





# **XXV International Congress of the Spanish Society for Comparative Psychology**



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## **Donostia - San Sebastián 2013**



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# Meeting Venue

## Miramar Palace

Planta Noble



Conferences and Talks: *Sala Julio Caro Baroja and/or Comedor Real*

Coffee Breaks and Posters: *Salón de la Música*

Registration: *Hall Sur*





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# **PROGRAMME OVERVIEW**

### **Wednesday, September 11**

- 09:00-09:30 Registration
- 09:30-10:00 Opening of the Congress
- 10:00-11:30 Inaugural Conference  
Multiple consequences of omitted reward  
Peter C. Holland, *Johns Hopkins University*
- 11:30-12:30 Coffee Break & Poster Session 1
- 12:30-13:30 Pre-exposure Effects
- 13:30-15:30 Lunch at “*Restaurante Real Club de Tennis Ondarreta*”
- 15:30-16:45 Associative Learning
- 16:45-17:45 Coffee Break & Poster Session 1
- 17:45-19:00 Drinking Behavior and Preference Learning
- 21:00 Social Event

### **Thursday, September 12**

- 09:00-10:15 Causal and Contingency Learning
- 10:15-11:15 Coffee Break & Poster Session 2
- 11:15-12:30 Time, Space, and Brain
- 12:30-14:00 SEPEX Conference  
Looking at emotion stimuli: Cognition, physiology and the brain  
Luis Aguado, *Universidad Complutense de Madrid*
- 14:00-16:00 Lunch at “*Restaurante Real Club de Tennis Ondarreta*”
- 16:00-17:00 Extinction and Recovery
- 17:00-18:00 Coffee Break & Poster Session 2
- 18:00-19:00 Exposure and Attention
- 21:00 Social Event

**Friday, September 13**

- 09:00-10:00 Consumption Behavior and Preference Learning
- 10:00-11:00 Coffee Break & Poster Session 3
- 11:00-12:15 Learning, Memory, and Cognition
- 12:15-13:45 Closing Conference  
The discrimination of magnitude  
John Pearce, *Cardiff University*
- 13:45-15:45 Lunch at “*Restaurante Real Club de Tennis Ondarreta*”
- 15:45-16:45 Retrospective and 25-Year Celebration
- 16:45-17:45 Coffee Break & Poster Session 3
- 17:45-18:45 Business Meeting of the SEPC
- 21:30 Closing Dinner



# Full Programme





# Wednesday, September 11

09:00-09:30            **Registration**

09:30-10:00           **Opening of the Congress**

10:00-11:30           **Inaugural Conference**

Multiple consequences of omitted reward. Peter C. Holland.  
*Johns Hopkins University*

11:30-12:30           **Coffee Break & Poster Session 1**

1 Effects of medial prefrontal cortex functional in activation in spatial memory extinction. Marta Méndez-Couz, Nélida M<sup>a</sup> Conejo, Héctor González-Pardo, & Jorge L. Arias. *University of Oviedo*.

2 A new latent inhibition procedure with taste aversion conditioning. Luis Gonzalo De la Casa, Auxiliadora Mena, & Paola Revilla. *Seville University*.

3 Learned predictiveness influences rapid attentional capture in the dot probe task. Miguel A. Vadillo<sup>1</sup>, Mike E. Le Pelley<sup>2</sup>, & David Luque<sup>3,4</sup>.  
<sup>1</sup>University College London, <sup>2</sup>University of New South Wales, <sup>3</sup>Universidad de Málaga; <sup>4</sup>Instituto de Investigación Biomédica de Málaga (IBIMA).

4 Behavioral profile of Roman High- (RHA-I) and Low-avoidance (RLA-I) rats in the successive alley test for anxiety. Rocío Donaire<sup>1</sup>, Marta<sup>1</sup> Sabariego, Javier<sup>1</sup> F. Cano, Inmaculada Márquez<sup>1</sup>, Alberto Fernández-Teruel<sup>2</sup>, & Carmen Torres<sup>1</sup>. <sup>1</sup>University of Jaén, <sup>2</sup>Autonomous University of Barcelona.

5 Beer-based flavor conditioned preference increases 24 hours after the experience with a single stressful event in juvenile rats. Estefanía Orellana<sup>1</sup>, Lucrecia Petrazzini<sup>1</sup>, Liz G. Lesta<sup>1</sup>, Paula Abate<sup>1</sup>, & Felisa González<sup>2</sup>. <sup>1</sup>*Universidad Nacional de Córdoba*, <sup>2</sup>*Universidad de Granada*.

6 Forward and backward blocking procedures in latent inhibition. Marta Gil<sup>1</sup>, Raúl Márquez<sup>1</sup>, Gabriel Rodríguez<sup>1</sup>, Gumersinda Alonso<sup>1</sup>, & Geoffrey Hall<sup>2,3,4</sup>. <sup>1</sup>*Universidad del País Vasco (UPV/EHU)*, <sup>2</sup>*University of York*, <sup>3</sup>*University of Plymouth*, <sup>4</sup>*University of New South Wales*.

7 Taste neophobic attenuation in aging rats: Perirhinal cortex implications. Beatriz Gómez-Chacón, Fernando Gámiz, Enrique Morillas, & Milagros Gallo. *University of Granada*.

8 Effects of dietary choline availability on latent inhibition of taste aversion learning. Sergio A. Recio, Fernando Gámiz, Milagros Gallo, & Isabel de Brugada. *Universidad de Granada*.

9 Perceptual learning transfer to novel stimuli. Anna Miguélez<sup>1</sup>, Antonio A. Artigas<sup>1</sup>, & José Prados<sup>2</sup>. <sup>1</sup>*Universitat de Barcelona*, <sup>2</sup>*University of Leicester*.

10 The Discrimination of Magnitude: CS+cs- is acquired more readily than cs+CS-. Richard A. Inman, Rob C. Honey, & John M. Pearce. *Cardiff University*.

11 Temperament and related endocrine profiles in 10 years-old children's aggressive behavior. Eider Pascual-Sagastizabal, Aitziber Azurmendi, & José Ramón Sánchez-Martín. *Universidad del País Vasco, UPV/EHU*.

12 Analysis of a contingency learning task using Signal Detection Theory (SDT) parameters. M. Ángeles Carrero-Puerto, José A. Aristizábal, Teresa L. Martín-Guerrero, Manuel M. Ramos-Álvarez, & Concepción Paredes-Olay. *Universidad de Jaén*.

13 The effect of stimulus similarity and the retention interval in an object recognition task with rats. Rocío Angulo, Naiara Arriola, Antón Navarro, & Gumersinda Alonso. *Universidad del País Vasco, UPV/EHU*.

14 Geometric orientation in amphibians: Evolutionary conserved spatial navigation? Rubén N. Muzio<sup>1,2</sup>, María Inés Sotelo<sup>1,2</sup>, & Verner P. Bingman<sup>3</sup>. <sup>1</sup>*Grupo de Aprendizaje & Cognición Comparada, Laboratorio de Biología del Comportamiento IBYME-CONICET*, <sup>2</sup>*Universidad de Buenos Aires*, <sup>3</sup>*Bowling Green State University*.

15 Do dogs resemble their owners? Joanna Izdebska & Tatarzyna Zeiba. *University of Warsaw*.

## 12:30-13:30 **Pre-exposure Effects**

Chair: Matias López, *Universidad de Oviedo*.

12:30-12:45 Latent Inhibition disruption induced by Deprivation and Frustration with an Auditory Fear Conditioning Procedure. Luis Gonzalo De la Casa, Auxiliadora Mena, Alexandra Orgaz, Andrea Puentes, & Esperanza Quintero. *University of Seville*.

12:45-13:00 Latent inhibition in invertebrates: The planarian case. Jose Prados<sup>1</sup>, Polyvios Theodotou<sup>1</sup>, & Laura Llames<sup>2</sup>. <sup>1</sup>*University of Leicester*, <sup>2</sup>*Universidad de Oviedo*.

13:00-13:15 Learned predictiveness effects on human causal learning. Gabriel Rodriguez<sup>1</sup> & Geoffrey Hall<sup>2,3,4</sup>. <sup>1</sup>*Universidad del País Vasco (UPV/EHU)*, <sup>2</sup>*University of York*, <sup>3</sup>*University of South Wales*, <sup>4</sup>*University of Plymouth*.

13:15-13:30 US-preexposure effect in snails is due to blocking by contextual cues. Félix Acebes & Ignacio Loy. *University of Oviedo*.

13:30-15:30 Lunch at “*Restaurante Real Club de Tenis Ondarreta*”

## 15:30-16:45 **Associative Learning**

Chair: Charlotte Bonardi, *University of Nottingham*

15:30-15:45 Associative versus rule-based generalization: A dissociation between judgements and priming effects. María José Gutiérrez-Cobo, Amanda Flores-Martín, & Pedro L. Cobos. *Universidad de Málaga*.

15:45-16:00 Binary associations established in human instrumental extinction. A. Matías Gámez, Samuel P. León, M. M. Moreno Fernández, & Juan M. Rosas. *University of Jaén*.

16:00-16:15 Can't see the forest for the trees? Cueing of visual attention benefits from pretraining a configural representation of the search context. Miguel A. Vadillo<sup>1</sup>, Tom Beesley<sup>2</sup>, & David R. Shanks<sup>1</sup>. <sup>1</sup>*University College London*, <sup>2</sup>*University of New South Wales*

16:15-16:30 Effect of conditioned inhibition on Pavlovian-instrumental transfer. Daniel Alarcon & Charlotte Bonardi. *University of Nottingham*.

16:30-16:45 Unconditioned sensitization and conditioned tolerance to the stimulating effect of ethanol in the infant rat. Stefanía Castelló<sup>1,2</sup>, Damián Revillo<sup>1,2</sup>, Carlos Arias<sup>3</sup>, & Juan Carlos Molina<sup>1,2</sup>. <sup>1</sup>*Instituto de Investigación Médica Mercedes & Martín Ferreyra, INIMEC-CONICET-UNC*, <sup>2</sup>*Universidad Nacional de Córdoba*, <sup>3</sup>*Universidad del País Vasco (UPV/EHU)*.

## 16:45-17:45 **Coffee Break & Poster Session 1**

## 17:45-19:00 **Drinking Behavior and Preference Learning**

Chair: Milagros Gallo, *Universidad de Granada*

17:45-18:00 Acquisition of schedule-induced drinking as a function of the drinking-food interval. Jorge Ruiz<sup>1</sup>, Peter Killeen<sup>2</sup>, & Ricardo Pellón<sup>1</sup>. <sup>1</sup>*Universidad Nacional de Educación a Distancia*, <sup>2</sup> *Arizona State University*.

18:00-18:15 Differential blocking of flavour preference conditioning based on nutrients and/or palatable tastes. Felisa González<sup>1</sup>, David Garcia-Burgos<sup>1</sup>, & Geoffrey Hall<sup>2,3</sup>. <sup>1</sup>*University of Granada*, <sup>2</sup>*University of York*, <sup>3</sup>*University of New South Wales*.

18:15-18:30 Lack of cognitive flexibility in high drinker rats in Schedule-Induced Polydipsia. Silvia Victoria Navarro, Olga Vilches, Francisco Nieto, Roberto Álvarez, Margarita Moreno, & Pilar Flores. *Universidad de Almería*.

18:30-18:45 Reward value set by simultaneous contrast drives preference learning. Dominic Dwyer<sup>1</sup>, Jaime Figueroa<sup>2</sup>, Patricia Gasalla<sup>3</sup>, & Matias Lopez<sup>3</sup>. <sup>1</sup>*Cardiff University*, <sup>2</sup>*Universidad Autónoma de Barcelona*, <sup>3</sup>*Universidad de Oviedo*.

18:45-19:00 Superconditioning of a flavor preference. Robert A. Boakes<sup>1</sup>, Felisa González<sup>2</sup> & Dorothy W.S.Kwok<sup>1</sup>, <sup>1</sup>*University of Sydney*, <sup>2</sup>*University of Granada*.



# Thursday, September 12

## 09:00-10:15 **Causal and Contingency Learning**

Chair: Helena Matute, *Universidad de Deusto*

09:00-09:15 An illusion that a cue causes an outcome might make you underestimate the strength of the actual cause. Ion Yarritu<sup>1</sup>, Helena Matute<sup>1</sup>, & David Luque<sup>2,3</sup>. <sup>1</sup>*Universidad de Deusto*, <sup>2</sup>*Universidad de Málaga*, <sup>3</sup>*Instituto de Investigación Biomédica de Málaga (IBIMA)*.

09:15-09:30 Cue duration modulates the effects produced by a change in cue-outcome contingencies. Rafael Alonso-Bardón<sup>1,2</sup>, David Luque<sup>1,2</sup>, & Francisco J. López<sup>1,2</sup>. <sup>1</sup>*Universidad de Málaga*, <sup>2</sup>*Instituto de Investigación Biomédica de Málaga (IBIMA)*.

09:30-09:45 Interference between cues in human contingency learning: A review, new data and a potential general explanation based on propositional models. David Luque, Joaquín Morís, & María José Gutiérrez. *University of Málaga*.

09:45-10:00 Modulating effect of filler associations on the expression of interfered information. Carmelo P. Cubillas<sup>1</sup>, Helena Matute<sup>1</sup>, & Miguel A. Vadillo<sup>2</sup>. <sup>1</sup>*Universidad de Deusto*, <sup>2</sup>*University College London*.

10:00-10:15 Role of feedback and response time on the associations established between cues and outcomes in a human predictive task. José A. Aristizabal, José E. Callejas-Aguilera, Manuel M. Ramos-Álvarez, Pedro M. Ogallar, & Juan M. Rosas. *University of Jaen*

## 10:15-11:15 **Coffee Break & Poster Session 2**

1 Change in aggressive behavior from 8 to 10 years old children the role of sex and hormones. Eider Pascual-Sagastizabal, Aitziber Azurmendi, & José Ramón Sánchez-Martín. *Universidad del País Vasco, UPV/EHU*.

2 The US-Preexposure effect in flavour-flavour learning: underlying mechanisms. Sergio A. Recio, Adela F. Iliescu, & Isabel de Brugada. *University of Granada*.

3 A comparison between dynamic average of negative and positive value experiences in information retrieval. Angélica Alvarado, Karina Segura-Flores, Eneida Strempler-Rubio, & Javier Vila. *Universidad Nacional Autónoma de México*.

4 Overshadowing and associability change in a spatial search task. David Luna, Alberto Monroy, & Javier Vila. *Universidad Nacional Autónoma de México*.

5 Neurochemical differences in Low versus High compulsive drinker rats selected by Schedule-induced Polydipsia. Silvia Navarro, Roberto Álvarez, Cristina Suñol, Leticia Campa, Pilar Flores, & Margarita Moreno. *Universidad de Almería*.

6 Fos-like immunoreactivity in gustatory thalamus during taste-recognition memory in rats. Enrique Morillas, Beatriz Gómez-Chacón, & Fernando Gámiz, Milagros Gallo. *University of Granada*.

7 Sensory preconditioning and backward conditioned inhibition in taste aversion learning: The role of preexposure. Susana Carnero, Félix Acebes, & Ignacio Loy. *Universidad de Oviedo*.

8 Rats' navigation with one or two landmarks relatively far from a goal. Elisabet Gimeno, Teresa Rodrigo, & Victoria D. Chamizo. *Universitat de Barcelona*.

9 "Is this my cholesterol pill?" Differential outcomes and discriminative learning. Michael Molina<sup>1</sup>, Laura Esteban<sup>2</sup>, Rubén Fernández<sup>2</sup>, & Angeles F. Estévez<sup>2</sup>. <sup>1</sup>*Universidad de Valencia*, <sup>2</sup>*Universidad de Almería*.

10 In vivo stimulation of locus coeruleus: effects in amygdala nuclei. Diana Cardona<sup>1</sup>, Elisa Rodríguez-Ortega<sup>2</sup>, Joseph LeDoux<sup>3</sup>, & Fernando Cañadas<sup>2</sup>. <sup>1</sup>*Universidad de Almería*, <sup>2</sup>*Universidad de Almería*; <sup>3</sup>*New York University*.



11 Asymmetry of generalization decrement in human contingency learning: use of a negative feature and a negative or positive outcome. Takahisa Masaki, Ryoji Nishiyama, & Takatoshi Nagaishi. *Kwansei Gakuin University*.

12 Activity-based anorexia in rats as a function of the interval between running and eating. Erica Franco, Felicidad Ruiz, David Sancho, Pedro Vidal, & Ricardo Pellón. *Universidad Nacional de Educación a Distancia*.

