory for Kanji characters

Chen Bai (Tohoku University, Japan)
Syoichi Iwasaki (Tohoku University, Japan)

The present study was conducted to assess the amount of priming elicited by the Kanji clarification test when Kanji characters were shown in their normal views or mirror- reversed views during study phase. In the experiment, we manipulated the orientation of the test forms shown in the Kanji clarification test. Results showed that even the test forms were presented in mirror-reversed view in the Kanji clarification test the amount of priming was still equivalent regardless of previous study views (normal vs. mirror reversed view). These results imply that perceptual priming of Kanji character may be attributed to abstract perceptual representation of Kanji character rather than specific perceptual representation constructed during study phase.

(22)

Computational model of the relation between the processes of music perception and evocation of emotion

Yasuhiro Goto (Hokusei Gakuen University, Japan)

A computational model about the relation between music perception and emotion was constructed and its algorithm was implemented as a computer program. The algorithm reflects the psychological findings about "tempo" of music. The model also takes into account the "implication-realization" process, which tries to explain the aspect of emotion evoked by music. In order to evaluate the validity of the model, computer simulations were performed for the musical tone sequences used in our previous psychological experiment. The results showed that the model could predict the metrical time units correctly, at the same time, emotion listeners felt could be expressed appropriately.

(23)

The effects of background music on cognitive activities

Minako Hanafusa (University of Tsukuba, Japan)
Takao Minamidate (University of Tsukuba, Japan)
Shinobu Ikoma (University of Tsukuba, Japan)

Does background music have an effect on our cognitive activities as well as on our moods? We investigated whether it affects on mental arithmetic processing. Participants performed the equation decision tasks, with hearing their favorite music taken by themselves, white noise, or nothing. We found hearing background music affected neither reaction times nor error rates on the tasks, although it did moods partly. Multiple regression analysis also revealed moods not to affect the performance significantly. These results suggest, as several prior studies have shown, background music has no effect on cognitive activities.

(24)

Memory-based Simon effect

Sachiko Takahama (National Institute of Advanced Industrial Science and Technology, Japan)
Takatsune Kumada (National Institute of Advanced Industrial Science and Technology, Japan)

We investigated memory-guided visual behavior using a Simon effect, in which reaction times are faster when the relative spatial positions of stimulus match the responses. We newly designed "a memory-based Simon task" to examine whether the Simon effect occurred when responses were guided by memory of visual information. We observed the memory-based Simon effect as well as the typical visual Simon effect. Sequential analyses showed that the memory-based Simon effect was influenced by the compatibility in the preceding trial. A possibility that mechanism of memory-guided behavior differs from that of visually guided behavior will be discussed.

(25)

The verbal representation of navigation instructions depends on the spatial representation

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Alice F. Healy(University of Colorado, USA)
James A. Kole(University of Colorado, USA)
Immanuel Barshi(University of Colorado, USA)

Subjects heard messages instructing them to move within a 2-dimensional depiction of a 3-dimensional space consisting of 4 stacked grids displayed on a computer screen. They repeated the instructions aloud and followed them. Two groups with identical instructions were compared that differed only in whether the starting position was displayed before or after the instructions were given and repeated. Accuracy on both the manual movement and oral repetition responses was significantly higher when the starting position was provided before the instructions. The results suggest that the subjects' verbal representation of the instructions depends on their mental representation of the space.

(26)

Effect of different voices on repetition deafness

Masato Nakajima (University of Tsukuba, Japan)
Tadashi Kikuchi (University of Tsukuba, Japan)

Repetition deafness (RD) refers to the inability to detect or recall a repeated word in rapid auditory presentation. Previous research has suggested that RD, like repetition blindness, is robust to physical identity. In this study, we investigated whether RD could be observed between physical mismatching stimuli using lists of 2 or 3 nonsense syllables by different speakers (male and female). Incongruent with the previous research, RD could be observed not under same voice condition but under different voice condition. This result suggests that physical identity is not a critical factor for RD and that processing voices would affect RD.

(27)

Theoretical interpretation for superiority effect of auditory channel on impression formation

Natsuko Yamada (Kyushu University, Japan)

According to the findings from previous studies, voice channel has strong influence on interpersonal cognition: Superiority effect of voice stimuli to face stimuli was observed under the condition in which personality attributes of face stimuli and voice stimuli was consistently verified. After introducing the procedure and findings from the previous studies using multimodal information resources (face and voice), interpretation and theoretical explanation for the phenomena are attempted by considering various informational processing viewpoints.

(28)

Recognition memory of cognitive interviewee

Masako Yamashita (Nihon University, Japan)
Masakazu Maruyama(Nihon University, Japan)
Yukio Itsukushima (Nihon University, Japan)

Accuracy of one's recognition memory after cognitive interview(CI) was investigated. Thirty eight undergraduate students saw the short story of dairy event by the video. Half of them participated in free recall session, and the remains participated in free recall session and CI session. Then, subject took part in recognition test. There was no difference in percent correct across conditions, but significant difference was found in miss responses. That is, miss was much more in CI condition than in control condition.

(29)

"No, Mum. It was a white car": What happens if mother and child dyads witnessed the same event differently?

