

**Semantic Priming**

**Grand Ballroom JKL, Friday Morning, 8:00–9:20**

*Chaired by David A. Balota, Washington University*

**8:00–8:15 (1)**

**Effects of Semantic Priming and Stimulus Quality: Insights From RT Distributional Analyses.** DAVID A. BALOTA & MELVIN J. YAP, *Washington University*—In a series of experiments, reaction time (RT) distribution analyses were used to examine the nature of the influence of semantic priming on lexical decision and word-naming performance. In contrast to variables that both shift and skew the RT distributions (e.g., word frequency and lexicality), semantic relatedness produces primarily a shift in the RT distribution, with no increase in skewing. In the standard clear target conditions, the shifting of the RT distribution suggests a constant influence of priming on lexical processing across all targets. In contrast to this shifting, the interactive effects of target degradation and semantic priming primarily occur at the tail of the RT distribution, suggesting an additional process invoked with degraded targets. Interestingly, this pattern was also found when primes were highly masked. The discussion focuses on single versus multiple process models of semantic priming.

**8:20–8:35 (2)**

**On a PDP Model of Lexical Processing: More Words About Stages.** DEREK BESNER, SZYMON WARTAK, & SERJE ROBIDOUX, *University of Waterloo*—Plaut and Booth (2006 in *Psych. Rev.* and Plaut & Booth 2000, also in *Psych. Rev.*) assert that their PDP model of lexical processing simulates the repeated observation, in the context of lexical decision, that (1) stimulus quality and semantic relatedness interact on RT, but that (2) stimulus quality and word frequency have additive effects on RT. The results of new simulations with their model undermine this conclusion.

**8:40–8:55 (3)**

**Relational Integration in Lexical Processing.** ZACHARY ESTES, *University of Warwick*, & LARA L. JONES, *University of Georgia*—Relational integration is the inference of some semantic relation (e.g., containment) between two concepts (e.g., BEAN and JAR), such that they jointly refer to a single object or event (BEAN JAR). We investigated the influence of relational integration on lexical processing. In Experiment 1, lexical decisions for the exact same word pairs were faster when they were easily integrated (e.g., HORSE DOCTOR) than when they were more difficult to integrate (e.g., DOCTOR HORSE). In Experiment 2, this “integrative priming” was obtained across varying proportions of related prime–target trials. Experiments 3 and 4 used a variable prime–target SOA to compare the temporal dynamics of integrative priming with those of associative and semantic priming. Integrative priming was dissociated from associative priming at a 2,000-msec SOA (Experiment 3), but closely resembled semantic priming from early (100-msec) to late (2,500-msec) SOA conditions. Relational integration appears to act prospectively and occur inevitably.

**9:00–9:15 (4)**

**Masked Associative/Semantic and Identity Priming Across Languages With Highly Proficient Bilinguals.** MANUEL PEREA, *Universitat de València*, & JON A. DUÑABEITIA & MANUEL CARREIRAS, *Universidad de La Laguna*—One key issue for models of bilingual memory is to what degree the semantic representation from one of the languages is shared with the other language. Prior research has suggested that there are shared conceptual representations for cognates, but not for noncognates. However, there is no reason a priori to consider that the conceptual representation of noncognates differs from that of cognates. Experiment 1 was a between-language masked associative priming lexical decision experiment in which we used noncognate pairs with highly fluent bilinguals. The results showed a significant between-language associative priming effect. Experiment 2 showed that the magnitudes of the between-language and

within-language associative priming effects were quite similar. Finally, Experiment 3 showed a significant translation priming effect for noncognates. Thus, highly fluent bilinguals do develop between-language links with noncognates at the conceptual level. We examine the implications of these results for models of bilingual memory.

**Judgment and Decision Making 1**

**Grand Ballroom ABC, Friday Morning, 8:00–10:00**

*Chaired by Christine Ruva, University of South Florida*

**8:00–8:15 (5)**

**Judgments of Functional Relationships in Systems of Three Variables.** KENT L. NORMAN & BENJAMIN K. SMITH, *University of Maryland, College Park*—The participants were told the relationship between variables A and B and between B and C and then asked to judge the relationship between A and C. The order, the names, and the relationships (increasing, decreasing, and no change) were varied systematically and resulted in 72 judgment problems. Four groups of 15 participants each made judgments for fictitious systems of variables in chemistry, psychology, or economics. An additional chemistry group was allowed the option “don’t know.” Although there were no mathematically correct answers, the results showed consistent patterns of inference (transitivity, bidirectionality, and solvability), but no effect due to system. For example, positive relationships between A and B and between B and C resulted in a positive relationship between A and C (transitivity and bidirectionality). A number of other consistent inferences were found for mixed relationships that are being used to formulate a theory of inference for systems of variables.