13 Analysis of the influence of perceptual learning on the blocking effect. José Antonio González, María Rosario Pozo, Emiliano Díez, & David Fernández. *Universidad de Salamanca*.

14 Spontaneous colour discrimination in angelfish (*Pterophyllum scalare*): implications for behavioural assays. Luis M. Gómez Laplaza & Emilio Hijes. *Universidad de Oviedo*.

15 Different conditions in habitats influence on the behavior in the Elevated Plus Maze. Katarzyna Zięba. *University Of Warsaw*.

## **11:15-12:30 Time, Space, and Brain**

Chair: Victoria D. Chamizo, *Universitat de Barcelona*

11:15-11:30 Configural learning and the hippocampus: What happens where and when. Honey, R.C., Dumigan, N.M., Lin, T.E., & Good, M.A. *Cardiff University*.

11:30-11:45 Environmental enrichment and oxidative stress. Frederic Mármol, Clara A. Rodríguez, Juan Sánchez, & Victoria D. Chamizo. *Universitat de Barcelona*.

11:45-12:00 Dissociations in the effect of delay on object recognition and the effect of dorsal hippocampal damage: Evidence for an associative model of recognition memory. Shu K.E. Tam<sup>1</sup>, Jasper Robinson<sup>2</sup>, Dómnall J. Jennings<sup>3</sup> and Charlotte Bonardi<sup>2</sup>. <sup>1</sup>*University of Oxford*, <sup>2</sup>*University of Nottingham*, <sup>3</sup>*Institute of Neuroscience*.

12:00-12:15 Prepulse Inhibition Modulation by Contextual Conditioning of Dopaminergic Activity. Auxiliadora Mena & Luis Gonzalo De la Casa. *Universidad de Sevilla*.

12:15-12:30 Intradimensional and interdimensional temporal control. Catarina V. de Castro & Armando Machado. *University of Minho*.

### 12:30-14:00 **SEPEX Conference**

Looking at emotion stimuli: Cognition, physiology, and the brain. Luis Aguado. *Universidad Complutense de Madrid*

14:00-16:00 Lunch at “*Restaurante Real Club de Tennis Ondarreta*”

### 16:00-17:00 **Extinction and Recovery**

Chair: Juan Manuel Rosas, *Universidad de Jaén*

16:00-16:15 A sensory-enhanced context allows renewal after extinction in the infant rat. Damian Revillo<sup>1,2</sup>, Stefania Castello<sup>1,2</sup>, M. Gabriela Paglini<sup>1</sup>, & Carlos Arias<sup>3</sup>. <sup>1</sup>*Instituto Mercedes & Martin Ferreyra (INIMEC-CONICET-UNC)*, <sup>2</sup>*Universidad Nacional de Cordoba*, <sup>3</sup>*Universidad del País Vasco (UPV/EHU)*.

16:15-16:30 Contextual renewal with simultaneous and successive cues in humans. Javier Vila, David Luna, & Alberto Monroy. *Universidad Nacional Autónoma de México*.

16:30-16:45 Extinction of an instrumental task in the amphibian *Rhinella arenarum* under different acquisition conditions: Amount of practice vs. Magnitude of reinforcement. Rubén N. Muzio<sup>1,2</sup>, Martín M. Puddington<sup>1,2</sup>, & Mauricio R. Papini<sup>3</sup>. <sup>1</sup>*Grupo de Aprendizaje & Cognición Comparada, Laboratorio de Biología del Comportamiento IBYME-CONICET*, <sup>2</sup>*Universidad de Buenos Aires*, <sup>3</sup>*Texas Christian University*.

16:45-17:00 Extinction, spontaneous recovery and reinstatement in the garden snail *Helix aspersa*. Beatriz Álvarez<sup>1</sup>, Joaquín Morís<sup>2,3</sup>, David Luque<sup>2,3</sup>, & Ignacio Loy<sup>1</sup>. <sup>1</sup>*Universidad de Oviedo*, <sup>2</sup>*Universidad de Málaga*, <sup>3</sup>*Instituto de Investigación Biomédica de Málaga (IBIMA)*.

## 17:00-18:00                      **Coffee Break & Poster Session 2**

### 18:00-19:00                      **Exposure and Attention**

Chair: Gonzalo de la Casa, *Universidad de Sevilla*

18:00-18:15 Concurrent latent inhibition effects on consumption and cue palatability in taste aversion learning. Patricia Gasalla<sup>1</sup>, Dominic M. Dwyer<sup>2</sup>, & Matías López<sup>1</sup>. <sup>1</sup>*University of Oviedo*, <sup>2</sup>*Cardiff University*.

18:15-18:30 Criterion sensibility to feedback contingencies. Teresa L. Martín-Guerrero, Concepción Paredes-Olay, Juan M. Rosas, & Manuel M. Ramos-Álvarez. *University of Jaén*.

18:30-18:45 Perceptual learning with textures in rats. Luke M. Montuori & Rob C. Honey. *Cardiff University*.

18:45-19:00 The blocking effect does not seem to involve learned inattention. Francisco Arcediano, Duncan Y. Amegbletor, & Martha R. Forloines. *Auburn University*.



# Friday, September 13

## 09:00-10:00 **Consumption Behavior and Preference Learning**

Chair: Robert Boakes, *University of Sidney*

09:00-09:15 Resistance to change of schedule-induced drinking in rats. Pedro Vidal & Ricardo Pellón. *Universidad Nacional de Educación a Distancia*.

09:15-09:30 Sensory-specific flavor-taste associations in flavor preference learning. Alberto Soto, Patricia Gasalla, & Matías López. *Universidad de Oviedo*.

09:30-09:45 Transfer of training between consummatory and anticipatory tasks involving incentive downshift. Amanda C. Glueck<sup>1</sup> Mauricio R. Papini<sup>1</sup>, & Carmen Torres<sup>2</sup>. <sup>1</sup>*Texas Christian University*, <sup>2</sup>*Universidad de Jaén*.

09:45-10:00 Yo-Yo diets effect in laboratory rats: induced obesity in an animal model of anxiety and depression. Javier Ibias Martín<sup>1</sup>, Núria del Olmo Izquierdo<sup>2</sup>, Ricardo Pellón Suárez de Puga<sup>1</sup>. <sup>1</sup>*Universidad Nacional de Educación a Distancia*, <sup>2</sup>*Universidad CEU- San Pablo*.

## 10:00-11:00 **Coffee Break & Poster Session 3**

1 A role-playing game (RPG) task: a new tool for studying human associative learning. Takatoshi Nagaishi. *Kwansei Gakuin University*.

2 Attention to Contexts after Short Training in a Human Predictive Learning Task. José A. Aristizabal, Manuel M. Ramos-Álvarez, Juan M. Rosas, & José E. Callejas-Aguilera. *University of Jaen*.

3 Conditioned inhibition in infant rats. Aranda, P.E., Gaztañaga, M., Arias, C., & Chotro, M.G. *Universidad del País Vasco (UPV/EHU)*.

4 Context-Switch Effects on Schedule-Induced Drinking. José A. Aristizábal<sup>1</sup>, Ricardo Pellón<sup>2</sup>, Juan M. Rosas<sup>1</sup>, Manuel M. Ramos-Álvarez<sup>1</sup>, & José E. Callejas-Aguilera<sup>1</sup>. <sup>1</sup>*University of Jaen*, <sup>2</sup> *National University of Distance Education*.

5 Contrasting ABA, AAB and ABC renewal in a free operant procedure. Montserrat Carrasco-López, Rodolfo Bernal-Gamboa, & Javier Nieto. *Universidad Nacional Autónoma de México*.

6 Development of schedule induced polydipsia in goal- and sign-tracker rats. V.E. Gutiérrez-Ferre<sup>1</sup>, A. Serrano<sup>2</sup>, J.C. López<sup>2</sup>, & R. Pellón<sup>1</sup>. <sup>1</sup>*Universidad Nacional de Educación a Distancia*, <sup>2</sup>*Universidad de Sevilla*.

7 Differential development of adjunctive behavior in humans depending on feedback type during inter-trial intervals of a competition game schedule induced behaviors in winners and losers. Laura Gijón Serrano, Javier Ibias Martín, Cristina Orgaz Jiménez & Ricardo Pellón Suárez de Puga. *Universidad Nacional de Educación a Distancia*.

8 Differential outcomes and delayed face recognition memory in healthy adults. Victoria Plaza<sup>1</sup>, Diego Guirao<sup>1</sup>, José Antonio Pérez<sup>1</sup>, Luis Fuentes<sup>2</sup>, & Angeles F. Estévez<sup>1</sup>. <sup>1</sup>*Universidad de Almería*, <sup>2</sup>*Universidad de Murcia*.

9 Effect of instructions on visual attention in perceptual learning. Antón Navarro, Rocío Angulo, Naiara Arriola, & Gumersinda Alonso. *Universidad del País Vasco (UPV/EHU)*.

10 Operant conditioning in 5-day old rats exposed prenatally to vanilla. M. Gaztañaga<sup>1,2</sup>, R.S. Miranda-Morales<sup>2</sup>, N.E. Spear<sup>2</sup>, & M.G. Chotro<sup>1</sup>. <sup>1</sup>*Universidad del País Vasco (UPV/EHU)*, <sup>2</sup>*Binghamton University*.

11 Spacing extinction sessions attenuates the recovery of operant responses. Rodolfo Bernal-Gamboa, Alexis Martínez-Ramírez, & Javier Nieto. *Universidad Nacional Autónoma de México*.

12 Study of anxiogenic effect of yohimbine in wistar rats. Escarabajal, M.D., de la Torre, L., & Agüero, A. *Universidad de Jaén*.

13 The effects of schedule-induced polydipsia on the structure of anterior prefrontal cortex and dorsal striatum neurons. Estrella Soria<sup>1</sup>, Javier Íbias<sup>1</sup>, Asta Kastanauskaite<sup>2</sup>, Cristina Orgaz<sup>1</sup>, Javier DeFelipe<sup>2,3</sup>, Ricardo Pellón<sup>1</sup>, & Miguel Miguéns<sup>1</sup>. <sup>1</sup> *Universidad Nacional de Educación a Distancia*, <sup>2</sup>*Laboratorio Cajal de Circuitos Corticales, Centro de Tecnología Biomédica, Universidad Politécnica de Madrid*, <sup>3</sup>*Instituto Cajal, CSIC*.

14 The partial reinforcement extinction effect (PREE): An experiment study with rats procedurally similar to studies with human participants. Óscar García-Leal & Gamaliel Saldivar Olivares. *Universidad de Guadalajara (México)*.

15 Asymmetry of generalization decrement in human contingency learning use of a positive feature and a negative or positive outcome. Ryoji Nishiyama, Takatoshi Nagaishi, & Takahisa Masaki. *Kwansei Gakuin University*.

## 11:00-12:15 **Learning, Memory, and Cognition**

Chair: Francisco López, *Universidad de Málaga*

11:00-11:15 Episodic-Like Memory in children occurs as single event. Angélica Alvarado, Eneida Strempler, Rosalba Juárez, & Javier Vila. *Universidad Nacional Autónoma de México*.

11:15-11:30 Flexible Configural Learning of Non-Linear Discriminations and Detection of Stimulus Compounds. Steven Glautier, Hayward Godwin, Tamaryn Menneer, & Nick Donnelly. *Southampton University*.

11:30-11:45 Generalization decrement and not overshadowing by associative competition among pairs of landmarks in a navigation task with humans. J. Antonio Aznar-Casanova, Joan Sansa, Clara A. Rodríguez, & Victoria D. Chamizo. *Universitat de Barcelona*.

11:45-12:00 Sequential Choice Model: Discovering common choice processes in human and non-human subjects. Enzo Leandro Rodríguez González & Óscar García-Leal. *Universidad de Guadalajara (México)*.

12:00-12:15 What makes a landmark effective (especially for female rats)? Victoria D. Chamizo<sup>1</sup>, Clara A. Rodríguez<sup>1</sup>, Marta N. Torres<sup>1</sup>, & Nicholas J. Mackintosh<sup>2</sup>. <sup>1</sup>*Universitat de Barcelona*, <sup>2</sup>*Cambridge University*.

12:15-13:45                    **Closing Conference**  
The Discrimination of Magnitude. John Pearce. *Cardiff University*

13:45-15:45    Lunch at “*Restaurante Real Club de Tennis Ondarreta*”

15:45-16:45                    **Retrospective and 25-Year celebration**

15:45-16:00 Behaviorist, Publicist and Social Critic: The Evolution of John B. Watson. Jose María Gondra, *Universidad del País Vasco, UPV/EHU*.

16:00-16:15 The Spanish society for comparative psychology turns 25: notes on its history. Gabriel Ruiz, *Universidad de Sevilla*.



16:15-16:30 Tribute to Dr. Victor García-Hoz Rosales.  
Ricardo Pellón, *Universidad Nacional de Educación a Distancia*.

16:30-16:45 Tribute to Dr. Geoffrey Hall.  
Isabel de Brugada, *Universidad de Granada*.

16:45-17:45                    **Coffee Break & Poster Session 3**

17:45-18:45                    **Business Meeting of the SEPC**



# Conferences



**Wednesday, September 11, 10:00-11:30**

**Multiple consequences of omitted reward**

Peter C. Holland  
*Johns Hopkins University*

The surprising omission of expected reward can have profound, but sometimes paradoxical, effects on attention, learning and decision. Although such omission often enhances and redirects attention, those attentional changes can simultaneously suppress current performance and facilitate new learning. Moreover, cues associated with the omission of expected reward may also have contradictory effects: a cue that replaces the expected delivery of food acquires both aversive and appetitive properties. Although such an omission cue can punish food-rewarded instrumental behavior, it enhances consumption of food itself. Furthermore, in a choice test, animals may select for or against that stimulus, depending on whether the food is freely available or must be earned. These disparate consequences of reward omission on appetitive and consummatory responding have important implications for psychological concepts of value and value-based decision. I will describe several converging lines of rodent behavioral research that examined both the origins and products of this learning.

**Thursday, September 12, 12:30-14:00**

**Looking at emotion stimuli: cognition, physiology and the brain**

Luis Aguado

*Universidad Complutense de Madrid*

The study of the processes involved in perceiving, feeling and responding to emotional stimuli has been one of the main driving forces in the development of the cognitive neuroscience of emotion. In this talk I will review recent work from my research group using different types of visual stimuli (facial expressions of emotion, static emotion images and short emotion films). Using different tools (cognitive paradigms, brain potentials –ERPs-, eye tracking and psychophysiological recording) our research has addressed three main goals. First is the study of perceptual and attentional mechanisms involved in processing of facial expressions of emotion and the extent to which that processing can be modulated by context. Second, we have evaluated the affective properties of emotion stimuli using psychophysiological probes such as facial electromyography (fEMG) and skin conductance responses (SCR), that are differentially sensitive to two dimensions of affect, valence and arousal. Finally, our most recent research has focused on psychopathological samples in which social and affective processing deficits have been described and considered of clinical relevance, namely schizophrenia, first-episode psychosis and bipolar disorder.

*Note: Work reported in this talk was in part supported by Grant No. Psi2010-18682 from the Spanish Ministerio de Ciencia & Educación.*

**Friday, September 13, 12:15-13:45**

## **The Discrimination of Magnitude**

John M Pearce  
*Cardiff University*

Discriminations between two stimuli that differ in quality, such as tones of different frequency, tend to be symmetrical. That is, the course of the discrimination is unaffected by which of the stimuli signal reward. In contrast, a limited body of evidence indicates that discriminations based on stimuli that differ in quantity, or magnitude, do not follow this rule. Such discriminations appear to be solved more readily when reward is signalled by the larger rather than the smaller of the two stimuli. I shall describe a series of new experiments that demonstrate this asymmetry with stimuli that differ in intensity, number, duration and, in particular, length. There are at least two possible explanations for the asymmetry found with magnitude discriminations. One is based on the assumption that the asymmetry is a manifestation of the feature positive effect. The other is based on the theory of discrimination learning put forward by Spence. Additional experiments that test these proposals will be described.





# Talks



**Wednesday, September 11, 12:30-13:30**

**Pre-exposure Effects**

CHAIR: Matias López, *Universidad de Oviedo*

12:30

**Latent Inhibition disruption induced by Deprivation and Frustration with an Auditory Fear Conditioning Procedure.**

Luis Gonzalo De la Casa, Auxiliadora Mena, Alexandra Orgaz, Andrea Puentes, & Esperanza Quintero.  
*University of Seville*

Latent Inhibition (LI), operationally defined as the reduced conditioned response to a stimulus that has been preexposed before conditioning, seems to be determined by the interaction of different processes that includes attentional, associative, memory, motivational, and emotional factors. In this work we analyze the effects of the latter two factors on LI modulation using an auditory fear conditioning procedure with rats. In our first experiment LI was observed when the animals were non-deprived, but it was disrupted when the rats were water- or food-deprived. In the second experiment, the induction of a negative consummatory successive contrast effect before to proceed to CS preexposure and conditioning resulted in LI disruption. The results are discussed attending to the relevance of motivational and emotional factors on LI, and examining their implications for the current interpretations of LI.