Kazuo Mori (Shinshu University, Japan)

Using the MORI technique (Mori, 2002), two different versions of the same simulated criminal event were presented simultaneously to 15 mother and child dyads. The two versions were different only in the following three points; the color of the car, the driver's clothes, and the direction of the pedestrian's walk. The participant pairs were asked to recall what they had observed three times; just after the presentation, after having discussed together, and a week later. The results showed that the mothers were not necessarily dominant during the discussion and tended to accept their child's opinions on the disagreed points.

(30)

Lawyers' perception of the causes of false charges and mistrials: A review of two surveys by Japanese Bar Association and implication for future study.

Makiko Naka (Tokyo Metropolitan University, Japan)

In 1981 and 1989, Japanese Bar Association administered a questionnaire to its members on their perception of the causes of false charges and mistrials. These results showed lawyers perceived the main causes were the biased investigation, biased trial and faulty representation by lawyers. In 2003, the third survey will be conducted by "A Collaborative Project on Application of Psychology in Law" (Chair: Toshikuni Murai). As a psychologist in the team, the author reviewed two previous surveys from psychological viewpoint. Author's analysis of then unanalyzed descriptive data suggested the vulnerable (mentally handicapped, youths, foreigners, etc.) were prone to be the victims of false charges and mistrials. The direction of next survey will be discussed.

(31)

Is false memory of CNWs' shapes created in encoding process or retrieval process?

Yayoi Miyaji (Kobe College, Japan)
Hiroshi Yama (Kobe College, Japan)

In order to set match and mismatch conditions between encoding and retrieval processes, Japanese lists of the DRM paradigm (Miyaji & Yama, 2002) were presented in the font of either Ming-cho or Gothic type within participants. All items in recognition test were printed in either of the two between participants. CNWs were printed either at first or at last to see the effect of list items' fonts at test. Consequently false recognition and font-attribution of CNWs were not influenced by whether the fonts matched or not, and by the order of CNWs at test. Hence we concluded the shapes of false memory were created in the encoding process.

(32)

Eliciting false memories on implicit and explicit memory tests after incidental learning

Hidetsugu Tajika (Aichi University of Education, Japan)
Ewald Neumann (University of Canterbury, New Zealand)
Hideki Hamajima (Nagoya University, Japan)
Akihiko Iwahara (Shoin-Higashi Junior College, Japan)

The authors investigated whether a false memory experiment using implicit and explicit memory tests would produce memories for critical nonpresented (CN) words. Lists of semantic associates (e.g., newspaper, letter, book, etc.) were presented to three groups of participants to induce false memories for CN words (e.g., read) in an incidental learning task. After the incidental learning phase, participants received implicit and explicit memory tests. Implicit memory results showed that the level of priming for the CN words was equivalent to that for actually presented target words for all three groups. Explicit memory results showed that participants explicitly recognized more target words than CN words. The results were consistent with the activation of associative responses hypothesis, but conflicted with one of the main tenets of fuzzy trace theory.

(33)

The effect of imagery on suggestibility

Ai Uchikoshi (Tokyo Metropolitan University, Japan)
Hiroshi Yama (Kobe College, Japan)
Makiko Naka (Tokyo Metropolitan University, Japan)

In order to study the effect of imagery on suggestibility, we used the post information paradigm. Participants were twenty-four college undergraduate students. First they were presented with a picture. Then they were given the narration of the picture with or without the instruction of imagery. Finally, they took a source-monitoring test. In the source-monitoring test, the test items were those shown only in the picture, A only in the narration (high plausible or low plausible),or B both in the picture and the narration, and C new. We expected that imagery would increase suggestibility. On the contrary to our expectation, in both imagery and non-imagery conditions, participants correctly answered that the low plausible items were not presented in the picture.

(34)

Can retrieval-induced forgetting (RIF) be observed for categorized-nonsense-syllables?

Yuko Suzuki (University of Tsukuba, Japan)

RIF is the phenomenon that retrieving some exemplars from one category reduces the probability of recalling other exemplars from the same category. In this experiment, it was examined whether RIF could be observed for categorized-nonsense-syllables. Japanese 2-letter nonsense-syllables were used as memorizing materials. 18 nonsense-syllables constitute 3 categories sharing the first letter. After learning nonsense-syllables for 2 times, usual paradigm of RIF was administered. Even in early stage of learning nonsense-syllables, RIF was observed clearly.

(35)

Young children's false episodic reports: Consideration on development of episodic memory

Izumi Uehara (University of Tokyo, Japan)

To assess when young children become to have true episodic memory, I analyzed longitudinal data for each individual and cross-sectional data across tens of children. These demonstrated that episodic reports by children aged before and around four often included false episodes they had never experienced but had simply heard, unrelated things, and unreal events. Children aged 5-6 rarely made these errors. I discuss the possibility that the acquisition of episodic memory in children may depend more on the ability of recognition memory and the correct consciousness of their own past experiences, rather than on the ability of reporting per se.

(36)

Developmental change of the self-reference effect on free recall

Kiyomi Okumura (Nagoya University, Japan)

The present study investigated whether the self-reference effect changes over age. As an incidental memory task, three groups of subjects (third graders, sixth graders and undergraduate students) were asked to decide whether the number of letters of a trait-descriptive adjective was even (physical encoding), whether an adjective was used to mention animals (semantic encoding) or whether an adjective described themselves (self-reference encoding). The sixth graders and the undergraduate students recalled adjectives in the self-reference condition better than those in the other two conditions, but the third graders did not. These results indicate that the self-reference effect increases over age.

