



*Eleventh Banff Annual Seminar
in Cognitive Science*

Saturday, May 9 and Sunday, May 10
Banff Park Lodge, Banff, Alberta

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Saturday, May 9

9:00-9:05 Opening Remarks, Peter Dixon

9:05-10:30 *A Quantitative Model For Visible Persistence*

George Wolford, Dartmouth University (Introduced by Geoff Loftus)

Visible persistence is characterized by several counterintuitive relationships. For instance, Coltheart (1980) argued that the defining characteristics of visible persistence were inverse relationships with stimulus intensity and stimulus duration. We found another highly counter-intuitive outcome in our research: superior performance on integration tasks (requiring visible persistence) with monocular presentation than with binocular presentation. Nearly every other visual task yields binocular superiority. I will present a quantitative model based on impulse-response functions and linear-systems theory that provides a quantitative account of these findings and renders them less counterintuitive.

10:30-11:00 Coffee

11:00-12:30 *On The Nature Of Global Dominance In Object Perception*

Lise Paquet, Carleton University (Introduced by Barb McLeod)

One of the most enduring issue in perception is whether object processing is more influenced by the overall configuration of the parts (global aspect) or by the identity of the component parts (local aspect). A recent controversy has centered on the proposal that the global aspect predominates during early perceptual processing. Supporting evidence for this view will be presented from studies in which global/local processing was examined in attended and nonattended objects. The studies reveal important differences between global and local processing. Furthermore, although the global aspect dominates both attentive and preattentive processes, the nature of this dominance is affected by whether or not an object is attended. The implications of these results for models of attention and object perception will be discussed.

12:30-2:00 Lunch

2:00-3:30 *Lessons From Arithmetic: Factors That Influence The Selection Of Problem-Solving Procedures*

Jeff Bisanz, University of Alberta (Introduced by Doug Grant)

Research on mental arithmetic recently has diverged to some extent: Research with adults has been focused primarily on processes of fact retrieval, whereas research with young children has been concentrated on methods of solution other than fact retrieval. Studies will be described that highlight the value of uniting these two lines of inquiry. In one study an analysis of self-reports and latencies revealed that, contrary to common expectation, adults often do not use

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fact retrieval to solve simple arithmetic problems. In a second study with young children, age and schooling were found to have different effects on the use of retrieval and other solution procedures. These findings have several implications for understanding developmental changes in problems solving and remembering.

3:30-4:00 Coffee

4:00-5:30 *Orientation Effects In Visual Object Perception: Recent Results That Will Make Your Mind Spin!*

Pierre Jolicoeur, Waterloo University (Introduced by Dave Hall)

The time needed to identify objects from two-dimensional depictions can be affected sharply by the orientation of the depicted object. The orientation effects have been found to have the following major characteristics:

- substantial in magnitude (slopes comparable to that in “mental rotation experiments” for orientations ranging from 0 deg to 120 deg from upright);
- sometimes M-shaped effects of orientation (dip for upside-down objects) rather than peaked;
- magnitude of effect is attenuated after practice;
- little or no transfer-of-training to novel objects;
- orientation effects are retinal (rather than environmental or gravitational).

In this talk I review a number of recent findings designed to address issues raised by these findings. In particular, I will review recent work comparing the magnitude and characteristics of orientation effects across several tasks (object naming, letter naming, top-bottom decisions, front-back decisions, and left-right decisions). Patterns of additivity and interaction between orientation and various other variables will be used to localize roughly the effects of orientation in the information processing stream. The perceptual frame of reference for these effects will be discussed based on results using head-tilt manipulations in several tasks. The implication of these results for current work in the area will be discussed.

Sunday, May 10

9:00-10:30 *Unintended Influences Of Perception And Memory: Attention, Awareness, And Control*

Larry Jacoby, McMaster University (Introduced by John Vokey)

Findings of dissociations between direct and indirect tests of memory and perception have renewed enthusiasm for the study of unconscious processing. However, such findings are open to the same problems of interpretation as earlier evidence of unconscious influences--namely, the effects of conscious processing may contaminate the measure of unconscious processing. Our

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solution to this problem is to use a "process dissociation procedure" to gain separate quantitative estimates of the contributions of unconscious and consciously-controlled processing to task performance. I will describe experiments using that procedure to provide evidence of unconscious perception and unconscious influences of memory. Further, the process dissociation procedure allows one to go beyond demonstrating the existence of unconscious or unintended processes to examine factors that determine the magnitude of their effects.

10:30-11:00 Coffee

11:00-12:30 *TAP, Implicit And Explicit Memory, And Adult Memory Development*

Peter Graf, University of British Columbia (Introduced by Mike Masson)

Transfer Appropriate Processing (TAP) is the notion that memory performance is determined by the degree of overlap between study and test processing. My talk begins with an outline of a TAP-based account that guides our investigations of performance on implicit and explicit memory tests. I will briefly review several well-established findings to highlight the critical features of this TAP account. The main part of the talk focuses on two different kinds of research which ask about the cues that are critical for performance of implicit and explicit memory tests. Finally, I will talk about changes in the type of cues that are preferred by adults from different age groups, and the use of our TAP account to explain memory development in adulthood.

12:30-12:35 Closing Remarks, Peter Dixon