12:45

**Latent inhibition in invertebrates: The planarian case.**

Jose Prados<sup>1</sup>, Polyvios Theodotou<sup>1</sup>, & Laura Llames<sup>2</sup>.

<sup>1</sup>*University of Leicester*; <sup>2</sup>*Universidad de Oviedo*

Latent inhibition, a deficit in conditioned responding after pre-exposure to the to-be-conditioned stimulus (CS), has been said to depend on relatively complex attentional mechanisms that require a complex neuronal wiring. For that reason, only mammals and perhaps other vertebrates with highly structured nervous systems might be capable of showing latent inhibition. There are, however, a number of demonstrations of the effect in a few invertebrate species; unfortunately, these claims are shadowed by a number of statistical, design and interpretation problems (for a review see Lubow, 2010), casting doubt about the functional equivalence of the pre-exposure effect observed in invertebrates and vertebrates. We report here for the first time latent inhibition in the planaria using between-subjects and within-subjects designs. Whether the response deficit observed was a consequence of habituation of the unconditioned response to the CS (similar to the response elicited by the US), a decline in CS-processing, or a case of memory interference (between memories acquired at the time of pre-exposure and conditioning) was further assessed. Reference Lubow R. E. (2010). The phylogenetic distribution of latent inhibition. In R. E. Lubow and I. Weiner (Eds.), *Latent Inhibition Cognition, Neuroscience and Applications to Schizophrenia* (pp. 201-224). Cambridge, UK Cambridge University Press.

13:00

**Learned predictiveness effects on human causal learning.**

Gabriel Rodriguez<sup>1</sup> & Geoffrey Hall<sup>2,3,4</sup>.

<sup>1</sup>*Universidad del País Vasco (UPV/EHU)*, <sup>2</sup>*University of York*, <sup>3</sup>*University of South Wales*, <sup>4</sup>*University of Plymouth*

Previous studies in human causal learning have demonstrated that the predictive history of a cue biases new contingency learning about it. In Stage 1 half of the cues are established as accurate predictors of their outcomes, and the other half are established as poorer predictors. In Stage 2, all cues are equally predictive of a new outcome. On test, participants rate the likelihood that the cues would produce Stage 2 outcomes. It has been consistently found that participants rate the accurate predictors higher than poorer predictors. We report two experiments investigating this learned predictiveness (LP) effect. In Experiment 1, reversing the order of Stages 1 and 2 produced the same effect, inconsistent with the notion that the predictive value of the cues learnt on Stage 1 modulates their learning rate. In Experiment 2, we reduced the maximum time to respond on each trial to 4 s. This short-time period was enough for participants to show a clear discrimination in Stage 1, but not to show the LP effect on the test. This suggests that the mechanism involved in the LP effect requires more time than the automatic associative mechanisms involved in discrimination learning.

13:15

**US-preexposure effect in snails is due to blocking by contextual cues.**

Félix Acebes & Ignacio Loy.  
*University of Oviedo*

Exposing the unconditioned stimulus (US) prior to its pairing in compound with a conditioned stimulus (CS), results in a decrease in the conditioning of the CS (US- preexposure effect). The explanatory mechanisms of this effect are still subject of debate among current theories of associative learning. These experiments replicated previous demonstrations of the US preexposure effect in the snail (*Helix aspersa*) with a tentacle lowering procedure and demonstrated an attenuation of the effect by introducing the context without consequences prior to US preexposure training (latent inhibition of contextual conditioning). The results are consistent with an associative explanation of the US preexposure effect based on blocking by contextual cues, providing as well a sample of contextual effects in mollusks which are unusual in the literature.

**Wednesday, September 11, 15:30-16:45**

## **Associative Learning**

CHAIR: Charlotte Bonardi, *University of Nottingham*

15:30

### **Associative versus rule-based generalization: A dissociation between judgements and priming effects.**

María José Gutiérrez-Cobo, Amanda Flores-Martín, & Pedro L. Cobos.  
*Universidad de Málaga*

Following Shanks and Darby (1998), participants in our experiments had to learn that single cues that signalled the same outcome (e.g., A-1/B-1) predicted the opposite outcome when presented in compound (e.g., AB-2). Some cues were only presented in compound during training (e.g., CD-2) to see whether, at test, participants tended to respond according to rule-based (i.e., C-1/D-1) or according to feature-based generalisation (i.e., C-2/D-2). The generalisation test was based on two different tasks A predictive judgment, and a cued-response priming task. In the judgment task, participants' responses were consistent with rule-based generalisation. However, participants' reaction times in the cued-response priming task were consistent with feature-based generalisation. This dissociation contradicts Jan De Houwer and Stefaan Vandorpe's (2010) results based on the implicit association task, and indicates that, when a priming task with a short SOA (200 ms) is used, the expression of very simple processes is favoured over more complex reasoning processes. Conversely, when participants have unlimited time to think, complex reasoning processes may override simple processes. Consequently, our study supports the idea that priming techniques with demanding time requirements favour the expression of activation-based processes such as associative processes, and prevent to a great extent the operation of inferential reasoning.

15:45

**Binary associations established in human instrumental extinction.**

A. Matías Gámez, Samuel P. León, M. M. Moreno Fernández, & Juan M. Rosas.

*University of Jaén*

The associative structure of acquisition and extinction in classical conditioning is well established. However, little it is known about the contents of extinction in human instrumental learning. Two experiments were carried out with the main goal of exploring binary associations between the discriminative stimulus (SD), the response (R) and the outcome (O) in human instrumental extinction (SD-R, SD-O and R-O associations). Participants were initially trained with four instrumental responses that were randomly followed by one of two possible outcomes in the presence of specific SDs (X-R1-O1; Y-R2-O2; Z-R3-O1; J-R4-O2). Participants in Experiment 1 received a test immediately afterwards, while participants in Experiment 2 received extinction training before the final test (e.g. X-R1-). In order to explore the presence of binary associations after both, acquisition and extinction, the test included three trials, counterbalanced. Each trial involved a different combination of SDs and Rs, allowing for testing the strength of SD-R, SD-O and R-O associations within the same experiment and participant. Results are in concordance with reports from prior non-human animal research (Rescorla, 1993).



16:00

**Can't see the forest for the trees? Cueing of visual attention benefits from pretraining a configural representation of the search context.**

Miguel A. Vadillo<sup>1</sup>, Tom Beesley<sup>2</sup>, & David R. Shanks<sup>1</sup>.

*<sup>1</sup>University College London, <sup>2</sup>University of New South Wales*

Searching for a target among an array of distractors becomes faster as a result of previous experience with that search array. Although many features of this contextual cueing of visual attention are now well understood, little is known about the specific representations that underlie this type of learning. One possibility is that each element of the search context develops an individual association with the location at which the target is most likely to appear. An alternative view is that all the elements of the context become associated with each other and that this configural representation of the context is then associated with the target location. Across three experiments we show that pretraining associations between the distractors that form a context, even in the absence of a consistent target location, subsequently enhances contextual cueing. Our simulations of several computational models show that these results are problematic for accounts that attempt to explain contextual cueing in terms of individual distractor-target associations.

16:15

**Effect of conditioned inhibition on Pavlovian-instrumental transfer.**

Daniel Alarcon & Charlotte Bonardi.

*University of Nottingham*

Conditioned stimuli associated with a specific outcome acquire the ability to increase instrumental responding that was reinforced with the same outcome, in the phenomenon called the specific transfer effect. One explanation appeals to mediation by the outcome representation, through a stimulus-outcome-response association (S-O-R), but there is evidence indicating that this effect occurs as the result of a direct stimulus-response association (S-R). This experiment aimed to test these explanations using a conditioned inhibition procedure, in which a conditioned inhibitor (CI) signals the absence of the outcome. If the S-O-R mechanism is responsible for the effect, a CI should cancel the transfer by suppressing the outcome representation, but not in the case of the S-R. Participants received instrumental training followed by a standard Pavlovian conditioned inhibition training. Finally, in the transfer test participants performed the instrumental responses while they received presentations of excitatory CSs in compound with CIs and with neutral stimuli. A specific transfer effect was found in the presence of the neutral compounds but it was abolished in the presence of the inhibitory compounds. These results indicate that the specific transfer effect is mediated by the outcome representation, providing evidence for the S-O-R theory.

16:30

**Unconditioned sensitization and conditioned tolerance to the stimulating effect of ethanol in the infant rat.**

Stefanía Castelló<sup>1,2</sup>, Damián Revillo<sup>1,2</sup>, Carlos Arias<sup>3</sup>,  
& Juan Carlos Molina<sup>1,2</sup>.

*<sup>1</sup>Instituto de Investigación Médica Mercedes & Martín Ferreyra, INIMEC-CONICET-UNC <sup>2</sup>, Universidad Nacional de Córdoba, <sup>3</sup>Universidad del País Vasco (UPV/EHU)*

Relatively high ethanol doses induce acute locomotor stimulating effects in preweanling rats, an effect associated with its rewarding properties. The goal of the present work was to explore how the ethanol-mediated locomotor response is modulated by the context and by the chronic experience with the drug. Subjects were trained with ethanol (0 or 2.5 g/kg) between postnatal days (PDs) 8 and 12. Training was carried out in the presence or absence of an odor cue. Three days later (on PD 15) subjects were evaluated in response to ethanol or water in the presence of the odor cue. Repeated exposure to ethanol induced conditioned tolerance or unconditioned sensitization. Tolerance to the locomotor stimulating effect of ethanol was observed when the odor cue was presented during training and testing. Locomotor sensitization occurred when rats were trained in absence of the odor cue, in a different context than the one employed at testing. These results represent the first evidence of conditioned tolerance and unconditioned sensitization to the locomotor activating effect of ethanol in this ontogenetic period.



**Wednesday, September 11, 17:45-19:00**

**Drinking Behavior and Preference Learning**  
CHAIR: Milagros Gallo, *Universidad de Granada*

17:45

**Acquisition of schedule-induced drinking as a function of the drinking-food interval.**

Jorge Ruiz<sup>1</sup>, Peter Killeen<sup>2</sup> & Ricardo Pellón<sup>1</sup>.

*<sup>1</sup>Universidad Nacional de Educación a Distancia, <sup>2</sup>Arizona State University*

It was explored the effect of the temporal proximity between the opportunity to drink and the delivery of food on the acquisition of schedule-induced drinking. Sixteen food-deprived rats were exposed to a fixed time 125 seconds food delivery schedule. In a first phase, eight rats had the opportunity to obtain a drop of water by each lick between the seconds 31 and 70 of each inter-food interval, and between the seconds 71 and 110 the rest of the rats. In a second phase, the experimental conditions for each group were reverted. In both phases a light during the water availability period was presented. It was found that rats that initiated the experiment with the water availability period closer to the following food acquired gradually the drinking behavior and that in the following phase diminished the frequency of licking. The other rats maintained a low frequency of licking during all the experiment. The results are discussed in the context of the argument that schedule-induced drinking occurs because food acts as a positive reinforcer of the drinking behavior.

18:00

**Differential blocking of flavour preference conditioning based on nutrients and/or palatable tastes.**

Felisa González<sup>1</sup>, David Garcia-Burgos<sup>1</sup>, & Geoffrey Hall<sup>2,3</sup>.

<sup>1</sup>*University of Granada*, <sup>2</sup>*University of York*, <sup>3</sup>*University of New South Wales*

In three experiments with hungry rats as subjects a neutral odour (A) was paired with either a nutrient with a palatable taste (sucrose; Experiment 1), or (Experiments 2 & 3) with a reinforcer producing either a) flavour-nutrient but not flavour-taste learning (maltodextrin), or b) flavour-taste but not flavour-nutrient learning (fructose). Flavour A was subsequently presented in a reinforced compound with a second odour (B; odours almond and vanilla, counterbalanced). Replicating previous results (Balleine, Espinet, & González, 2005), sucrose produced a robust effect of blocking in Experiment 1. Although flavour preference conditioning was readily obtained for flavour A with both maltodextrin and fructose as reinforcers, neither the standard (sequential A+/AB+ training) nor the alternate (intermixed A+/AB+ trials; Dwyer, Haselgrove, & Jones, 2011) procedures were effective in blocking the conditioned preference for flavour B in Experiments 2 and 3. The results are discussed in terms of the relative strength of the different carbohydrates as flavour-preference conditioning reinforcers. Funding PSI2012-33552 (MINECO, Spain)

18:15

**Lack of cognitive flexibility in high drinker rats in Schedule-Induced Polydipsia.**

Silvia Victoria Navarro, Olga Vilches, Francisco Nieto, Roberto Álvarez, Margarita Moreno, & Pilar Flores.

*Universidad de Almería*

Cognitive flexibility is the ability of adapt behavior in respond to situational demands and its alterations are associated with some neuropsychiatric disorders as obsessive-compulsive disorder, schizophrenia and depression. One validated model of cognitive flexibility is reversal learning, that requires detection of the shift contingencies, inhibition of a prepotent response and new associations learning. Schedule-induced polydipsia (SIP), characterized by the development of excessive drinking under intermittent food-reinforcement, has been used as a model of compulsive responding in OCD, schizophrenia, alcohol abuse and predisposition to drug addiction and other neuropsychiatric conditions related to the impulsive-compulsive spectrum disorders. We hypothesize that the poor inhibitory control showed for HD rats selected by SIP may play a role in cognitive flexibility alterations observed in those neuropsychiatric disorders. In this study, we asses cognitive flexibility in low drinkers and high drinkers rats selected by SIP through spatial reversal learning task. Our results showed that HD rats needed more trials to get the criterion and show more incorrect responses in a spatial reversal learning task than LD animals. We suggest that these differences between HD and LD rats reflect two kind of neurocognitive endophenotype of compulsivity. This work was supported by project PSI2012-31660 granted Ministerio de Economía & Competitividad, Spain.

18:30

## **Reward value set by simultaneous contrast drives preference learning.**

Dominic Dwyer<sup>1</sup>, Jaime Figueroa<sup>2</sup>, Patricia Gasalla<sup>3</sup>, & Matias Lopez<sup>3</sup>.

<sup>1</sup>*Cardiff University*, <sup>2</sup>*Universidad Autonoma de Barcelona*,

<sup>3</sup>*Universidad de Oviedo*

Formal theories of learning suggest that the association between a cue and rewarding outcome is determined (in part) by the degree to which the representation of the outcome is activated. This implies that manipulating the degree of reward processing should affect learning, even when the objective reward value is unchanged. We examined this prediction in two flavour preference learning experiments in rats. In Experiment 1 a CS+ flavour was combined with 8% sucrose when it followed 2% sucrose, while a CS- flavour was combined with 8% sucrose when it followed 32% sucrose. Experiment 2 used fructose instead of sucrose, and equated CS+ and CS- intakes during training. In both experiments, the simultaneous contrast procedure modified the value of the 8% solution (assessed by lick microstructure analysis) and produced a subsequent preference for the CS+ over the CS-. Moreover, the size of the contrast-produced change in reward value during training correlated positively with the size of the preference for the CS+ over the CS- flavour at test. These results are entirely in accordance with associative models of learning and suggest that, even in rats, learning is determined by the perception of the events rather than their objective properties.



18:45

**Superconditioning of a flavor preference.**

Robert A. Boakes<sup>1</sup>, Felisa González<sup>2</sup>, & Dorothy W.S.Kwok<sup>1</sup>.

<sup>1</sup>University of Sydney, <sup>2</sup>University of Granada

If rats are given a high-energy solution (20% maltodextrin) on ‘good’ days that are intermixed with ‘bad’ days when they are given a low-energy solution (3% maltodextrin) to which a target flavour has been added, they later show avoidance of this flavour. We have named this the *missing calorie* effect. To the extent that such training establishes the flavour, A, as a conditioned inhibitor, the flavour should support superconditioning of a second flavour, N, when the combination of A and N is added to an intermediate-energy solution (10% maltodextrin). This prediction was tested in a series of experiments in which A was 1% almond and N was 0.2% sodium chloride. Superconditioning of N was consistently found insofar as, following a single superconditioning session, AN+10% maltodextrin, preference for N was greater in the group given Intermixed training than in a control group given Blocked training. However, superconditioning was not detected relative to the more stringent criterion whereby preference for N produced by AN+ conditioning is greater than preference for N produced by N+ conditioning.