(37)

Developmental changes in the self-choice elaboration effects on incidental memory

Hiroshi Toyota (Nara University of Education, Japan)

Adults, sixth, and second grade subjects chose one of two sentence frames which each target fitted better in a self-choice elaboration condition. They then judged whether each target made sense in its sentence frame in an experimenter-provided elaboration and this was followed by free recall tests. Only adults recalled targets with an image sentence better with self-choice, rather than experimenter-provided, elaboration. However, self-choice elaboration was superior for the recall of targets with non-image sentences only for second graders. The results indicated that the effects of self-choice elaboration were determined by age and the type of sentence frame.

(38)

A developmental change in facial recognition between preschool children and adults

Benise S.K. Mak (The University of Hong Kong, China)
Connie L.Y. Lo (The University of Hong Kong, China)

Facial patterns interest infants early in life. Neonates of few minutes old have been found to be sensitive to human faces and show a preference for "face-like" patterns rather than scrambled faces, abstract patterns or plain surfaces (e.g., Fantz 1961, 1963; Johnson & Morton, 1991). Within the next few days, they are able to discriminate and recognize faces and prefer their mother's faces (Field et al., 1984; Bushnell et al., 1989). Infants are sensitive to faces and to human faces in particular (Tanaka et al., 1993, Carey & Diamond 1994). However, human faces change physically in the course of development. For instance, a newborn's face is very different from an adult's in terms of feature proportion. The aim of this study was to determine if preschool children are more capable of recognizing faces of same-age peers. Although adults are their major caregivers, we hypothesized that 5-year-olds are more sensitive to faces of same-age peers and more able to recognize their faces than faces of younger counterparts and adults. This is also true in adults. They would perform better in recognizing same-age faces than those of infants and children. In 2 experiments, 5-year-olds and adults were required to recognize faces of 3 different age groups (1-year-olds, 5-year-olds and adults). Results provide support for the hypotheses, but infants' sensitivity to faces of these different age groups remains to be determined. Nonetheless, the current findings have an implication on studies of early facial processing and emotion recognition

(39)

Aging effect on explicit and implicit memory, and meta-memory in healthy adults using a brief memory test

Jun Kawaguchi (Nagoya University, Japan)
Hama Watanabe (Nagoya University, Japan)

Explicit/ implicit memory and meta-memory were investigated in a rural cohort in Japan. About four hundred community dwellers aged from 40 to 87 years old participated in this research. Participants were given two memory tests (explicit and implicit word memory tests) and five meta-memory questions to evaluate their memory function. The results showed that explicit memory (recall) for words became worse over sixties, while priming effect in implicit memory task (word-stem completion task) remained the same till sixties and declined over seventies. We discuss the relations between these memory functions and the usefulness of this brief test.

(40)

Indirect activation: Preserving semantic priming in older adults?

Cathy L. McEvoy(University of South Florida, USA)

Experiencing familiar concepts (e.g., COW) results in faster processing of related concepts (e.g., MILK). These priming effects indicate activation within a semantic network and are observed with both older and younger adults. It has been suggested that, although transmission of activation across single connections within a network may diminish with age, converging activation from multiple indirect connections may preserve semantic priming. Younger and older adults participated in lexical decision experiments with targets preceded by directly-related, indirectly-related, or unrelated primes. Older adults showed both direct and indirect priming effects that were greater than younger adults', thus supporting the converging activation hypothesis.

(41)

Evidence for equivalent directed forgetting effects in young and old adults under both item-by-item and list cueing method

Nadia Gamboz (University of Trieste, Italy)
Riccardo Russo (University of Essex, UK)
Carlo Semenza (University of Trieste, Italy)

Directed forgetting paradigms were used to evaluate whether there are age related differences in the ability to suppress processing and retrieval of irrelevant words. The directed forgetting effect, indexed by a better access to words designed to be remembered compared to words designed to be forgotten, was assessed using the item-by-item and list cueing methods. Results indicated equivalent directed forgetting effects in young and old adults under both cueing procedures as well as with different memory assessment methods, i.e. free recall and recognition. These results have important implications for theories of cognitive aging hypothesising a generalised breakdown of inhibitory mechanisms.

(42)

Aging and interferences from lures on the same screen: Examining spatial / temporal inhibition by a selection task

Etsuko T. Harada (Hosei University, Japan)
Satoru Suto (Chuo University, Japan)

Most experiments reporting reduced-inhibition by aging have been using sequential stimulus (e.g. Go/NoGo task) or compound stimulus (e.g. Stroop task), and little were known about lures on the same screen, which were more likely in our daily life. In this study, we examined interferences from discrete and simultaneous lures and its effects of aging, using KANJI selection tasks. After reading a context sentence with a target pronunciation, four candidates were presented; a correct Kanji, a homophone, and two distracters. Linear increments of RTs caused by target/lure location was only observed with old adults. Possible processing hypothesis will be discussed.

(43)

Age-related changes in cognitive function of elderly healthy people: An examination through Mini Neuropsychological Scale

Kanade Kato (Toyama Medical and Pharmaceutical University, Japan)
Mie Matsui (Toyama Medical and Pharmaceutical University, Japan)
Masayoshi Kurachi (Toyama Medical and Pharmaceutical University, Japan)

Developing a test battery for diagnostic of Alzheimer's Disease in very early stage, it is necessary to understand various cognitive function in healthy elderly people. In this study, we used the Mini Neuropsychological Scale (MNPS) to examine age-related changes in cognitive function. Participants for this study consisted of 62 normal elderly subjects (age ranged 50~83). The age effect of aging was found in calculation, language, and delayed recall after 15 minutes. This study demonstrated that performance of delayed recall particularly decreased with increasing age.