**8:20–8:35 (6)**

**The System of Concepts Behind the Simplest Medical Diagnosis.** ROBERT M. HAMM, *University of Oklahoma*—The simplest situation for medical diagnosis and treatment involves one disease, one dichotomous test for it, and one treatment for it. However, seven primary concepts and eight derived concepts are applicable to this situation. Psychologists have studied physicians’ judgments of most of the primary concepts (pretest probability, sensitivity, specificity, utility of correct, missed, and unnecessary treatments and of correctly not treating), but only a few of the derived concepts (probabilistic inference: posttest probability via Bayes’s Theorem; treatment decisions). Judgments of other concepts (e.g., utility impacts of unnecessary treatment and of missed treatment; action threshold, no-test/test threshold, and test/treat threshold probabilities; choice whether to test, treat, or neither) have been little studied. How accurate are they? By what processes are they made? How may they be aided? Consideration of the full system of concepts provides a context in which the practical importance of improving probabilistic inference can be realized.

**8:40–8:55 (7)**

**Testing a Class of Utility Models.** RICHARD A. CHECHILE & SUSAN F. BUTLER, *Tufts University*—The Miyamoto (1988) generic utility theory (GUT) is a utility representation that captures a wide class of other utility models. Moreover, the entire class of models can be evaluated by examining a key parameter that emerges whenever there are mixed gambles, i.e., a gamble with a possible gain and a possible loss. In a comprehensive experiment, it is shown that this parameter varies in a systematic fashion that is inconsistent with the GUT class of models. The implications of the experiment are developed for a theory of risky choice.

**9:00–9:15 (8)**

**Response Time Tests of Take-the-Best and Rational Models of Decision Making.** ROBERT M. NOSOFSKY & F. BRYAN BERGERT, *Indiana University, Bloomington*—We develop and test generalized versions of take-the-best (TTB) and rational (RAT) models of multi-attribute paired-comparison inference. The generalized models make allowance for subjective attribute weighting, probabilistic orders of at-

University, JOHN D. COLEY, *Northeastern University*, AIMEE K. CRISP, *Durham University*, & ANNA VITKIN, *Northeastern University*—We presented participants with sets of category-based arguments involving three premises. Premises were presented one at a time and disappeared once they had been read. Arguments within a set were identical, apart from the first premise, which was manipulated so as to produce consistent arguments (*magpies, panda bears, zebras*), misleading arguments (*brown bears, panda bears, zebras*), and control arguments (*otters, panda bears, zebras*). Conclusions were specific (all black and white animals) or general (all animals). Analysis of premise reading times revealed longer reading times for the second premise in the control condition than in the other two conditions and shorter reading times for the final premise in the consistent condition than in the other conditions. These results support a relevance account of induction and suggest that premises may achieve relevance by disconfirming hypotheses about the nature of the blank predicate, as well as by making particular background knowledge available.

**Perceptual Learning and Perceptual Organization**  
Grand Ballroom DE, Friday Afternoon, 3:30–5:30

Chaired by Barbara A. Doshier, *University of California, Irvine*

**3:30–3:45 (105)**

**Dynamics and Modes of Perceptual Learning.** BARBARA A. DOSHER, *University of California, Irvine*, & ZHONG-LIN LU, *University of Southern California*—Perceptual learning reflects the improvements of perceptual task performance with training or practice. Recent proposals have suggested that perceptual learning may often reflect learned reweighting of associations to decision structures (Doshier & Lu, 1998, 1999) and that an augmented Hebbian learning model may account for perceptual learning (Petrov, Doshier, & Lu, 2005), with or without feedback. This approach is compatible with specific functional forms of the learning function. The functional form of perceptual learning is more consistent with an exponential improvement, suggesting single-process learning for basic visual tasks. There was no support for either a combination of local experts or cascades of different learning processes at different levels of the visual system.