Thursday, September 12, 09:00-10:15

## Causal and Contingency Learning

CHAIR: Helena Matute, *Universidad de Deusto*

09:00

### **An illusion that a cue causes an outcome might make you underestimate the strength of the actual cause.**

Ion Yarritu<sup>1</sup>, Helena Matute<sup>1</sup>, & David Luque<sup>2,3</sup>.

<sup>1</sup>*Universidad de Deusto*, <sup>2</sup>*Universidad de Málaga*,

<sup>3</sup>*Instituto de Investigación Biomédica de Málaga (IBIMA)*

Causal illusions (e.g., illusions of control) have been related with mental health and psychological well-being because they appear to have an enhancing effect over self-esteem. However, the consequences of these illusions are not always positive. The present experiment explores the influence of a previous illusory causal relationship on the subsequent learning of a real causal relationship. In Phase 1 two groups of participants developed an illusory belief about the relationship between a single cue (A) and an outcome that were actually unrelated ( $\Delta p = 0$ ). The two groups developed different degrees of illusion due to the experimental manipulation (the probability of the cue event was either high or low). In Phase 2 all participants were exposed to a compound of two cues (AB) which were associated to the same outcome. This relationship was contingent ( $\Delta p = 0.2$ ). Participants' contingency judgments revealed that participants who had developed a higher illusion about A during the first phase, showed impairment learning about the relationship between cue B and the outcome in the second phase.

09:15

**Cue duration modulates the effects produced by a change in cue-outcome contingencies.**

Rafael Alonso-Bardón<sup>1,2</sup>, David Luque<sup>1,2</sup>, & Francisco J. López<sup>1,2</sup>.

<sup>1</sup>Universidad de Málaga. <sup>2</sup>Instituto de Investigación Biomédica de Málaga

Attempts have been made to dissociate associative and inferential processes in human contingency learning. However, depending on the task characteristics, one process or the other, but not both, may underlie participants' responses. One characteristic that has been regarded as relevant is the time available to process the cue. A brief presentation may hinder (or make difficult) the activation of inferential processes whereas a long one may favor this activation. The present experiment used a two-phase cueing task. In Phase 1, four different cues were paired with the same outcome. In Phase 2, two of these cue-outcome pairs were changed. Through instructions, participants knew about one of these changes whereas the other change was uninformed. The effect of the instructions was measured during Phase 2 in three different groups. In the first group, cues were only presented during 250 ms in both phases. In a second group, cues were presented during 1500 ms in both phases. In a third group, cues were presented during 250 ms in Phase 1 and during 1500 ms in Phase 2. The results suggest the influence of associative processes during Phase 2 only when the cue was presented during 250ms.

09:30

**Interference between cues in human contingency learning A review, new data and a potential general explanation based on propositional models.**

David Luque<sup>1,2</sup>, Joaquín Morís<sup>1,2</sup>, & María José Gutiérrez<sup>1,2</sup>.

<sup>1</sup>University of Málaga, <sup>2</sup>Instituto de Investigación Biomédica de Málaga (IBIMA)

Interference between cues (IbC) is a phenomenon in which associating a cue with an outcome interferes retroactively with the retrieval of previously acquired association between another cue and the same outcome. In this presentation, we review those situations in which IbC has been found and not found in the literature, and propose a general mechanism responsible of IbC based on propositional models. IbC would take place in those situations in which participants had reasonable expectations of univoque relations between cues and outcomes/responses but later these expectations are not fulfilled. We present three experiments that tested this hypothesis. In the first one, the likelihood of univoque relations was manipulated by using a different number of available responses, while in the second participants were pretrained with univoque or non univoque filler relations. In both cases reducing the likelihood of the expectation of univoque relations reduced the magnitude of IbC, supporting the proposed hypothesis. Finally, in the third experiment we showed that when the interfering association is presented using instructions it also produces IbC, as in a trial-by-trial learning. Its magnitude was similar or higher, depending on the type of measurement used. These results suggest that a high-level propositional inference produces IbC.

09:45

**Modulating effect of filler associations on the expression of interfered information.**

Carmelo P. Cubillas<sup>1</sup>, Helena Matute<sup>1</sup>, & Miguel A. Vadillo<sup>2</sup>.

<sup>1</sup>*Universidad de Deusto*, <sup>2</sup>*University College London*

The information learned during Phase 1 in an interference-between-outcomes paradigm (e.g., X-O1 | X-O2) is far to be totally replaced by the information learned in Phase 2. An overwhelming amount of evidence in the associative learning literature has shown that this first information remains stored and that some manipulations, such as context switches, may cause its expression. In Experiment 1 we found that presenting one trial of a filler association trained in Phase 1 immediately before testing caused the expression of the interfered information at test. Some data suggest that it might be possible to account for this effect in non-associative terms, as a result of rule formation processes. In Experiment 2 we confirmed that rules can indeed influence our results. Finally, in Experiment 3 we changed the procedure to minimize rule formation and usage. The effect was replicated. In addition, this experiment showed that presenting the outcome of the filler association immediately before test is more effective than presenting its corresponding cue in retrieving the interfered information from Phase 1.

10:00

**Role of feedback and response time on the associations  
established between cues and outcomes in a human predictive  
task.**

José A. Aristizabal, José E. Callejas-Aguilera, Manuel M. Ramos-  
Álvarez, Pedro M. Ogallar, & Juan M. Rosas.  
*University of Jaen, Spain*

This study began the exploration of two factors that may determine the attentional processing of the information and, as a consequence, the context dependence of simple acquisition in human predictive learning. The information participants received as a feedback after their response, and the duration of the exposure time to the context and the cue in each training trial were independently manipulated. Both factors showed to be relevant for the formation of cue-outcome associations. When the cue was explicitly presented at the same time the feedback about whether the cue was followed by the outcome, excitatory and inhibitory associations between the cue and the outcome were strengthened. A similar effect was found when the duration of the exposure to the context and the cue was kept fixed during acquisition trials. These results are discussed within the framework of the Attentional Theory of Context Processing.





**Thursday, September 11, 11:15 –12:30**

**Time, Space, and Brain**

CHAIR: Victoria D. Chamizo, *Universitat de Barcelona*

11:15

**Configural learning and the hippocampus: What happens  
where and when.**

Honey, R.C., Dumigan, N.M., Lin, T.E., & Good, M.A.  
*Cardiff University*

There is now compelling evidence that the dorsal hippocampus of the rat is involved in configural memory for patterns of sensory stimulation with episodic content what, where and when. This evidence is consistent with the idea that the hippocampus underpins the rapid formation of episodic memories for everyday events (e.g., what I ate for breakfast this morning and where). Here, we examined the role of the rat hippocampus in the acquisition of novel, configural (and elemental) discriminations involving when and where food was delivered. Surprisingly, rats with lesions of the dorsal hippocampus acquired these configural (and elemental) discriminations as readily as rats with sham lesions. To reconcile these new results with those observed using more neutral patterns of stimulation requires that either (i) the hippocampus is not involved in the acquisition of configural memories (of what happened where and when), or (ii) configural learning can be supported by multiple mechanisms.

11:30

**Environmental enrichment and oxidative stress.**

Frederic Mármol, Clara A. Rodríguez, Juan Sánchez, & Victoria D. Chamizo.

*Universitat de Barcelona*

It has been shown that environmental enrichment can produce a variety of long term effects at neuroanatomical, neurochemical, and behavioural levels in different species. The present study was conducted with male and female rats that grew up under either “enriched” or “standard” conditions. After weaning, the rats were housed in pairs in enriched or in standard cages, for two and a half months. When the rats were approximately 90 days old they were tested both in the Morris pool (as in Rodríguez et al., 2010, Experiment 2), and then in a modified straight corridor (i.e., where a fear response was measured). The results revealed the beneficial effects of environmental enrichment enriched rats learned more and showed less fear than controls. Next, the rats were sacrificed and both their cerebral cortex and hippocampus were extracted. Several experiments were conducted with these areas to determine oxidative stress. The main parameters measured were superoxide anion activity, antioxidant capacity, protein oxidation activity, superoxide dismutase activity, catalase levels, and lipid peroxidation levels (Mármol et al., 2009). As expected, environmental enrichment could modify these parameters of oxidative stress and its influence was not the same in male and female rats.

11:45

**Dissociations in the effect of delay on object recognition and the effect of dorsal hippocampal damage: Evidence for an associative model of recognition memory.**

Shu K.E. Tam<sup>1</sup>, Jasper Robinson<sup>2</sup>, Dómnall J. Jennings<sup>3</sup> and Charlotte Bonardi<sup>2</sup>.

*<sup>1</sup>University of Oxford, <sup>2</sup>University of Nottingham, <sup>3</sup>Institute of Neuroscience*

Rats were administered three versions of an object recognition task: In the spontaneous object recognition task (SOR) animals discriminated between a familiar object and a novel object; in the temporal order task they discriminated between two familiar objects, one of which had been presented more recently than the other; and, in the object-in-place task, they discriminated among four previously experienced objects, two of which were presented in the same location as in preexposure and two in different but familiar locations. In each task animals were tested at two delays (5 minutes and 2 hours) between sample and test phases in the SOR and object-in-place tasks, and between the two sample phases in the temporal order task. Performance in the SOR was poorer with the longer delay, whereas in the temporal order task performance improved with delay. There was no effect of delay on object-in-place performance. In addition the performance of animals with neurotoxic lesions of the dorsal hippocampus was selectively impaired in the object-in-place task at the longer delay only. These findings are interpreted within the framework of Wagner's (1981) model of memory.

12:00

**Prepulse Inhibition Modulation by Contextual Conditioning of Dopaminergic Activity.**

Auxiliadora Mena & Luis Gonzalo De la Casa.

*Universidad de Sevilla*

In this study we focus on the analysis of the associations that can be established between the contextual cues and the administration of dopamine agonists or antagonists. According to previous studies and the data obtained from our lab research our hypothesis suggests that repeated administration of drugs that modulate dopaminergic activity in the presence of a specific context leads to the establishment of an association that subsequently results in a conditioned response to the context that is similar to that induced by the drug. To test this hypothesis, we conducted two experiments that revealed that a specific set of contextual cues acquired the property to modulate pre-pulse inhibition by prior pairings of such context with the dopamine antagonist haloperidol (Experiments 1, and 2), and with the dopamine agonist d-amphetamine (Experiment 1). The implications of these results are analyzed both at a theoretical level, and attending to the possibilities that could involve the use of context cues as a conditioned stimulus to modulate dopaminergic activity.

12:15

**Intradimensional and interdimensional temporal control.**

Catarina V. de Castro & Armando Machado.

*University of Minho*

Stimulus control has been studied with intradimensional and interdimensional protocols. In an intradimensional protocol a subject discriminates between two stimuli that differ in a single dimension, whereas in an interdimensional protocol a subject discriminates between the presence and the absence of a stimulus. When duration is the relevant stimulus dimension, the behavioral effects of the intradimensional protocol are well known and reasonably understood, but the effects of the interdimensional protocol are not. Few empirical studies have examined interdimensional temporal control and few theories have addressed the problem of how time comes to control a response in such protocol. In this talk, we review some temporal discrimination experiments using the two protocols and contrast their results with current models of timing.



**Thursday, September 11, 16:00-17:00**

## **Extinction and Recovery**

CHAIR: Juan Manuel Rosas, *Universidad de Jaén*

16:00

### **A sensory-enhanced context allows renewal after extinction in the infant rat.**

Damian Revillo<sup>1,2</sup>, Stefania Castello<sup>1,2</sup>, M. Gabriela Paglini<sup>1</sup>, & Carlos Arias<sup>3</sup>.

<sup>1</sup>*Instituto Mercedes & Martin Ferreyra (INIMEC-CONICET-UNC),*

<sup>2</sup>*Universidad Nacional de Cordoba,* <sup>3</sup>*Universidad del Pais Vasco (UPV/EHU)*

Empirical studies of extinction in preweanling rats have failed to find ABA-renewal in a fear conditioning paradigm. This result supports the hypothesis postulating ontogenetic qualitative differences in experimental extinction. A similar result in adult rats led to the conclusion that ABA-renewal requires contexts A and B to differ in several types of features, including odor cues. In a recent study, we found renewal of an extinguished taste aversion response in infant rats, employing contexts which differ in their odor content. Recently, we examined the possibility of renewing an extinguished fear response in infant rats when contexts A and B did not include or included an explicit odor. Results indicated absence of renewal when using standard contexts (without explicit odors). However, when contexts A and B varied also in their odor content, the ABA-renewal procedure was effective in reinstating the extinguished CR. These results challenge the understanding of extinction as a learning process that is qualitatively different in preweanling rats than in later stages of ontogeny. These results are in agreement with previous findings which highlight the importance of the sensory content of the context in context learning in the infant rat

16:15

**Contextual renewal with simultaneous and successive cues in humans.**

Javier Vila, David Luna & Alberto Monroy.

*Universidad Nacional Autónoma de México*

Contextual renewal traditionally has been observed in successive procedures in which a cue produces an outcome during a first phase and a second outcome in a subsequent phase. The observed result had been a recovery of first association when the physical context changes. This study presents in two experiments a comparison between contextual renewal observed with successive and simultaneous cues with human participants in a spatial search task in which they must find a goal within a virtual figure using geometrical and landmark cues presented simultaneously or successively. Experiment 1 found a similar interference between simultaneous and successive cues produced by salient or recent cues respectively. Experiment 2 shows a similar contextual renewal effect employing both types of cue presentation. Results for simultaneous and successive renewal suggests a common mechanism based in cue salience and relative temporal distance that can produce similar context retrieval in both cases.



16:30

**Extinction of an instrumental task in the amphibian *Rhinella arenarum* under different acquisition conditions: Amount of practice vs. Magnitude of reinforcement.**

Rubén N. Muzio<sup>1,2</sup>, Martín M. Puddington<sup>1,2</sup>, & Mauricio R. Papini<sup>3</sup>.

<sup>1</sup>*Grupo de Aprendizaje & Cognición Comparada, Laboratorio de Biología del Comportamiento IBYME-CONICET,* <sup>2</sup>*Universidad de Buenos Aires,*

<sup>3</sup>*Texas Christian University*

It has been observed that toads that have learned a runway task using water as reward, showed different extinction response as a result of several acquisition parameters. Overtrained animals showed stronger resistance to extinction than animals with less acquisition practice. In a separated study, animals trained under a small magnitude of reward program, extinguished their response faster than those trained with a large magnitude of reward. Both results are not enough to answer the question about which are the determinants of extinction in instrumental learning in toads, since animals who received a higher amount of trials, also received a higher magnitude of total reward. In present study, 4 groups of toads were trained in a runway, receiving as reward a total of 1500 or 4500 seconds of access to deionized water, distributed in 5 or 15 trials -one per day. Only the group receiving the large magnitude of reward distributed in the higher number of trials showed significantly more resistance to extinction than the other three groups. These results suggest that none of the two factors, practice or magnitude of reward, by itself predict the extinction behavior, but the extinction is the result of the interaction of both variables.

16:45

**Extinction, spontaneous recovery and reinstatement in the garden snail *Helix aspersa*.**

Beatriz Álvarez<sup>1</sup>, Joaquín Morís<sup>2,3</sup>, David Luque<sup>2,3</sup>, & Ignacio Loy<sup>1</sup>.

<sup>1</sup>*Universidad de Oviedo*, <sup>2</sup>*Universidad de Málaga*, <sup>3</sup>*Instituto de Investigación Biomédica de Málaga (IBIMA)*

Extinction and its related phenomena (spontaneous recovery, renewal and reinstatement) are central to the study and development of Learning Theory. Several accounts have been developed to explain them; being the current most accepted explanation that based on the idea of interference (the same CS predicts both the occurrence of the US and its absence). For a better understanding of the mechanisms involved in extinction, it is interesting to know how general these phenomena are in the different species, given that both invertebrates and vertebrates have fundamentally different brain architectures. Extensive evidence of extinction in invertebrate species would be useful in order to test the generality of the theoretical and physiological current accounts. The experiments presented tested if extinction, spontaneous recovery, and reinstatement would be obtained in an appetitive conditioning paradigm in the garden snail. The results are discussed considering current interference theories of extinction.

**Thursday, September 11, 18:00-19:00**

## **Exposure and Attention**

CHAIR: Gonzalo de la Case, *Universidad de Sevilla*

18:00

### **Concurrent latent inhibition effects on consumption and cue palatability in taste aversion learning.**

Patricia Gasalla<sup>1</sup>, Dominic M. Dwyer<sup>2</sup>, & Matías López<sup>1</sup>.