(44)

Autobiographical encoding and self-reference effect

Takashi Horiuchi (Tokai Women's University, Japan)
Yusuke Nakai (Nagoya University, Japan)
Hiroko Nakamura (Nagoya University, Japan)

This study investigated the self-reference effect obtained by the autobiographical task, in terms of episodic retrieval in encoding. Subjects were assigned to either self-episodic or other-episodic retrieval condition. In both conditions, subjects were asked to retrieve an episode associated with each trait word, and reported "Remember", "Know" or "No". Then, they were given the surprise recall task. "Remember"-reported words were better recalled than "Know"-reported words. And there was no difference in recall between self-episodic and other-episodic retrieval condition. Those results suggest that the recollective experience in episodic retrieval, in encoding, produces better recall performance.

(45)

Involuntary Recollection of Autobiographical Memories during a Semantic Differential Test

Yuri Amemiya (Tokyo Gakugei University, Japan)
Takahiro Sekiguchi (Tokyo Gakugei University, Japan)

Examined the nature of involuntary recollection of autobiographical memories in a laboratory experiment. Using semantic differential scales, 78 participants answered their impressions of four words (cue words) which would elicit involuntary memories, and were then required to report whether or not they had recollected past experiences during the evaluations. Either positive or negative cue-words were presented to a participant. Overall, participants reported involuntary memories at a considerable rate. The mean rate of recollection was 66.7 %. The positive words elicited more involuntary memories than the negative words. The results were compared with those of voluntary autobiographical memories.

(46)

A diffusion model for strategy effects in visual word recognition

Eric-Jan Wagenmakers (Northwestern University, USA)
Roger Ratcliff (Northwestern University, USA)
Pablo Gomez (Northwestern University, USA)
Gail McKoon (Northwestern University, USA)

The speed and accuracy with which information is retrieved from lexical memory is often studied using the lexical decision task. This task requires participants to distinguish words(e.g., *job*) from nonwords (e.g., *jom*). The diffusion model (e.g., Ratcliff, 1978, 2002) provides a quantitative account of performance in many two-choice response time tasks and has recently been applied to lexical decision (Ratcliff, Gomez, & McKoon, in press). The model predicts that response latencies for incorrect responses will be longer than those for correct responses under standard low speed-stress conditions. The model also predicts that this pattern of results can be reversed under conditions of high speed-stress. This detailed prediction of the model was verified in an experiment that manipulated speed-stress via instructions.

(47)

The influence of study presentation on criterion changes and the revelation effect for words versus nonwords in recognition memory

William E. Hockley(Wilfrid Laurier University, Canada)
Melissa Wells(Wilfrid Laurier University, Canada)

The factors that influence how subjects set and change their decision criterion in tests of yes-no recognition memory are not very well understood. In a within-list comparison, we found that subjects adopted a more liberal criterion for nonwords compared to words, and that this bias was influenced by whether the stimuli were presented in random or blocked order at study. In addition, the manipulation of study order interacted with the revelation effect for nonwords (the increase in old responses for test probes preceded by an unrelated problem solving task), suggesting that this phenomenon may also be due to criterion changes.

(48)

The powerful effect of spaced retrieval-learning on the memory of the sutra

Masanobu Takahashi (University of the Sacred Heart, Japan)

The purpose of the present study was to demonstrate the powerful effect of spaced retrieval-learning on the memory of unfamiliar verbal materials. Sixteen female students were asked to remember the sutra, Han-nya Shin-gyo, for a total of six hours. Eight participants, in the massed learning group, were instructed to repeat the materials in a rote fashion for a six successive hours. Those in the spaced retrieval-learning group were asked to remember the materials by retrieving them frequently for six spaced one-hour sessions. The results demonstrated that spaced retrieval-learning group showed much better performance than massed learning group did.

(49)

Utility of episodic knowledge in MIACE architecture

Andre Mayers**(**Universite de Sherbrooke, Canada)

Miace is a computational cognitive architecture inspired from ACT-R. The episodic memory inclusion makes it possible to distinguish the various occurrences of the same concept (declarative knowledge). These occurrences are named cognitions and specify the episode in which they are used. Episodes are characterized by a goal, the procedure used to achieve it, cognitions handled or created in a direct way by the used procedure, and some time parameters. The episode set forms a directed graph. The descendant episode nodes correspond to subgoals generated during the procedure execution. The equations which determine access to memory elements (concepts, procedures, cognition and episode) are inspired by the same principles as those of ACT-R.

(50)

On the possibility of parallel retrievals: Modeling and testing the alternatives

Michael J. Wenger(University of Notre Dame, USA)

The possibility of parallel retrievals given a single retrieval cue has been explored using the psychological refractory period (PRP) paradigm; these explorations have produced a series of contradictory conclusions. In order to explore the source of these apparent contradictions, stochastic linear systems models of a set of alternative hypotheses were constructed. Simulations of these alternative systems indicate that system architecture may not be identifiable in the standard PRP paradigm, but may be identifiable in a factorial design that includes SOA manipulations. Results from an experiment implementing this design suggest that it is possible provide strong evidence for parallel retrieval processing.