**3:50–4:05 (106)**

**Modeling the Effect of Differential Experience on Perception and Memory.** ANGELA B. NELSON & RICHARD M. SHIFFRIN, *Indiana University, Bloomington* (read by Richard M. Shiffrin)—Our studies explore the effects of differential experience on perception and memory. Participants trained for 2 weeks, searching for (initially novel) Chinese characters in visual displays. Training frequency for different characters varied geometrically. Transfer tasks were (1) pseudolexical decision, (2) 2AFC perceptual identification, and (3) episodic recognition memory. Frequency effects in each generally conformed to those found for words (with one exception). Although the REM model has successfully predicted word frequency effects in tasks such as these, using words as stimuli, this model is inappropriate in the present context: We arbitrarily assigned characters to training frequency, making unlikely the REM assumption that items of higher frequency share more features. We present a new form of the REM model, appropriate for the training regimen used in our Chinese character studies, and fit the model to the results.

**4:10–4:25 (107)**

**Unconscious Discovery in Concrete and Abstract Perceptual Learning.** EVERETT W. METTLER & PHILIP J. KELLMAN, *UCLA* (read by Philip J. Kellman)—We studied concrete and abstract perceptual learning (PL), using a task involving the discovery of patterns embedded in noise. In stimulus *grids* of 144 squares that could take on any of four grayscale values, subjects judged presence or absence of target patterns made of 10 squares and received accuracy feedback. Perceptual discovery of the target patterns was assessed by accuracy

of classification performance. We found evidence for both concrete PL (targets had constant color and position) and abstract PL (targets changed position or color across trials). Learning was facilitated by a paired comparison format (vs. single-target presentation), and pairing feedback with displays (vs. sequential presentation). Tests for conscious awareness of pattern shape and location showed that perfect performance could occur without awareness in all conditions. We discuss the results in terms of mechanisms that could discover concrete and abstract patterns, including claims regarding the relation of abstract PL to consciousness.

**4:30–4:45 (108)**

**Perceptual and Decisional Effects in Perceptual Learning.** MICHAEL J. WENGER, JENNIFER L. BITTNER, BRIANNA M. SULLIVAN, & REBECCA J. VON DER HEIDE, *Pennsylvania State University*—Our studies of perceptual learning for contrast detection have documented that reductions in thresholds are regularly accompanied by liberal shifts in response bias. These shifts are due to false alarm rates that either do not change or increase as a function of practice. To date, all of this evidence has been obtained in tasks that require explicit presence/absence responses, leaving open the possibility that our results may be due to the act of repeatedly giving presence/absence responses. We tested this hypothesis by assessing false alarm rates only at the beginning and end of practice. The remaining sessions involved 2AFC methods, without the requirement of presence/absence judgments. The results showed reliable decreases in threshold, reliable increases in false alarm rates, and an absence of bias for response interval. This suggests that even in the absence of making presence/absence decisions, observers experience a shift in decisional criteria specific to sensory detection.

**4:50–5:05 (109)**

**Developmental Trends in Utilizing Perceptual Closure for Grouping of Shape.** RUTH KIMCHI & BAT-SHEVA HADAD, *University of Haifa*—We used visual search to study grouping of shape by perceptual closure in individuals 5–23 years of age. Developmental differences were observed in search for a concave target among convex distractors with fragmented stimuli whose completion depended on closure alone or on closure and collinearity. When only closure was available, search efficiency was unaffected by age—efficient for spatially close fragments and inefficient for distant fragments. Similarly, when closure and collinearity were available and the fragments were spatially close, all age groups searched efficiently. However, when the fragments were spatially far apart, younger children searched inefficiently. Efficiency improved between ages 5 to 10. These results suggest that young children can utilize closure as efficiently as adults for closed or nearly closed stimuli. When the closure-inducing fragments are spatially distant, older children and adults, but not 5-year-olds, can utilize collinearity to enhance closure for the grouping of shape.

**5:10–5:25 (110)**

**News Regarding the Gestalt Figural Cue of Convexity: Context Effects and Hidden Competition.** MARY A. PETERSON & JEE HYUN KIM, *University of Arizona*—In demonstrations employing alternating black/white convex/concave regions, convex regions are likely to be seen as figures. Experiment 1 showed that for black/white displays, convex regions were decreasingly likely to be figures as region number decreased from 8 to 2 (80%–57%). We suggest that some cue favoring the concave region competes with convexity; its effectiveness decreases as region number increases (context matters). In Experiments 2 and 3, context overcame the competing cue only when the concave regions were uniform in color, providing global evidence that they were part of a larger area. Experiment 4 showed no effects of the competing cue in outline displays. We suggest a neurobiologically plausible manner whereby local small area competes with convexity only when different features fill alternating regions. To our knowledge, this is the first suggestion that a local small area is a figural cue and the first evidence of context effects in this domain.