<sup>1</sup>*University of Oviedo*, <sup>2</sup>*Cardiff University*

The present study investigates latent inhibition (LI) effects in conditioned taste aversion as measured by flavour consumption and analysis of the microstructure of licking behaviour (as a measure of hedonic value of fluids). Experiment 1 used a between subjects design where half the animals were exposed to saccharin before all animals received lithium chloride paired with saccharin. Consumption and lick cluster measures of taste palatability were examined throughout testing in extinction. Experiment 2 used a within-subject design to control for neophobic responses and also allowed the comparison of conditioned and unconditioned responses to the flavoured solutions. Results in these experiments showed the pre-conditioning exposure resulted in an attenuation of the reduction in flavour consumption and in lick cluster size typically produced by conditioned taste aversion, indicating concurrent LI effects on consumption and cue palatability. In addition, conditioned changes in taste palatability extinguished more rapidly than did flavour consumption. These results will be discussed in terms of the validity of different methods (consumption, taste reactivity and lick microstructure) for examining hedonic changes in the taste aversion learning paradigm.

**Criterion sensibility to feedback contingencies.**

Teresa L. Martín-Guerrero, Concepción Paredes-Olay, Juan M. Rosas, &  
Manuel M. Ramos-Álvarez.

*University of Jaén*

In perceptual decision-making tasks, participants match their response strategy to the provided feedback. The criterion fit seems to depend on two factors the frequency of explicit feedback and the quality of the information. In the field of perceptual learning about flavors, recent studies have shown that decisions are sensitive to stimuli density when feedback is continuous. However, in contexts where the information is limited, particularly in situations in which discrimination is difficult, different response biases may appear, modifying the criterion location. Two studies explored the influence on the criterion location of different feedback procedures in a complex discrimination task involving salty over acid flavors. In Experiment 1, participants' criterion was explored within a situation of stimuli disproportion, and providing feedback in blocks rather than continuously. In Experiment 2, criterion was explored within a situation that kept equal stimuli probability when feedback was either available or unavailable to participants. Participants' criterion was adapted to feedback contingencies while a response bias was found when explicit feedback is reduced and the complexity of the decision is increased. Keywords Criterion, feedback contingencies, perceptual learning, salty and acid flavors, discrimination task, response biases.

18:30

**Perceptual learning with textures in rats.**

Luke M. Montuori & Rob C. Honey.

*Cardiff University*

Prior exposure to similar stimuli can increase the ease with which those stimuli are discriminated from one another. We examined whether such effects can be observed in rats using the convenient continuum of different grades of sandpaper (1=rough, 2, 3, 4, 5=smooth). These textures were secured to the floors of standard operant chambers, upon which the rats were placed during preexposure and during appetitive discrimination learning. Experiments 1 and 2 confirmed that a standard perceptual learning effect can be observed using this dimension, while Experiments 3 and 4 examined the mechanisms that underlie this effect by manipulating the relationship between the preexposed and test stimuli; for example, by exposing rats to either sandpaper 2 or 4 and testing them with 3 and 5. The results are discussed with reference to associative and non-associative explanations of perceptual learning.

18:45

**The blocking effect does not seem to involve learned inattention.**

Francisco Arcediano, Duncan Y. Amegbletor, & Martha R. Forloines.

*Auburn University*

The blocking effect refers to attenuated (blocked) responding to a target stimulus if, during training, this stimulus has been presented in compound with another one that has already been established as a reliable predictor of the outcome they both signal (i.e., attenuated responding to X, after A-Outcome, then AX-Outcome training.) Most theories of learning explain blocking as a deficit on acquiring the X-Outcome association. A common argument is that the acquisition deficit arises from diminished attention to X because it does not provide any new relevant information about outcome occurrence. We assessed this hypothesis with human participants, in a within-subjects preparation, using gaze behavior as a measurement of allocation of attentional resources to the stimuli presented during training. We also manipulated the time of exposition to the stimuli during training.

**Friday, September 13, 09:00-10:00**

## **Consumption Behavior and Preference learning**

CHAIR: Robert Boakes, *University of Sidney*

09:00

### **Resistance to change of schedule-induced drinking in rats.**

Pedro Vidal & Ricardo Pellón.

*Universidad Nacional de Educación a Distancia*

Behavioral momentum theory (BMT) is an important framework to evaluate the strength of a response as behavioral persistence. The behavior strength can be inferred by its resistance to change (RTC) when a context disturbance condition occurs. Response rate and RTC are separable aspects in operant behaviors. According to BMT, response rate would be governed by the response-reinforcer contingency while RTC would be determined by a Pavlovian stimulus-reinforcer relation. Schedule-induced polydipsia (SIP) is characterized by a pattern of excessive water intake that develops when animals are exposed to intermittent food reinforcement schedules. The main controversy is whether adjunctive behaviors are maintained by classical or operant conditioning. Two experiments were designed to test if RTC and the resistance to extinction (RTE) of SIP conforms to the predictions of BMT for operant behaviors. Experiment 1 used a multiple schedule with 2 components FT-30 and FT-60 seconds. Experiment 2 used a multiple schedule with 2 components of FT-60 seconds that differed in reinforcement magnitude, being 2 pellets or 1. The data suggest that RTC and RTE are related to reinforcement ratio and reinforcement magnitude, as others operants do.

09:15

## **Sensory-specific flavor-taste associations in flavor preference learning.**

Alberto Soto, Patricia Gasalla, & Matías López.

*Universidad de Oviedo*

In this study we used a US devaluation procedure to explore the presence of sensory-specific flavor-taste associations in flavor preference conditioning. In two experiments, a mildly aversive flavor CS (3% citric acid) was paired with either a nutrient (8% sucrose) or a non-nutrient US (0.1% saccharin). Following such training, the US was devaluated by LiCl. On Testing, the rats were given a choice between the citric acid and water. Finally, the rats were intraorally infused with the citric acid and the orofacial reactions elicited by this flavor were recorded. The results showed that pairing a novel cue flavor with the palatable taste of either sucrose or saccharin is sufficient to support a subsequent preference for that flavor. Critically, the devaluation of sucrose or saccharin reduced the preference for the flavor previously paired with the devalued US. In the taste reactivity test, the rats displayed rejection reactions (gaping, chin rubbing, paw treading), indicating a reduction in the palatability of the cue flavor. We interpret these results as evidence that the conditioned flavor preference was produced because the cue flavor has been associated with the specific sensory qualities of the palatable flavor (e.g., the sweet taste of either sucrose or saccharin).



09:30

**Transfer of training between consummatory and anticipatory tasks involving incentive downshift.**

Amanda C. Glueck<sup>1</sup> Mauricio R. Papini<sup>1</sup>, & Carmen Torres<sup>2</sup>.

*<sup>1</sup>Texas Christian University, <sup>2</sup>Universidad de Jaén*

Amsel's (1992) frustration theory predicts that (1) incentive downshifts (incentive omission or devaluation) induce a state of frustration that can be conditioned to stimuli present in the situation; (2) such stimuli can later evoke an anticipatory form of that state, which then triggers goal avoidance, and (3) pairings between anticipatory frustration and incentives reduce avoidance and promote goal approach, a process called counterconditioning. Counterconditioning in Task 1 should promote approach behavior in Task 2 when frustration is induced, even if counterconditioning was not explicitly trained in Task 2. Four experiments tested for transfer effects among consummatory and anticipatory situations. In Experiment 1, training in consummatory successive negative contrast (cSNC) later eliminated SNC in one-way avoidance learning. However, in Experiment 2, no transfer was observed from one-way avoidance to cSNC. In Experiment 3, cSNC increased lever pressing under partial reinforcement, and, though more modestly, also under continuous reinforcement. Finally, in Experiment 4, no transfer was observed from lever pressing under partial vs. continuous reinforcement to cSNC. Such asymmetries are at variance with predictions from Amsel's frustration theory. Factors that make cSNC less vulnerable to the influence of counterconditioning will be discussed.

09:45

**Yo-Yo diets effect in laboratory rats: induced obesity in an animal model of anxiety and depression.**

Javier Ibias Martín<sup>1</sup>, Núria del Olmo Izquierdo<sup>2</sup>, & Ricardo Pellón Suárez de Puga<sup>1</sup>.

*<sup>1</sup>Universidad Nacional de Educación a Distancia, <sup>2</sup>Universidad CEU- San Pablo*

Three different strains of rat were used in an experiment involving several sustained periods of diet and weight regain. A total of 15 Wistar, 7 Wistar Kyoto (WKY; an animal model of depression and anxiety) and 6 Spontaneously Hypertensive Rats (SHR; an animal model of hyperactivity, low anxiety and impulsivity) were used. Four episodes of food restriction (diet) during which the weight of the animals was reduced to 92% of their ad libitum weights were carried out. Diet phases were followed by the opportunity to regain weight by free access to high-caloric and maintenance food over the next 48 hours (binge). Each binge episode was followed by a new phase of dieting simulating continuous cycles to which many humans are exposed by the so-called yo-yo diets. For WKY rats it was found that the sequence of episodes of weight loss and recovery resulted in that ad libitum weights increased after each cycle (obesity). In SHR, however, weight remained constant after continuous diet and binge episodes, despite that these animals eventually consumed more food than the rest of rats. These differences are discussed in terms of the specific characteristics present in each strain, and the results are compared to those found in a control population of Wistar rats. Keywords Obesity, Yo-Yo diet, Anxiety, Depression, SHR vs WKY rats.

**Friday, September 13, 11:00-12:15**

## **Learning, Memory, and Cognition**

CHAIR: Francisco López, *Universidad de Málaga*

11:00

### **Episodic-Like Memory in children occurs as single event.**

Angélica Alvarado, Eneida Strempler, Rosalba Juárez, & Javier Vila.

*Universidad Nacional Autónoma de México*

A behavioral approach to the study of episodic memory is by Episodic-Like Memory, ELM, (Clayton & Dickinson, 1998) that involves the integrated memory of What, Where and When (WWW) of an event. The study of human ELM considers that these events must occur in a single event. A possible strategy to test this idea is to consider the integration of learning experiences according to their temporal distance and relative value at the time of recall. One experiment compared the performance of preschool children in a training of one or three trials using a choice task where they must find coins in different containers that varied the subjective value (coins of varying value) and the retention interval of the experience (immediate or distant past). The results showed that the choice of children was similar in both trainings (1 or 3 trials), suggesting that they remember and integrate the What (coins), Where (the container) and When (recent or distant past) from a single episode. These data are consistent with considerations for ELM in humans.

11:15

**Flexible Configural Learning of Non-Linear Discriminations  
and Detection of Stimulus Compounds.**

Steven Glautier, Hayward Godwin, Tamaryn Menneer, & Nick Donnelly.  
*Southampton University*

Previous work has shown that prior experience with discriminations which require configural solutions (e.g. biconditional discrimination) confers an advantage for the learning of new configural discriminations (e.g. negative patterning). However, although this effect has been demonstrated in several preparations, the mechanism for the effect is not understood. In the current studies we assessed whether the salience of configural cues was enhanced after extensive experience with a configural discrimination. Although we observed positive transfer to a new configural discrimination we were unable to find evidence for increased salience of configural cues using a signal detection task, suggesting that transfer effects depend on a later rather than an early perceptual stage of processing of stimulus inputs.

11:30

**Generalization decrement and not overshadowing by associative competition among pairs of landmarks in a navigation task with humans.**

J. Antonio Aznar-Casanova, Joan Sansa, Clara A. Rodríguez, & Victoria D. Chamizo.

*Universitat de Barcelona*

In two experiments a virtual preparation for humans of the Morris water task (VMWT) was used. Psychology students were trained to locate a hidden platform in the presence of either two or four landmarks. They were naive about the hypothesis of the experiments and received course credit for their participation. In Experiment 1 one pair of groups was trained with four visual landmarks spaced at equal intervals around the edge of the pool, while a second pair was trained with two landmarks only, either relatively close to or far from the hidden platform. After training, both boys and girls showed a reciprocal overshadowing effect on a test with two landmarks only (either close to or far from the platform), the participants trained with four landmarks spent less time in the platform quadrant than those trained with only two. Then Experiment 2 showed that at least participants trained with two landmarks relatively close from the platform and then tested with four also performed worse on test than those trained and tested with two close landmarks only. This suggests that generalization decrement, rather than associative competition, could provide a sufficient explanation for the overshadowing observed in Experiment 1.

11:45

**Sequential Choice Model: Discovering common choice processes  
in human and non-human subjects.**

Enzo Leandro Rodríguez González & Óscar García-Leal.

*Universidad de Guadalajara (México)*

In 2008 Shapiro, Siller & Kacelnik propose the Sequential Choice Model (SCM) to account for some experimental data contrary to common evidence. Some papers have been published including evidence supporting the SCM. Specifically, in decision making tasks, using European starlings (*Sturnus vulgaris*) as experimental subjects, they observed that response time in no-choice situations was greater than in binary situations. Considering the SCM, some empirical predictions are proposed and suggested. At the same time, previous works found similar behavior in non-human and human animals, when procedures used with human are adapted or modified to make them similar to experimental situations used with non-human animals. In this work, we make an adaptation of the procedure proposed in Shapiro, Siller & Kacelnik to study decision making in humans. The data support partially the SCM predictions. The time of response operates as a good predictor of preference, but we cannot exclude the reference to a comparative mechanism to account for data. Time of response was always greater in binary situations than in no-choice trials. Finally, ratio between time of exposure to a video and delay to its beginning in non-choice trials was an adequate currency to account for ulterior preference.

12:00

**What makes a landmark effective (especially for female rats)?**

Victoria D. Chamizo<sup>1</sup>, Clara A. Rodríguez<sup>1</sup>, Marta N. Torres<sup>1</sup>, & Nicholas J. Mackintosh<sup>2</sup>.

*<sup>1</sup>Universitat de Barcelona, <sup>2</sup>Cambridge University*

Rats were trained in a circular pool to find a hidden platform, whose location was defined in terms of a single landmark outside the pool. Two identically shaped cylinders were used as the landmark one with a single pattern, the other divided into four different vertical segments, each with a different pattern. Experiment 1 with female rats found that they learned more rapidly when the landmark had only a single pattern than when it contained four different patterns. Experiment 2 replicated the females' results of Experiment 1 with an improved procedure, but found little or no difference between males trained with the single-pattern and the four-pattern landmark. These results are consistent with the suggestion that one critical factor determining the effectiveness of a landmark, especially for females, is whether it looks the same or different when approached from different directions.





# Posters



**Wednesday, September 11, 11:30-12:30, 16:45-17:45**

## **Poster Session 1**

**1**

### **Effects of medial prefrontal cortex functional inactivation in spatial memory extinction.**

Marta Méndez-Couz, Nélida M<sup>a</sup> Conejo, Héctor González-Pardo, & Jorge L. Arias.

*University of Oviedo*

Several studies suggest prefrontal cortex involvement during acquisition and consolidation of spatial memory. On the other hand, this region has been related to the extinction of conditioned learning. However, the role played by the prefrontal cortex in spatial memory extinction remains unclear. Therefore, this study aimed to evaluate the functional contribution of the prelimbic area (PL) of the prefrontal cortex during the extinction of a previously acquired spatial memory task in the Morris water maze. For this purpose, male Wistar rats were stereotactically implanted with bilateral cannula in the PL of the prefrontal cortex. They were trained later during five consecutive days in a hidden platform task and tested for reference spatial memory immediately after the last training session. One day after completing the training task, bilateral infusion of 5 micro liters of the GABAA receptor agonist muscimol in the PL were performed, 30 min before the extinction task. Results show that animals acquired the reference memory task in the water maze and the extinction task was successfully completed. In contrast to conditioned learning extinction, the prelimbic area does not play a key role in spatial memory extinction. Supported by PSI2010-19348 (MICINN) and BP11-066 (Asturias' Government S.Ochoa pre-doctoral fellowship).

**A new latent inhibition procedure with taste aversion conditioning.**

Luis Gonzalo De la Casa, Auxiliadora Mena, & Paola Revilla.

*Seville University*

In this poster we describe a new conditioned taste aversion procedure intended to evaluate latent inhibition with rats. Some differential characteristics of such procedure with respect to the more traditional are i) the animals are not water-deprived during the experimental manipulations, avoiding problems derived from a possible increase in consumption related to the deprivation regime; ii) all animals in every experimental group are preexposed to the to-be-conditioned flavor (saccharin), thus avoiding the problem of neophobia that is common in the traditional non-preexposed groups (that are exposed to the flavor for the first time on conditioning day); iii) finally, the test stage is conducted across an extended period of time (6 hours), that is probably reflecting consumption in a more exact way than in those situations that allow access to the flavor during a short period for several days.