(51)

Repetition effects on frequency judgments of source

Eriko Sugimori (Kyoto University, Japan)
Kusumi Takashi (Kyoto University, Japan)

In Experiment 1, participants saw and imagined pictures 1,3,8 times respectively. Then they were asked to judge frequency of each source. Results show the relative frequency of seen have fewer bias than that of imagined. In Experiment 2 and 3, the same stimulus items were used on Day 1 and Day 2. The source-monitoring test on Day 2 indicated that for those participants who saw pictures on Day 1 and imagined items on Day 2, the likelihood of attributing the test items to the pictures increased as the number of repetition increased on Day 1. The similar bias was not created for those participants who imagined items on Day 1 and saw pictures on Day 2.

(52)

Japanese normative measures for 359 line drawings: Naming time, name agreement, age of acquisition, and familiarity

Kaori Miyawaki (Waseda University, Japan)
Masaru Takahashi (Waseda University, Japan)
Yuko Une (Waseda University, Japan)
Takashi Ueda (Waseda University, Japan)
Takehiko Nishimoto (Waseda University, Japan)

The present study provides Japanese normative measures for 359 line drawings, including the 216 drawings taken from Snodgrass and Vanderwart (1980). The pictures have been standardized on the following measures: naming time, name agreement, age of acquisition, and familiarity. The data also include word frequency taken from NTT database (Amano & Kondo, 2000). A stepwise multiple regression was carried out on the naming time, using name agreement, age of acquisition, familiarity, and word frequency as predictor variables. As a result, name agreement and familiarity made significant contributions to predicting naming time.

(53)

A standardized set of nonsensical paired pictures (droodles) for use in experiments of memory and cognition

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Takashi Ueda (Waseda University, Japan)
Kaori Miyawaki (Waseda University, Japan)
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We present a set of nonsensical paired pictures, called droodles for use in experiments investigating a major determinant of how well a person can remember a picture. First, we selected 200 pairs of droodles from which the students in classes of introduction to psychology. The pictures have been standardized on four variables: relation of paired pictures, label suitability (of a single picture and in pair), visual complexity, and picture name. Then we selected 70 pairs from them, and investigated the recall and recognition of selected pairs. Finally 58 pairs were chosen as a standardized set of droodles.

(54)

Retrieval inhibition in the generation effect

Tomoyuki Watanabe (Sendai Shirayuri Women's College, Japan)

This study investigated generation effects in the part-set cueing paradigm. Participants generated or read items in either mixed or pure lists. They were then required to recall half of the items (either generated or read), when the remaining items (either generated or read) were presented as part-set cues. The results demonstrated that the generate cues were more inhibitive than the read cues. Under the conditions where cue type was equated, generation effects were obtained even in a between-participants design. The implication is that retrieval inhibition is involved in the diminished generation effect in free recall in between- as compared to within-participants designs.

(55)

Reminders in event-based prospective memory tasks

Taisuke Morita (Kansai University, Japan)

This experiment examined what types of reminder are effective in improving prospective memory. Participants were either reminded of a prospective memory task during a retention interval or not reminded of the prospective memory task. Reminders that referred to the intended activities did not improve prospective memory. However, both reminders that referred to the existence of something to do and reminders that referred to the target events did improve prospective memory. Suppression of the articulatory loop abolished the benefit of the former, but not that of the latter. Implications of these data for current views on prospective memory are discussed.

(56)

Future-oriented metamemory: Prospective memory complaint and impairment in middle-aged adults

Timo Mantyla(Umea University, Sweden)

Two experiments examined metamemorial differences between prospective and retrospective memory. Participants of Experiment 1 were recruited through newspapers advertisements, and comprised middle-aged women who experienced exceptional problems in prospective remembering. Experiment 2 involved self-reporters and nonreporters of retrospective memory problems, who were selected from a large population-based sample of middle-aged adults. In both experiments, memory performance was assessed by using a variety of tasks, including five retrospective memory tasks and three prospective memory tasks that varied in level of realism and retrieval support. Both experiments showed selective differences in memory performance, so that participants who experienced (retrospective or prospective) memory problems showed impaired performance in prospective, but not in retrospective, memory tasks. These findings suggest that memory for future intentions provides a more sensitive task criterion than memory for past events for assessing individual differences in self-reports of episodic memory problems. Task-specific differences in reliance on frontally-mediated executive processes may underlie these differences.

(57)

Developmental variations of social cognition I: Face preference

Takako Saitou (Kyushu University, Japan)
Yukiko Yamamoto (Kyushu University, Japan)
Yoko Kamio (Kyushu University, Japan)

Developmental changes in preference toward the facial expressions exposed below and above the consciousness were investigated using an affective-priming paradigm. Thirty-eight adults and 46 children were asked to make a liking judgment to affectively neutral Korean characters after subliminal or supraliminal presentations of emotional facial expressions (happy, fearful and neutral). In adults, both happy and fearful faces revealed positive affective priming effect compared to the neutral controls in the subliminal condition and happy faces revealed positive priming effect in the supraliminal condition. In children, on the other hand, affective priming effect was found only in the supraliminal condition, that is, negative priming effect subsequent to fearful faces. These findings suggest that emotional facial expressions implicitly influence our cognitive preference, and recognition skills of facial emotions are acquired through experience.

(58)

Developmental variations of social cognition II: self vs. others

Yukiko Yamamoto (Kyushu University, Japan)
Saito Takako (Kyushu University, Japan)
Yoko Kamio (Kyushu University, Japan)

Self-others recognition can develop with action imitations from infancy, and become an important basis for social development. Since gender difference in various aspects of social behaviors has been revealed, we hypothesized that self-other recognition develops along different courses by gender. We examined the relationships of the self-other recognition of action and verbal memory, using subject-performed tasks (SPTs) and experimenter-performed tasks (EPTs). Participants were typically developing boys and girls (N=28, mean CA=10:03)0:03). The results showed the performance of SPTs being higher than that of EPTs in girls, while both performances being the same in boys. These findings suggest the development of self-reference system is dominant in girls.

(59)

The intention superiority effect: A real case of superiority?

Gertrude Rapinett (University of Sussex, UK)
Jenny Rusted (University of Sussex, UK)

The intention to perform future action events may facilitate memory for those action events (Einstein & McDaniel, 1990). Intentions appear to have a privileged status in memory, visible in terms of speeded access (Goshke & Kuhl, 1993) and known as the ISE effect. What is yet unclear is whether both the initiation and the content of the action are facilitated as a result of an intention tag (Kormi-Nouri, Nyberg & Nilsson, 1994). In this study, we look at the relationship between intention and memory for the content of the action event. Specifically, we investigate whether previous enactment of an intended action influences its later recall. Results demonstrate that intention does not enhance memory for the content of the intended action ($t = 0.087$, $p > 0.05$). This is also true for intended actions that had previously been performed at encoding ($t = 0.53$, $p > 0.05$). Moreover, previous enactment did not inhibit subsequent recall of the same actions, contrary to previous suggestions (Shaefer, Kozak & Sagness, 1998). The most significant advantage to recall is observed when subjects perform the actions at encoding, ($t = 5.44$, $p < 0.0001$). Intention does not confer any additional advantage. In conclusion, no evidence of an ISE on memory for content was observed. Memory for content benefited most when subjects performed the action events at encoding, confirming the robustness of the SPT advantage. Enactment at encoding was not found to inhibit recall of the prospective action events.

(60)

Effects of handwriting movement on memory for numbers

Yuichi Kaji (Tokyo Metropolitan University, Japan)
Makiko Naka (Tokyo Metropolitan University, Japan)

The purpose of this study was to determine whether handwriting movement enhances memory for numbers just as enactment enhances memory for actions in self-performed tasks (SPTs). We compared the recall under three conditions of encoding strategies (i.e., large handwriting, small handwriting, and without handwriting). Each learning list consisted of fourteen two-digit numbers. Twenty-four participants were assigned to either one of three conditions. There were no significant differences in recall between conditions. Furthermore, the typical serial position curve was obtained for each condition. In contrast to SPT effect, the handwriting movement had no effect on memory for numbers.

(61)

Flashbulb memories of the murder and injury of children at Ikeda Elementary School

Keita Ochi (Tokyo Kasei University, Japan)
Yoichiro Sagara (Teikyo University, Japan)

Flashbulb memories for the murder and injury at Ikeda Elementary School in Osaka, Japan was examined by comparing with subjects' memory for the moment when Ryoko Tamura, a well-known judo player, had lost the game in the international judo tournament. The results showed as follows: 1) the false memories for the moment when the subjects knew the event were found more in the memories for the Ikeda stabbing incident. 2) the forgetting was found more in the memories for judo game. It was suggested that the results had been caused by the behavioral difference among subjects after the events, not by the difference of emotionality.

(62)

Subjective elapsed time of “observer” and “field” memories

Yumi Shimojima (Kyorin University, Japan)
Martin A Conway (University of Durham, UK)

Shimojima (2002) have shown that even when one knows the exact dates of events, subjective time could be elastic and often different from objective time. In this study we contrasted two ways of remembering personal experience, observer and field memories (Nigro and Neisser, 1983). Subjects were asked to remember two high school period events, one was congruent with present self and another was incongruent with present self. Results showed that observer memories were felt more distant than field memories in incongruent events, but there was no difference in congruent events.

(63)

Effects of repeating marks to degree of emotion, evaluation, and trust

Shigeru Nakamaru (University of Komazawa, Japan)

In this report, there deals about quantity of information effect, using word and mark, to degree of emotion, evaluation, and trust by seven-rates-scale. Using word and mark, there are ‘good morning’, ‘well’, and ‘!’. Marks are repeated from 0 to 5 times. The subjects consisted of 60 subjects who attend general psychology in university. The mean age of subject was 18.8 years old. The results of research were, about degree of emotion, evaluation, and trust, to word and mark of many information less points than of little information. The trend are reversed J curve that mark are repeated.

(64)

Learning the multiple maps in manual point predicting task

Chiaki Hirata (Institute of Physical and Chemical Research, Japan)

To test the learning process of multiple abstract rules and switching among them, we performed a manual point-predicting task using the logistic maps. The maps produce variable sequences of target movement according to the initial values, but the sequences from each map have certain properties. Therefore, subjects are to learn the abstract rules for each map, not the exact trajectory. Through more than 3 days of practice, 3 subjects successfully learned 3 (2 similar, 1 different) maps. The interference among maps is rarely observed, so the switching the rules also seemed successful.