## **Learned predictiveness influences rapid attentional capture in the dot probe task.**

Miguel A. Vadillo<sup>1</sup>, Mike E. Le Pelley<sup>2</sup>, & David Luque<sup>3,4</sup>.

<sup>1</sup>*University College London*, <sup>2</sup>*University of New South Wales*, <sup>3</sup>*Universidad de Málaga*; <sup>4</sup>*Instituto de Investigación Biomédica de Málaga (IBIMA)*

According to attentional theories of learning, the predictiveness of a stimulus influences the amount of attention that is paid to that stimulus. Consistent with these theories, many experiments support the idea that people learn faster about cues that were predictive in the past. However, there is little evidence that these differences in learning rate are driven by attentional processes and not by other mechanisms that could also produce changes in associability. We tested the role of attentional processes by looking at the extent to which stimuli that had previously been experienced as predictive in a categorization task were able to capture attention in a dot probe task. Responses to the dot probe were faster when it appeared in a location cued by a predictive stimulus as compared to a location cued by a nonpredictive stimulus. This result was obtained only with short (250 or 350ms) but not long (1000ms) delays between onset of the stimuli and the dot probe, suggesting that the observed spatial cueing effect reflects the operation of a relatively rapid, automatic process. These findings are consistent with the approach to the relationship between attention and learning taken by the class of models exemplified by Mackintosh's theory (1975).

# **Behavioral profile of Roman High- (RHA-I) and Low-Avoidance (RLA-I) rats in the successive alley test for anxiety.**

Rocío Donaire<sup>1</sup>, Marta<sup>1</sup> Sabariego, Javier<sup>1</sup> F. Cano, Inmaculada Márquez<sup>1</sup>,  
Alberto Fernández-Teruel<sup>2</sup>, & Carmen Torres<sup>1</sup>.

<sup>1</sup>*University of Jaén*, <sup>2</sup>*Autonomous University of Barcelona*

The outbred Roman High- (RHA/Verh) and Low-Avoidance (RLA/Verh) rats were selected for rapid vs. extremely poor (respectively) acquisition of a two-way avoidance behaviour. The RLA rats are characterized by more pronounced anxiety-like responses registered in animal models based on conflict and fear stimuli exposure. However, inconsistent results appear when using novelty-based tests such as the elevated plus-maze (EPM). In this study, male inbred RHA and RLA rats (RHA-I, RLA-I; derived from the outbred lines) were exposed to the successive alley test (SAT), a modified form of EPM consisting of four sections of increasing anxiogenic character in a linear arrangement. Animals were placed in the apparatus for 5 min and the time spent, number of entries and rearings were measured. RLA-I rats entered more and stayed longer in the section 3, whereas RHA-I animals reared more in the section . These results contrast with the between-strain differences observed in other tasks (e.g. the elevated zero-maze), resembling previous results obtained with the EPM. Present findings are discussed in the context of the validity of EPM and SAT as animal models of anxiety. Supported by Junta de Andalucía (HUM-642), Ministerio de Ciencia e Innovación (PSI2010-15787; PSI2009-10532) and “Fundació la MARATÓ TV3” (ref. 092630/31).

**Beer-based flavor conditioned preference increases 24 hours after the experience with a single stressful event in juvenile rats.**

Estefanía Orellana<sup>1</sup>, Lucrecia Petrazzini<sup>1</sup>, Liz G. Lesta<sup>1</sup>, Paula Abate<sup>1</sup>,  
& Felisa González<sup>2</sup>.

<sup>1</sup>*Universidad Nacional de Córdoba,* <sup>2</sup>*Universidad de Granada*

This study presents an animal model of ethanol-conditioned flavor preference with voluntary, intermittent consumption. The use of beer as US increases the ecological validity of the model and it is thought to promote high levels of ethanol intake in adolescent rats. Nondeprived male Wistar rats (PD28-30) were given different solutions using nonalcoholic beer as vehicle. One flavor (CS+) was presented with ethanol while the other was presented in absence of the drug (CS-). Different 30-min CS+ vs. CS- preference tests were conducted. Then animals were exposed to a single episode of restraint (as stressful event), and preference for the CS+ flavor was evaluated after both 30-min and 24-h temporal intervals. Animals were divided in two different groups; one of them was given a CS+/EtOH vs. CS- choice test, whereas the other received a CS+ vs. CS- choice test. Although a clear preference for the CS+ over the CS- was not evident in any of the two tests, preference for the CS+ increased between tests. However, this enhancement of the preference was not observed when animals were given a CS+/EtOH vs. CS- choice test, suggesting that the low palatability of ethanol may prevent its expression. PS12012-33552(MINECO,Spain), PIP0923 and SECyT2012-2013(CONICET and UNC,Argentina).

## **Forward and backward blocking procedures in latent inhibition.**

Marta Gil<sup>1</sup>, Raúl Márquez<sup>1</sup>, Gabriel Rodríguez<sup>1</sup>, Gumersinda Alonso<sup>1</sup>,  
& Geoffrey Hall<sup>2,3,4</sup>.

<sup>1</sup>*Universidad del País Vasco (UPV/EHU)*, <sup>2</sup>*University of York*, <sup>3</sup>*University of Plymouth*, <sup>4</sup>*University of New South Wales*

Three groups of rats received Pavlovian appetitive conditioning in which a target stimulus (B) served as the conditioned stimulus (CS) and food served as the unconditioned stimulus (US). Two groups previously had received exposure to a non-target stimulus (A) and to a simultaneous compound consisting of the simultaneous presentations of A and B. The forward blocking condition (Group FW), received first all the A-trials and then all the AB-trials; the backward blocking condition (Group BCK), received the opposite sequence of stimulus presentations. We included a control condition that did not receive stimulus preexposure (Group CTRL). It was observed that the CR to the stimulus B was acquired more slowly in Groups FW and BCK than in Group CTRL (i.e., a latent inhibition effect). In addition, we found that Group FW showed more retarded acquisition than Group BCK. The results are discussed in terms of the Hall–Rodríguez (2010) model of latent inhibition.



## **Taste neophobic attenuation in aging rats Perirhinal cortex implications.**

Beatriz Gómez-Chacón, Fernando Gámiz, Enrique Morillas, & Milagros Gallo.

*University of Granada*

The taste neophobic response reflects the reluctance to ingest novel tastes in order to avoid negative consequences. Naïve aged rats do not exhibit a higher neophobic response but they show a slower attenuation than adult rats since they need a higher number of taste preexposures for the taste to become safe (Morón and Gallo, 2007). The effect cannot be attributed to age differences in taste sensitivity and it has been proposed to depend on age-related changes in the brain mechanisms relevant for detecting taste familiarity (Gámiz and Gallo, 2012). The perirhinal cortex (PER) has been related with the detection of taste familiarity and attenuation of taste neophobia (Gómez-Chacón et. al., 2012). In this study we compared the neophobic response exhibited by 24-month-old aged rats, intact and PER-lesioned three-month-old adult rats. We also assessed PER Fos-like immunoreactivity (FLI) while drinking the novel and familiar taste in aged rats. The results showed a similar pattern of ingestion indicating slower habituation of taste neophobia both in PER-lesioned and aged rats in comparison with adult rats. Moreover, aged rats did not show the previously reported PER FLI increase related with taste familiarity. The results are discussed in terms of aging-related decay of PER function.

## **Effects of dietary choline availability on latent inhibition of taste aversion learning.**

Sergio A. Recio, Fernando Gámiz, Milagros Gallo, & Isabel de Brugada.  
*Universidad de Granada*

It is well known that dietary choline availability might affect attention, learning and memory. Previous studies with the CER paradigm have found that latent inhibition (LI), i.e., an impairment in conditioning caused by the pre-exposure to the CS, is prevented after choline chloride supplementation (Moreno, de Brugada & Hall, 2013). Our goal was to reply this result using a conditioned taste aversion paradigm. Three groups of adult male Wistar rats (n=16 each) were fed with 3 different choline chloride concentrations diets, deficient (0g/kg), standard (1.1g/kg) and supplemented (5g/kg), for three months. After this supplementation period, each diet group was split into two further conditions preexposed and non-preexposed. The preexposure phase to cider vinegar solution (3%) or water was followed by the conditioning phase in which drinking the flavored solution was followed by an injection of LiCl as US. The results showed that the group with choline-deficient diet did not show LI at all, in contrast with the other two groups. Furthermore, the non-preexposed group with choline-supplemented diet showed a very long-lasting aversion that did not extinguish, unlike the non-preexposed group with choline-standard diet. The results seem to be at odds with the previous data, and this discrepancy is discussed (...).

**Perceptual learning transfer to novel stimuli.**

Anna Miguélez<sup>1</sup>, Antonio A. Artigas<sup>1</sup>, & José Prados<sup>2</sup>.

<sup>1</sup>*Universitat de Barcelona*, <sup>2</sup>*University of Leicester*

In a series of experiments rats were given Short (4 days) or Long (10 days) pre-exposure to flavour compounds sharing a common element (AX and BX) according to an Intermixed or a Blocked schedule. Following pre-exposure, the animals were given taste aversion conditioning with a novel compound stimulus (NX) followed by a generalisation test with another novel compound (YX). In these experiments we suspected that experience of pre-exposure in the groups Intermixed and Blocked differently affected the transition from pre-exposure to conditioning; therefore, to control for this issue, in the last Experiment of the series all the groups were given four identical additional sessions of pre-exposure with a novel stimulus (Z) in order to equate the experience of the schedule of pre-exposure before proceeding to the conditioning and test phases. The results showed a higher consumption of the novel compound YX in the Intermixed than in the Blocked groups both in the short and the long pre-exposure conditions. The results will be discussed in terms of differential salience modulation of the unique (A and B), the common (X), and the novel (N, Y and Z) elements presented throughout the experiment.

**The Discrimination of Magnitude: CS+cs- is acquired more readily than cs+CS- .**

Richard A. Inman, Robert C. Honey, & John M. Pearce.  
*Cardiff University*

A common assumption of many theories of associative learning is that when given a discrimination between two stimuli (A and B), the ease at which the discrimination is acquired should be unaffected by which stimulus is reinforced – that is, the rate of acquisition should be symmetrical for both A+B- and B+A- discriminations. Here we present a number of studies which demonstrate that discriminations between two stimuli based on stimulus magnitude (intensity, number, length, duration etc.) no longer adhere to this strict symmetry. In these cases, a discrimination between two stimuli where the high magnitude CS is reinforced and the low magnitude CS is not is learned more readily than when the opposite reinforcement contingency is true (CS+cs- > cs+CS-). In addition, we provide some preliminary evidence that suggests animals represent magnitude in an abstract, rather than concrete fashion. These results have implications for current theories of associative learning and suggest that some modifications may be necessary in order to take stimulus magnitude into consideration.

**Temperament and related endocrine profiles in 10 years-old children's aggressive behavior.**

Eider Pascual-Sagastizabal, Aitziber Azurmendi, & José Ramón Sánchez-Martín.

*Universidad del País Vasco, UPV/EHU*

The aim of this study was to analyze the potential predictive power of temperament and hormone levels on aggressive behavior among 10-year-old children. Participants were 103 children (54 boys and 49 girls) aged 10 from San Sebastián, Spain. Testosterone, androstenedione, estradiol and cortisol levels were analyzed using an enzyme immunoassay technique in saliva samples. Children's temperament was measured by School Aged Temperament Inventory (SATI). Aggressive behavior was assessed using the Direct and Indirect Aggression Scale (DIAS). A GLM was conducted to analyze the potential relationship between hormone levels and temperament. An interaction between withdrawal behavior and testosterone and cortisol and between persistence and androstenedione were found in boys to explain aggressive behavior but nothing was found in girls. The results of this research project highlight the importance of studying the interactions between biological and psychological variables (biopsychosocial perspective) and their predictive power for behavior. They also underscore the importance of taking gender differences into consideration when studying behavior.

### **Analysis of a contingency learning task using Signal Detection Theory (SDT) parameters.**

M. Ángeles Carrero-Puerto, José A. Aristizábal, Teresa L. Martín-Guerrero,  
Manuel M. Ramos-Álvarez, & Concepción Paredes-Olay.  
*Universidad de Jaén*

This research employs the “streamed-trial” procedure, developed by Crump, Hannah, Allan, & Hord (2007). We intend to study human contingency learning under the Signal Detection Theory (SDT) perspective. Participants have to estimate the association between two geometric shapes (a circle and a square) that are presented in a rapid stream fashion; in some cases both of them appear together, whereas in others, either they do not appear at all or only circle or square appear. In two experiments we manipulate the contingency (non-contingency  $\Delta P=0$ , vs. contingency  $\Delta P=0.467$ ) and high vs. low cue density (Experiment 1) or outcome density (Experiment 2). We register a binary response (weak association vs. strong association) in order to calculate SDT’s indexes that enable us to independently estimate sensorial and decision processes. We expect contingency will affect only sensorial process whereas density will affect only decision process. Crump, M. J. C.; Hannah, S. D.; Allan, L. G., & Hord, L. K. (2007). Contingency judgements on the fly. *The Quarterly Journal of Experimental Psychology*, 60(6), 753-761. Keywords Contingency learning, Signal Detection Theory (SDT), streamed-trial procedure.

**The effect of stimulus similarity and the retention interval in an object recognition task with rats.**

Rocío Angulo, Naiara Arriola, Antón Navarro, & Gumersinda Alonso.  
*Universidad del País Vasco, UPV/EHU*

Rats received a short pre-exposure trial to two identical objects followed (either 1h or 24h later) by a single test in which approaches (time and number) to the familiar and a novel object were recorded. The novel objects presented on test differed in a different number of features from the pre-exposed stimulus. When objects differed in form and colour, rats expended more time, and made more approaches, to the new object than the familiar one, both 1h and 24h later. This result was not found when objects differed only in the form. In this latter case, rats seemed to prefer to approach to the familiar than the novel object in the 24h-test. It will be discussed whether results like these could be explained in terms of perceptual learning.

Acknowledgements: Grants from MEC (PSI2011-24231), and the Basque Government (IT-276-07). Technical and human support provided by SGIker is gratefully acknowledged.

## **Geometric orientation in amphibians Evolutionary conserved spatial navigation?**

Rubén N. Muzio<sup>1,2</sup>, María Inés Sotelo<sup>1,2</sup>, & Verner P. Bingman<sup>3</sup>.

<sup>1</sup>*Grupo de Aprendizaje & Cognición Comparada, Laboratorio de Biología del Comportamiento IBYME-CONICET*, <sup>2</sup>*Universidad de Buenos Aires*, <sup>3</sup>*Bowling Green State University*

Although of crucial importance in vertebrate evolution, amphibians are rarely considered in studies of comparative cognition. Geometric orientation has been demonstrated in a variety of vertebrate species and appears dependent on the hippocampus. Using water as reward, we studied whether the terrestrial toad, *Rhinella arenarum*, is also capable of encoding geometric and feature information to navigate to a goal location. Experimental toads, partially dehydrated, were trained in either a white rectangular box (Geometry-only group) or in the same box with a removable colored panel (Geometry-Feature group) covering one wall. Four water containers were used, but only one (Geometry-Feature) or two in geometrically equivalent corners (Geometry-only) had water accessible to the test animals. After learning to successfully locate the water reward, probe trials were carried out by changing the shape of the arena or the location of the feature cue. Probe tests revealed that, under the experimental conditions used, toads can use both geometry and feature to locate a goal location, but geometry is more potent as a navigational cue. The results generally agree with findings from other vertebrates, and support the idea that at the behavioral level geometric orientation is a conserved feature shared by all vertebrates.



**Do dogs resemble their owners?**

Joanna Izdebska, Katarzyna Zięba.

*University of Warsaw*

Popular belief says that dogs resemble their owners. Previous studies in California (2004), Venezuela (2005) and Japan (2009) suggest that people can correctly match portraits of unknown purebred dogs with their owners at a level significantly higher than random. In my own research, conducted in Poland, the results also suggest that the belief that there is a resemblance between dogs and their owners is true. Although the results are not as high as the ones conducted in other countries. This research also shows that female dog owners achieved the best results in the task of matching dogs to their owners. Those results suggest that people choosing a purebred dog, choose one that resembles themselves to a certain extent. The question about the driving forces that are at work when choosing a dog remains to be answered.



**Thursday, September 12, 10:15-11:15, 17:00-18:00**

**Poster Session 2**

1

**Change in aggressive behavior from 8 to 10 years old children  
the role of sex and hormones.**

Eider Pascual-Sagastizabal, Aitziber Azurmendi, & José Ramón Sánchez-Martín.