(65)

Cultural differences in thought: A dual process theory explanation

Hiroshi Yama (Kobe College, Japan)
Miwa Nishioka (Konan Women's University, Japan)
Tomoko Horishita (Osaka University, Japan)
Yayoi Miyaji (Kobe College, Japan)
Junichi Taniuchi (Osaka University, Japan)

Nisbett et al. (2001) find that East Asians are likely to use holistic thought to solve problems, whereas Westerners use analytic thought more. The holistic vs. analytic distinction has been the greatest interest of dual process theories, which imply that human thinking has two sub processes, and we apply dual process theory to explain the cultural differences. We also discuss a cultural difference of individualism vs. collectivism and some implications of evolutionary psychology on this topic.

(66)

The mechanism and classification of human errors

Masayoshi Shigemori (Railway Technical Research Institute, Japan)

According to Reason (1990), human errors occur by the mechanism that an incorrect schema is adopted instead of a correct one, since it is normally correct or effective, and more frequently used than correct schemata, though it is wrong on the relevant occasion. Although he emphasized the importance of this mechanism, he didn't classified human errors by using such a mechanism. This paper adopts the classification of human errors by the mechanism of occurrence (CHEM) to reconstitute the classification of human errors in Reason's skill- and rule-based level (the well-defined task error).

(67)

Structure of representations of commutative problems in mental arithmetic: An examination by priming paradigm

Hideaki Shimada (University of Tsukuba, Japan)
Yoshitaka Iwata (University of Tsukuba, Japan)

The purpose of this study was to examine structure of representations of commutative problems in mental multiplication by priming paradigm. In experiment 1, 3 X 5 primed by 3 X ? and ? X 3 was solved faster than control (primed by ? X ?), and 3 X 5 primed by ? X 5 and 5 X ? was solved as fast as control. In experiment 2, 3 X 5 was solved faster not only in primed by 3 X ? and ? X 3, but also 三 X ? and ? X 三 (三 means three in Japanese Kanji format) than control. These results suggest that (a) commutative problems are differently represented on order information, not on position and (b) each of representations is identical regardless of presented formats.

(68)

Learning and memory recall compared to spatial reasoning and verbal comprehension: cognitive ability testing across the bell curve

Shawn Powell (United States Air force Academy, USA)
Michelle Butler (United States Air force Academy, USA)

Studies of cognitive ability testing from three independent samples, adults with mental retardation, college students at a state university, and cadets at the United States Air Force Academy, will be presented. The disparity between the samples implies they are representative of the bell curve. The results indicate the presence of low to moderate correlations between clinical measures of learning and memory recall when compared to spatial reasoning and verbal comprehension assessment results. These findings suggest the assessment of learning and memory involves distinct mental processes and that tests measuring spatial reasoning and verbal comprehension do not measure learning or memory.

(69)

Generative learning and human memory: Projective understanding

Salvatore A. Soraci (Tufts University, USA)
Kimiyo Murata-Soraci (Emerson College USA)

Generative encoding, in which participants actively select responses, has been demonstrated to have robust retention advantages compared to the passive encoding of stimuli in a wide range of experimental and testing contexts. Memory advantages for generative processing have been found with words, nonwords, sentences, pictures, and motor sequences. We briefly review several empirical studies conducted by ourselves and others, and provide an overall framework that provides a conceptual clarification of the range of effects. We propose that the memory mechanisms responsible for proactive generative encoding (e.g., word fragment completion) in which the participant has knowledge of the goal of the problem, involve the enhancement of cueing and cognitive operations. In contradistinction, and underemphasized in the literature, are generative enhancements due to retroactive processes that recontextualize a previously noncomprehended context (e.g., "aha" effects, problem solving).

(70)

Does five-minutes exercise in learning second-language words improve learner's lexical ability?

Takafumi Terasawa (Okayama University, Japan)
Tetsuya Yoshida (Tokoha Gakuen University, Japan)
Kyoko Maemoto (Okayama Higashi Commercial High school, Japan)
Kou Murayama (University of Tokyo, Japan)
Atsushi Katsube (Okayama University, Japan)
Nobuo Ohta (University of Tsukuba, Japan)

We conducted one-month learning study on second-language (English) acquisition of high school students. Participants were asked to rate their achievement (i.e., how they master Japanese meaning of each English word) for each English-Japanese pair word on a 4-point scale (0 = no good at all; 1 = no good; 2 = good; 3 = perfect). It took about five-minutes for completing the rating scale that was given at the beginning of each English class. The scale was given repeatedly at a total of 20 English classes during the one month. For all the pairs, the number of repetition and the schedule of learning were controlled. The achievement ratings were analyzed longitudinally for each participant to examine how changes in rating occur.

(71)

Examining the relation between subjective evaluation and objective performance of word test in long-lasting English words learning

Tetsuya Yoshida (Tokoha Gakuen University, Japan)
Takafumi Terasawa (Okayama University, Japan)
Kyoko Maemoto (Okayama Higashi Commercial High school, Japan)
Kou Murayama (University of Tokyo, Japan)
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We examined long-lasting effect of learning in second language (English) words acquisition of senior high school students. For measuring the long-lasting effect, we had mainly used the subjective evaluation rate of students' achievement in English words learning. However, the learners main interest is whether they can improve test performance in school (i.e., objective test performance). Thus, Yoshida, Terasawa, Ohta, and Sugiyama (2001) examined the relation between the subjective evaluation of each students' achievement and objective test performance. In the present study, we re-examined the relationship by changing experiment conditions.