*Universidad del País Vasco UPV/EHU*

The aim of this study was to analyze the possible change in aggressive behavior in the same children from 8 to 10 years old. In the case of such change we considered possible gender differences and explored the potential contribution of hormones at the same. Participants were 90 children (49 boys and 41 girls) from San Sebastian, Spain. Testosterone, estradiol and cortisol levels were analyzed using an enzymoimmunoassay technique in saliva samples. Children's aggressive behavior was measured by the Direct and Indirect Aggression Scale (DIAS). A repeated-measures analysis was conducted to analyze the change in aggressive behavior from 8 to 10 years old. After that, ANOVA analysis shown that only boys were more aggressive at 10 years old than they were at 8. Regression analysis shown that cortisol levels explained the change in aggressive behavior. In this study we found on one hand that boys increase their aggressive behavior from 8 to 10 year olds. On the other hand, we saw that this change was explained by their cortisol levels. The results of this study highlight the importance of studying the behavior from a semi-longitudinal view. They also underscore the importance of taking gender differences into consideration when studying behavior.

## **The US-Preexposure effect in flavour-flavour learning underlying mechanisms.**

Sergio A. Recio, Adela F. Iliescu, & Isabel de Brugada.

*University of Granada*

It is well known that prior exposure to a given stimulus impairs subsequent conditioning when the same stimulus is employed as the US (the so-called US pre-exposure effect). This effect has been well-established using the conditioned taste preference (CTP) paradigm with appetitive substances (e.g. sucrose or saccharine) as the US. When the stimulus is a complex substance such as sucrose, (that has a palatable flavour and caloric properties) the effect can be explained in associative terms (blocking). However, when the stimulus used lacks any post-oral consequences but has a palatable taste (e.g. saccharin), the associative account becomes less plausible. It has been suggested that the impairment in learning observed in the latter case could be due to the non-associative process of habituation. However, there is another possible associative explanation. There may be a pre-established association between the sweet taste and calories (Fedorchak, 1997), and therefore, the exposure to the sweet taste alone would extinguish this association and would impair subsequent conditioning. To ascertain this possibility, we pre-exposed one group of rats to saccharin, and another group to a compound of saccharin plus maltodextrin with the aim of preventing this supposed extinction. After this, we ran a conditioning procedure in which (...)

### **A comparison between dynamic average of negative and positive value experiences in information retrieval.**

Angélica Alvarado, Karina Segura-Flores, Eneida Strempler-Rubio,  
& Javier Vila.

*Universidad Nacional Autónoma de México*

Temporal Weighting Rule (TWR) (Devenport & Devenport, 1994), considers foraging behavior based on the value of recency and the relative value of learned experiences. Some TWR's predictions have been observed in human participants using an instrumental task where manipulating the subjective value and relative temporal distance of consequences. These predictions have proposed an account for human spontaneous recovery (Lopez, Alvarado & Vila, 2010). This experiment compared some TWR's predictions in human participants using positive and negative consequences using an instrumental choice task, with three response options (A; B and C), with different subjective value (A--, C+ and B- or A++, C- and B+) and different recency (nearby or distant past) using two retention intervals (0 and 24h). Results replicated predictions of TWR when the consequences are positive (integration of information within 24 h and recency at 0h), while when the consequences were negative, participants showed a recency effect in both retention intervals. This results confirm the TWR predictions for human spontaneous recovery.

## **Overshadowing and associability change in a spatial search task.**

David Luna, Alberto Monroy, & Javier Vila.

*Universidad Nacional Autónoma de México*

In overshadowing when a CS X is presented in compound with a salient CS A this results in less CR. This result has been explained by stimuli competition for gain associative strength (Rescorla & Wagner, 1972) although it also has been considered as due to changes in the associability of the CS due to its correlation with the US (Mackintosh, 1975). To test both approaches we employed a spatial search task. Human participants learned the location of a hidden goal inside a triangle using geometric (GC) and non-geometric (NGC) cues. Six groups were trained in three pairs, each pair with 1, 4 or 8 trials respectively. Then one member of each pair was tested with the CG and the other with the NGC. The results showed that after 8 trials GC overshadow to NGC, but when training was with 1 and 4 trials learning to both cues (CG and NGC) was equivalent. These data supports the idea that overshadowing is due to a change in the associability of the CS.

# **Neurochemical differences in Low versus High compulsive drinker rats selected by Schedule-induced Polydipsia.**

Silvia Navarro, Roberto Álvarez, Cristina Suñol, Leticia Campa, Pilar Flores, & Margarita Moreno.  
*Universidad de Almería*

Neurochemical differences in Low versus High compulsive drinker rats selected by Schedule-induced Polydipsia Silvia Navarro, Roberto Álvarez, Cristina Suñol, Leticia Campa, Pilar Flores & Margarita Moreno. Psychology Department, University of Almería, Spain Pre-frontal Cortex (PFC) activation is strongly influenced by emotional reactions through its functional interaction with the amygdala and the striatal circuitry. A role for serotonin in modulating the cognitive regulation of emotion has long been suggested based primarily on the observations that altering serotonin levels affects anxiety regulation and behavioral inhibition. Research on individual differences has opened new perspectives for a better understanding of the neurobiological basis in vulnerability to psychopathological disorders. According to this approach, we have used the Schedule-induced polydipsia (SIP) procedure, characterized by the development of excessive drinking under intermittent food reinforcement schedules. SIP has been proposed as a model of compulsive behavior, found in different disorders such as obsessive-compulsive disorder, schizophrenia and drug abuse. The present study investigated PFC levels of serotonin, 5-HIAA and glutamate on individual differences in SIP development. Outbred male Wistar rats were selected as high (HD) or low (LD) drinkers according to their SIP behavior. In a first part of the experiment, we measured serotonin, 5-HIAA and glutamate baseline levels (...).

### **Fos-like immunoreactivity in gustatory thalamus during taste-recognition memory in rats.**

Enrique Morillas, Beatriz Gómez-Chacón, Fernando Gámiz, & Milagros Gallo.

*University of Granada*

Previous research has shown the role of the gustatory thalamus in taste detection and recognition, as well as other aspects of taste-guided behaviors. In order to investigate the involvement of the gustatory thalamus in taste recognition memory, Fos-like immunohistochemistry (FLI) was examined as an index of neural activity during attenuation of neophobia. The number of Fos-like positive cells in the parvocellular ventral posteriomedial nucleus of the thalamus (VPMpc) was examined in male Wistar rats during the first preexposure (Novel group), the second preexposure (Familiar 1 group), or after six preexposures (Familiar 2 group) to a (3%) cider vinegar solution. The results showed that drinking a familiar taste solution induced a higher FLI in VPMpc than drinking a novel taste solution. Furthermore, six preexposures to the taste solution induced higher FLI than two exposures. No differences were seen in other thalamic relay nuclei. Thereby, the results indicated that the neural activity of VPMpc depend on the level of taste familiarity, this suggesting the involvement of VPMpc in the neural circuit of safe taste recognition memory. Grant PSIC2011-23702 (MICINN. Spain) supported by FEDER funding.



**Sensory preconditioning and backward conditioned inhibition  
in taste aversion learning The role of preexposure.**

Susana Carnero, Félix Acebes, & Ignacio Loy.

*Universidad de Oviedo*

Sensory preconditioning preparations involve two phases in which a non reinforced compound is followed by the conditioning of one of the elements. The same is true for backward conditioned inhibition but this result has not been obtained in many occasions with animal subjects. Some experiments with taste aversion learning paradigm show preliminary evidence of both, backward conditioned inhibition and sensory preconditioning, depending on the pre-experience with the elements.

## **Rats' navigation with one or two landmarks relatively far from a goal.**

Elisabet Gimeno, Teresa Rodrigo, & Victoria D. Chamizo.  
*Universitat de Barcelona*

In two experiments male and female rats were trained in a Morris pool to find a hidden platform in the presence of a single landmark (Experiment 1) or with two landmarks (Experiment 2). In both experiments, the position of the landmarks was relatively far from the hidden platform. Following acquisition, one or several test trials without the platform were conducted and the time the rats spent in the platform quadrant was registered. In Experiment 1 males and females were equally fast to reach the platform but, on a single test trial, males outperformed females. In Experiment 2 the platform was in the middle of the landmarks, which could be either of the same salience (i.e., landmarks b and c, group bc) or of different salience (i.e., landmarks B and c, group Bc). Males were always faster to find the platform than females, but no sex difference was found on tests (i.e., with the two landmarks in compound, and individually presented). An additive effect was found on group Bc only the best rats' performance was with landmarks B and c, which differed from B and from c, which differed from one another. A final test revealed configural learning in both groups.

**“Is this my cholesterol pill?” Differential outcomes and discriminative learning.**

Michael Molina<sup>1</sup>, Laura Esteban<sup>2</sup>, Rubén Fernández<sup>2</sup>, & Angeles F. Estévez<sup>2</sup>.

*<sup>1</sup>Universidad de Valencia, <sup>2</sup>Universidad de Almería*

Previous studies have reported that discriminative learning is facilitated when each correct stimulus-response sequence is rewarded with its own unique reinforcer. In the present study we extend this differential outcomes procedure to healthy adults who were asked to learn the medications used to treat a particular disease (e.g., the cholesterol pill is the red one and the migraine pill is the white one). The results from this experiment indicated that participants showed higher performance and persistence of learning under the differential outcomes condition as compared to the non-differential outcomes condition demonstrating that this procedure may affect acquisition as well as to later processing stages (e.g., a later memory stage).

**In vivo stimulation of locus coeruleus: effects in amygdala nuclei.**

Diana Cardona<sup>1</sup>, Elisa Rodríguez-Ortega<sup>2</sup>, Joseph LeDoux<sup>3</sup>, & Fernando Cañadas<sup>2</sup>.

<sup>1</sup>Universidad de Almería, <sup>2</sup>Universidad de Almería; <sup>3</sup>New York University

The amygdala is a structure located in medial temporal lobes and is composed of several nuclei. This complex structure mediates in emotional processes and memory formation. The locus Coeruleus (LC) is the major noradrenergic nucleus in the brain and sends direct projections to amygdala nuclei, like the central nucleus of amygdala (CeA). Pharmacological, lesions and behavioral studies have suggested that these noradrenergic projections play an important role in control and expression of responses to emotional stimuli and in long-term memory formation. The goal of this research is to understand how the noradrenergic systems interact to set the overall tone of the amygdala and the fear conditioning. In order to evaluate these projections we analyze stimulated-induced Fos protein expression in the amygdala nuclei following in vivo electrical stimulation of the LC. Both control and experimental rats will be implanted through stereotaxic surgery with electrodes, although control subjects will not receive stimulation. Afterwards, an electrical lesion in the LC will be made to assess the correct electrode placement. Our hypothesis is that in vivo electrical stimulation will cause an increase in Fos expression in the CeA, which directly controls fear expression. This work was supported by PSI2011-26237 granted by MINECO of Spain.

**Asymmetry of generalization decrement in human contingency: learning use of a negative feature and a negative or positive outcome.**

Takahisa Masaki, Ryoji Nishiyama, & Takatoshi Nagaishi.

*Kwansei Gakuin University*

In studies that investigated the generalization decrement in human contingency learning, both the symmetrical (e.g., Thorwart & Lachnit, 2009) and the asymmetrical (e.g., Glautier, 2006) pattern of generalization have been observed. A series of our studies demonstrated that the relationship between a distinctive feature added or removed to/from a learned cue and an outcome is important for forming these patterns of generalization decrement. The present experiments required participants to rate the degree to which the enterobacteria with negative appearance features cause the negative effect (Exp.1) or the positive effect (Exp.2) on gastrointestinal condition. Adding or removing the feature to/from the enterobacteria that caused the negative outcome result in the asymmetrical generalization pattern. However, using the positive outcome produced the symmetrical pattern of generalization. These results were discussed with regard to the configural model and the element model of stimulus generalization.

**Activity-based anorexia in rats as a function of the interval between running and eating.**

Erica Franco, Felicidad Ruiz, David Sancho, Pedro Vidal, & Ricardo Pellón.

*Universidad Nacional de Educación a Distancia*

Activity based anorexia (ABA) develops when laboratory rats have food access restricted to a single period in the day and are given access to a wheel running. Clinical studies have found that patients with anorexia develop high activity levels. These data suggest a possible implication of exercise in the etiology of anorexia and are in line with findings obtained in animals during experimental procedures to model interactions between activity and weight loss. One hypothesis is that in ABA exercise acquires reinforcing properties by its association with food. In order to test this idea an experiment was designed in which the potential association of running in a wheel and food consumption was manipulated by interposing time intervals between both activities. Three groups of 8 male Wistar rats had 2 hours of wheel running access per day and 1 hour of consumption. We found that level of activity was directly related to proximity to food, being this not related to food intake nor to circadian activity, thus favoring the interpretation that running in ABA is somehow maintain by the food regimen.

**Analysis of the influence of perceptual learning on the blocking effect.**

José Antonio González, María Rosario Pozo, Emiliano Díez, & David Fernández.

*Universidad de Salamanca*

The aim of the present experiment was to compare the role played by a perceptual learning process on the blocking effect in the first learning phase of a predictive task. Four groups were used: Latent inhibition ( $A^0/Y^0$ ), Perceptual learning ( $AY^0/BY^0$ ), Standard blocking ( $A+/X-$ ) and Compound blocking ( $AY+/BY-$ ). Both predictions and ratings were measured regarding cue-outcome relationships. Results showed the same behaviour pattern for each group in both tasks.

**Spontaneous colour discrimination in angelfish (*Pterophyllum scalare*) implications for behavioural assays.**

Luis M. Gómez Laplaza &amp; Emilio Higes.

*Universidad de Oviedo*

Fish are becoming increasingly useful organisms in behavioural studies as well as in genetics and behavioural neuroscience. Angelfish is used, as a model organism, in a diversity of studies including colour discrimination of conspecifics and in learning and memory assays. In the latter, visual colour stimuli are often used as cues. However, the natural colour preferences of this species are unknown and preferences towards a specific colour may lead to changes in visual discrimination learning, memory and decision making. To develop novel colour-based learning and memory paradigms for this species, we need to investigate the natural preferences or any pre-existing biases towards specific colours. Here, we used five different colours of gravel substratum: natural, black, red, green and blue, and different colour combinations were presented, one colour in each half of the aquarium. We found a significant preference for blue colour relative to natural gravel colour, and for black over red colour. No preference was found among the red and green gravel substratum, which apparently are equally pleasant or aversive. The present results are helpful in choosing colours to use in future colour-based learning and memory assays in angelfish and might be useful for validating experiments involving aversion, anxiety, or fear.



## **Different conditions in habitats influence on the behavior in the Elevated Plus Maze.**

Katarzyna Zięba.  
*University Of Warsaw*

Animals in captivity should be kept in conditions providing homeostasis, i.e. thanks to providing for their needs such as the need of contact with other specimen of the same species (in case of herd animals), the need of exploration, grooming, building a nest, or escaping to safety. Otherwise, pathological behavior- self-mutilation or stereotypies may occur. The size of cage or the presence of additional objects in it is not specified, which is not desirable as far as standardized research is concerned. Of course it is impossible to create the same parameters in all research centers, but one should take care to approximate them as closely as possible and, moreover, to be aware in what way the type of breeding affects an animal. The conducted experiment shows how different breeding conditions such as handling, social deprivation, food deprivation and the enrichment of environment affect behaviour in the Elevated Plus Maze.



**Friday, September 13, 10:00-11:00, 16:45-17:45**

### **Poster Session 3**

1

#### **A Role-playing game (RPG) task: A New Tool for studying human associative learning.**

Takatoshi Nagaishi.  
*Kwansei Gakuin University*

A role-playing game (RPG) is one of a video game genre in which players assume the roles of characters in a fictional setting. Players run a tale, growing up characters through a battle and a problem-solving. This study examined the possibility of application of RPG task to human associative learning. In particular, RPG task was used to study a context-specific latent inhibition effect. In Pavlovian conditioning, exposures to a to-be conditioned stimulus (CS) without any unconditioned stimulus (US) attenuate subsequent development of conditioned responding to this familiar CS (latent inhibition effect). A feature of the latent inhibition effect is that a context change between preexposure and conditioning disrupts the effect. This is called the context-specific latent inhibition effect. In RPG task, CS and US are a monster in the map, a treasure after a battle. The experimental contexts are a place of the battle of the monster (e.g., forest, cave). This study clearly observed the context-specific latent inhibition effect. This result support RPG task as a tool to extend research in human associative learning.