(72)

Which is the most vital for learning English? Memory, thinking, or information processing?

Mutusmi Iijima (Matsue National College of Technology, Japan)

It is widely known that when the foreign or second language learned, some new kind of language center comes to exist in the cerebrum. In the process of creating such a new center, how memory, thinking and information processing are interrelated? We, teachers in front of young people everyday, have noticed they are unlikely think deeply. Does it have something to do with learning a foreign language? I'd like to present a hypothesis on the relationship between language learning and memory, thinking, and information processing, and to emphasize the important of teaching method which develop the thinking.

(73)

Nonverbal context effect in abstract word translation: Examination of the asymmetry model of bilingual memory representations

Yoshiko Habuchi (Hiroshima University, Japan)

This study investigated the abstract word processing in bilingual word translation. The participants were fluent English (L2) speakers whose first language was Japanese (L1). A translation paradigm was used in the context of semantically categorized or randomized lists to investigate the relationship between lexical and conceptual connections in bilingual memory. The result was consistent with previous concrete word studies that category interference effect occurred only when translation was performed from L1 to L2. The result suggests that the translation processing of abstract words is also described by asymmetry model.

(74)

Developing an auditory sentence comprehension test to screen language learning difficulties in Japanese preschool children

Keiko Kosaka (Hiroshima University, Japan)
Katsuo Tamaoka (Hiroshima University, Japan)

The present study aimed to develop an auditory sentence comprehension test (ASCT) in order to screen language-learning difficulties in Japanese preschool children. The ASCT used verbally presented sentences including target nouns which children were asked to recall. The ASCT scores showed a relatively high reliability and validity. Pearson's correlations were significantly high between the ASCT and all measurements (i.e., forward and backward digit span test, word span test, kana knowledge and word knowledge). Multiple regression analysis revealed that the two-sentence condition in the ASCT significantly predicted only word knowledge. Thus, the ASCT must be further developed to measure syntactic knowledge to screen language-learning difficulties at preschool as well as word knowledge.

(75)

Can the fan effect occur in stories?

Ryuta Iseki (University of Tsukuba, Japan)

Prior studies found a fan effect for recognizing a set of sentences. This study did not use sentences as materials, but short stories. Each story embedded a proposition formed as SVO (e.g., A barber struck a florist). Story-fan was defined as the number of times for describing the character in different stories. Furthermore, there were two types of story-fan: (a) agent-fan(e.g., barber appeared in several stories), and (b) patient-fan (e.g., florist did). It was investigated whether or not both fans cause fan effect in similar manner. The results would be examined in terms of situation models.

(76)

An Interface between Inference and Interpretation in Understanding Silence: Applications to Second Language Learning

Mariko Boku (St. Andrew's University, Japan)

When people understand utterance meaning, what mechanism do they follow? Is everyone always aware of the same stimuli and proceed to access the same meaning via working memory? The research questions are: 1. whether universality in an inferential process applies to EFL learners, 2. whether a distinction between inference and interpretation exists. In this poster session, I will show the results of a pilot study concerning inference on silence phenomena. Subjects are 70 Japanese university students.

(77)

Frequency and verb-morphology effects for constituents of two-kanji compound words

Terry Joyce (Tokyo University of Foreign Studies, Japan)

The present constituent-morpheme priming experiment investigated the finding of faster reaction times for the first constituent compared to second constituent in verb + complement two-kanji compound words (Joyce 1999, 2002). The experiment compared over two word-formation principles (verb + complement vs. complement + verb) the positional ratios of verbal constituents (low vs. high) calculated from constituent-morpheme frequency data (Joyce & Ohta, 2002). While no significant differences were found in the low-ratio conditions, verbal constituents were faster than the complement conditions when the positional ratio was high. These results are discussed in terms of Japanese lemma unit model (Joyce, 1999, 2002).

(78)

Memory reinforced but Possibility creating new stereotyping existed in the Internet

Yukihiro Itoigawa(Wisdom Inc. Japan)

Case study was researched about memory and the Internet's psychological environment Gold medallists were well known, as Hideko Maehata and Tetsuo Hamuro with their record and descriptions like Hamuro saw Hitler at 25 meters interval twice in Berlin 1936. Man once was recorded in search engine, as historical person could be retrievable. But one dive player who had qualified for Tokyo Olympic Game canceled because of war could not be retrievable but exceptionally talking held at recalled circumstance like relative vigil. The author concluded informative content would have possibility to make net surfers or retrievers stereotyping of automatic viewing for local area and technical area, evaluating record and document in the Internet as method of reinforcing memory.

(79)

A mere exposure effect for the concept formation2

The effect of duration on the typicality and the affective judgments

Ken Matsuda (Kyoto university)
Takashi Kusumi (Kyoto university)

We examined how stimuli of typicality and mere frequency influence concept formation, using a mere-repeated-exposure paradigm. Participants were exposed to pictures of unfamiliar fish with 10 dimensions zero, one, three, five times. Two week later, they were asked to rate typicality, liking, prettiness, nostalgia, familiarity, and recognition of each picture. Although in the previous study judging immediately there were the effects of stimuli of typicality, this experiment judging two weeks later disappear the effect of that kind in all judgments. Nevertheless, on the within-category distracter, the more the stimuli integrate the dimensions, the higher judgment scores are. It suggests that the prototype integrating each individual is generated.

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