## **Attention to Contexts after Short Training in a Human Predictive Learning Task.**

José A. Aristizabal, Manuel M. Ramos-Álvarez, Juan M. Rosas, & José E. Callejas-Aguilera.  
*University of Jaen*

Context-switch effect on simple acquisition of predictive judgments has been shown to be dependent on the level of training. Context-switch effects have been reported with low levels of training, disappearing when training it is increased. This result has been explained by assuming that attention to the contexts decreased as training progresses. However, no independent measures of attention in this process have been reported so far. The goal of the experiment reported here was to provide an independent measure of the role of attention on the context-switch effect found after short training in a predictive judgments task by recording participants' eye movements during the task. A cue was paired with an outcome in one context, while different cues were presented without outcome in the same, or in a different context (AX+, F1- and BY-, F2-). During the test, cues X and Y were presented either in the context where they were trained, or in the alternative context. Predictive judgments confirmed the well-known context-switch effect, with a loss of responding to cue X and an increase in responding to cue Y with the context change. Percentage of eye fixations in the area of the context was different between the training context and (...).

**Conditioned inhibition in infant rats.**

P.E. Aranda, M. Gaztañaga, C. Arias, & M.G. Chotro.  
*Universidad del País Vasco (UPV/EHU)*

Inhibitory conditioning is a very well established phenomenon in associative learning described in humans and in adult animals. At the moment, there is no systematic or consistent study, which posits empirical evidences about the existence of inhibitory learning during early ontogeny of the rat. On the other hand, Conditioned inhibition pools most of the scientific research and still produces interesting theoretical discussions within the inhibitory learning field. The main objective of this study was to use a conditioned inhibition paradigm through a conditioned taste aversion procedure in infant rats (day 13). We tested whether the consumption of a saccharin taste (A) was diminished when paired with a LiCl injection compared to the presentation of saccharin in compound with lemon odor (AX) without any aversive consequence. Results suggest that under these conditions it is possible to observe this phenomenon in early stages of the ontogeny of the rat.

**Context-Switch Effects on Schedule-Induced Drinking.**

José A. Aristizábal<sup>1</sup>, Ricardo Pellón<sup>2</sup>, Juan M Rosas<sup>1</sup>, Manuel M. Ramos-Álvarez<sup>1</sup>, & José E. Callejas-Aguilera<sup>1</sup>.

*<sup>1</sup>University of Jaen, <sup>2</sup> National University of Distance Education*

The goal of this study was exploring the context-switch effect on schedule-induced polydipsia in rats. An ABA renewal paradigm was used with rats receiving 30 min sessions in which food pellets were provided on a 30 sec Fixed Time schedule in context A. Rats were then extinguished in Context B. Finally, they were tested again in Context A. Water was continuously available throughout the session. A 2 x 2 factorial design was used in which one of the factors was whether the end of each 30 sec period was signaled by a Tone. The second factor was the timing in which pellets were presented (either under a FT30 schedule, or at the beginning of the session). Exploration of the role of contexts on control of induced drinking could help to understand how contexts may influence development and maintenance of excessive behaviors in animals and humans.

### **Contrasting ABA, AAB and ABC renewal in a free operant procedure.**

Montserrat Carrasco-López, Rodolfo Bernal-Gamboa, & Javier Nieto.  
*Universidad Nacional Autónoma de México*

One experiment was conducted using a free operant procedure with rats to conduct a direct comparison between ABA, AAB and ABC renewal by using a within subject test. All rats were trained to press a lever for food in context A. Then all rats received extinction. For rats in groups ABA and ABC extinction took place in a second context (i. e., context B), while rats in group AAB received extinction in the same context in which acquisition took place (i. e., context A). Finally, two testing session were conducted for each rat, one in the same extinction context and one in a different context. Rats in group ABA were tested in context B and in context A. For group AAB, testing took place in context A and in context B. For group ABC the testing sessions were conducted in context B and in context C. The experiment demonstrated that all groups showed higher levels of responding when they were tested outside the extinction context. However, ABA renewal was stronger than AAB and ABC renewal.

## **Development of schedule induced polydipsia in goal- and sign-tracker rats.**

V.E. Gutiérrez-Ferre<sup>1</sup>, A. Serrano<sup>2</sup>, J.C. López<sup>2</sup>, and R. Pellón<sup>1</sup>.

<sup>1</sup>*Universidad Nacional de Educación a Distancia*, <sup>2</sup>*Universidad de Sevilla*

24 male Wistar rats, previously divided into goal- and sign-trackers, were exposed to intermittent food schedules to measure the development of schedule-induced polydipsia. Animals are currently running on various fixed time schedules (15, 30, 60 and 120s), with the order of presentation of the schedules being counterbalanced accross animals. Based on the idea that adjunctive drinking is maintained by food coming latter, it is expected that sign trackers will develop higher and /or quicker schedule-induced polydipsia.



**Differential development of adjunctive behavior in humans depending on feedback type during inter-trial intervals of a competition game schedule induced behaviors in winners and losers.**

Laura Gijón Serrano, Javier Íbias Martín, Cristina Orgaz Jiménez,  
& Ricardo Pellón Suárez de Puga.

*Universidad Nacional de Educación a Distancia*

The development of adjunctive behavior through a competition game was investigated in humans. During the game participants solved 24 trials in front of a computer screen using a pen and a response sheet. Each trial was separated from the next by an inter-trial interval of 40 or 60 seconds. At the beginning of each interval subjects received feedback about their performance on the task until the previous trial; and they were located at the first or second place in the competition at that moment. For one group 60% of the trials (of the last five) were reinforced by a message placing them first in the competition. The feedback in the other group informed the participants that they were getting the second position during these same trials. The frequency and duration of different behaviors were registered throughout the intervals. For the group with a higher percentage of negative feedback messages (losers) both the frequency and duration of stereotyped behaviors and tics gradually increased. The group that received a higher percentage of positive feedback (winners) had a higher frequency and duration of other behaviors such as ocular fixation on the computer screen and time spent holding the pen in their hands during inter-trial (...).

## **Differential outcomes and delayed face recognition memory in healthy adults.**

Victoria Plaza<sup>1</sup>, Diego Guirao<sup>1</sup>, José Antonio Pérez<sup>1</sup>, Luis Fuentes<sup>2</sup>,  
& Angeles F. Estévez<sup>1</sup>.

*<sup>1</sup>Universidad de Almería, <sup>2</sup>Universidad de Murcia*

It has been widely demonstrated that the differential outcomes procedure (DOP) facilitates both the learning of conditional relationships and the memory for the conditional stimuli in animal subjects. Although the DOP also produces a better discriminative learning in humans, the potential facilitative effects of this procedure in human memory have not been fully assessed. In the present study, we aimed to test whether the DOP improves performance on two versions of a facial recognition memory task in healthy adults. Participants showed significantly better delayed face recognition when differential outcomes were arranged but this effect was modulated by the difficulty of the task used. These findings are discussed in the light of other studies on the differential outcomes effect (DOE) in both animals and humans.

**Effect of instructions on visual attention in perceptual learning.**

Antón Navarro, Rocío Angulo, Naiara Arriola, & Gumersinda Alonso.

*Universidad del País Vasco (UPV/EHU)*

A series of experiments assessed the effect of pre-exposure instructions on visual attention in a human perceptual learning paradigm. All experiments served as a test of the Intermixed-Blocked effect of perceptual learning and presented two abstract colored checkerboards, AX and BX, during a pre-exposure phase and a test phase. In Experiment 1, pre-exposure phase instructions prompted participants to search for differences between the to-be-presented stimuli. Participants in the Intermixed group displayed greater gaze time to the distinctive regions of the stimuli than did the Blocked group during both pre-exposure and test. In Experiment 2, pre-exposure instructions told participants only to observe the to-be-presented stimuli. Here, all groups showed equally low gaze time to the distinctive regions during both pre-exposure and test. Behavioral performances on test reflected an Intermixed-Blocked effect in Experiment 1, but not in Experiment 2. The results therefore suggest pre-exposure instructions are an important determinant of the changes in visual attention that underlie some types of perceptual learning.

## **Operant conditioning in 5-day old rats exposed prenatally to vanilla.**

M. Gaztañaga<sup>1,2</sup>, R.S. Miranda-Morales<sup>2</sup>, N.E. Spear<sup>2</sup>, & M.G. Chotro<sup>1</sup>.

<sup>1</sup>*Universidad del País Vasco (UPV/EHU)*, <sup>2</sup>*Binghamton University*

The rat fetus can perceive chemosensory stimuli derived from their mother's diet, and they are able to learn about these stimuli. Some studies in human and animals report that prenatal exposure to a flavor through the mother increases postnatal acceptance of those flavors. In previous studies from our laboratory, we observed that infant rats exposed prenatally to ethanol, vanilla, or anise, showed higher palatability and increased intake of ethanol, but not in response to vanilla or anise. One hypothesis to explain these different results is based on the pharmacological properties of ethanol, which the other two stimuli lack of. However, considering the contradictory result from our and other's studies, we explored the possibility of observing a differential response to the prenatally exposed flavors, when tested during the neonatal period using operant conditioning. Five-day old rats exposed to vanilla on gestational days 17- 20 showed increased responses when using vanilla as reinforcer. When pups were tested on day 14, no differential responses were observed, indicating that prenatal exposure to a non-ethanol flavor induces increased acceptance, although detectable only on neonatal stages.

## **Spacing extinction sessions attenuates the recovery of operant responses.**

Rodolfo Bernal-Gamboa, Alexis Martínez-Ramírez, & Javier Nieto.  
*Universidad Nacional Autónoma de México*

The renewal effect, that is, a partial recovery of the extinguished conditioned response that occurs when testing takes place outside the extinction context has been proposed as an animal model for the treatment and relapse of unwanted behaviors such as phobias or addictions. The main goal of the present experiment was to test whether spacing the extinction sessions could prevent the renewal effect. The experiment consisted of three phases Acquisition, Extinction and Test. Rats were trained for four sessions to press a lever for pellets in context A during acquisition. Then, all rats received three sessions of extinction in context B. Rats in the Massed group received all extinction sessions in a single day; for the Spaced group, extinction sessions were conducted one session per day; rats in the Expanded group received one session per day, but each extinction session was separated by two days. Finally, testing was conducted for all rats in context A. Results showed that the context-switch effect was attenuated by spacing the extinction sessions.

**Study of anxiogenic effect of yohimbine in wistar rats.**

Escarabajal, M.D., de la Torre, L., & Agüero, A.

*Universidad de Jaén*

There is a generalized agreement on the anxiogenic effect of yohimbine, however we consider necessary to study this effect under our own experimental conditions. We have evaluated this effect using the elevated plus maze test (EPMT). In previous studies we evaluated the anxiogenic effectiveness of an acute dose of 2.5mg/kg of yohimbine and the anxiogenic effectiveness of the same dose after repeated administration of it. The results indicated the absence of an acute and/or chronic anxiogenic effect of the drug on exploratory behavior of animals in the EPMT. Given these results we proceeded to design an experiment with 4 mg/kg of yohimbine, and some variations in the drug preparation and in the process of exposure of the subject to EPMT. The results again indicated the absence of an acute anxiogenic effect of the drug at dose 4mg/kg. We have proceeded to design a new experiment in which it will attempt to reduce the initial level of anxiety of animals by of a period of manipulation (handling) prior to exposure to the plus maze, and will be employed the same dose of yohimbine (4 mg/kg). This experiment is currently in progress.

**The effects of schedule-induced polydipsia on the structure of anterior prefrontal cortex and dorsal striatum neurons.**

Estrella Soria<sup>1</sup>, Javier Íbias<sup>1</sup>, Asta Kastanauskaite<sup>2</sup>, Cristina Orgaz<sup>1</sup>, Javier DeFelipe<sup>2,3</sup>, Ricardo Pellón<sup>1</sup>, & Miguel Miguéns<sup>1</sup>.

<sup>1</sup>*Universidad Nacional de Educación a Distancia*, <sup>2</sup>*Laboratorio Cajal de Circuitos Corticales, Centro de Tecnología Biomédica, Universidad Politécnica de Madrid*, <sup>3</sup>*Instituto Cajal, CSIC*

Schedule-induced polydipsia (SIP) is a procedure in which rats exhibit exaggerated drinking behavior and has been proposed as a successful model to study the development of compulsive behavior disorders. In the present work we have used intracellular injections of lucifer yellow to examine whether the performance of SIP would induce modifications in cortical and striatal areas, as revealed by differences in neuron morphology and spine density. Specifically, the effects of 20 sessions of SIP on the structure, size, branching complexity and spine density were determined in the basal dendritic arbors of layer III pyramidal neurons in the anterior prefrontal cortex (APf). Spine density in the dorsal striatum was also studied. The analysis of the data did not show differences neither in spine density nor in the morphological structure of the dendrites of the APf in SIP rats compared to their controls. Preliminary data showed a trend towards to increase spine density in the dorsal striatum in SIP animals. The findings of this study could provide new insights into the involvement of cortical and subcortical regions in compulsivity spectrum disorders. The work was supported by the Ministry of Science and Innovation grant (PSI2011-29399).

**The partial reinforcement extinction effect (PREE) An experiment study with rats procedurally similar to studies with human participants.**

Óscar García-Leal & Gamaliel Saldivar Olivares.  
*Universidad de Guadalajara (México)*

The partial reinforcement extinction effect (PREE) indicates more resistance to extinction of an operant response previously acquired by the exposition to an intermitent reinforcement schedule than using continuous reinforcement. The PREE involves an affective reaction to surprising nonreward. But the PREE is no observed in all experimental procedures, and between different species. Methodological issues, and the increased complexity of controlling mechanisms in human responding have been proposed to account for contradictory results. In this study, the authors expose two groups of rats to two different reinforcement densities in a discrete-trial task, very similar to the procedures used with human participants. We observe conventional PREE. So, there were no differences between both conditions during acquisition of a response criteria, but the extinction of the response were faster in group exposed to the continuous reinforcement schedule than in the other. Data are discussed considering the generality of the phenomena.



**Asymmetry of generalization decrement in human contingency learning use of a positive feature and a negative or positive outcome.**

Ryoji Nishiyama, Takatoshi Nagaishi, & Takahisa Masaki.  
*Kwansei Gakuin University*

A series of our studies investigated the generalization decrement in human contingency learning. The participants learned which of the enterobacteria caused the negative effect or the positive effect on gastrointestinal condition. Then, they were asked to evaluate the novel test cues for their likelihood to cause the effects. The novel test cues were made by adding or removing positive appearance feature to/from previously learned cues. In Experiment 1, in which participants judged negative outcome, removing features from the cues produced a generalization decrement, but adding features didn't (i.e., asymmetrical generalization decrement). In Experiment 2 using positive outcome, both adding and removing features produced a generalization decrement (i.e., symmetrical generalization decrement). The prior belief about associations between a cue and a feature accounts for the present results with our other poster.



# Historical Retrospective



**Friday, September 13, 15:30-16:30**

## **Retrospective and 25-year Celebration**

### **Behaviorist, Publicist and Social Critic: The Evolution of John B. Watson**

Jose María Gondra  
*Universidad del País Vasco, UPV/EHU*

Three years after launching his Behaviorist Manifesto at Columbia University on February 24, 1913, John B. Watson started his research on child behavior at the Phipps Clinic of Johns Hopkins University, which ended in 1920 with the well-known experiment on little Albert. Forced to leave Academia after the scandal of divorce with his wife, he became a successful advertising man, making significant contributions to the advertising industry. During the 1920s and 1930s, in addition to develop his theory of behaviorism, Watson published articles in popular magazines like Harpers, McCall's, or Cosmopolitan, which were widely read. He sought to legitimize the authority of psychologists by stressing the usefulness of psychology to solve the problems of everyday life. Our purpose is to examine the evolution of his thinking during this last period of his life, from his controversial views on parenting to his writings on marriage, family and society. We conclude with an analysis of the article "Why I don't commit suicide," which was rejected by the editor of Cosmopolitan and any other magazine would publish it, probably because of his pessimistic and critical view of American society.

## **The Spanish society for comparative psychology turns 25: notes on its history**

Gabriel Ruiz

*Universidad de Sevilla*

This paper looks at the evolution of the Spanish Society for Comparative Psychology (SEPC), from its beginnings at the end of the 1980s up to the present day. However, the story does not start with the founding of the society but stretches back to the period between 1920 and 1935 when animal conditioning techniques were first used in Spain. During those years, studies were conducted into the sensations of ants (Ramón y Cajal, 1921), the functions of the corpus callosum in monkeys and cats (Lafora & Prados, 1921; 1922), the instrumental learning of mice (de Luna, 1921) and Pavlovian conditioning of the hypoglycemic response in dogs (Planelles, 1935). The paper then briefly discusses the reasons why this promising start was snuffed out after the Spanish Civil War (1936-1939) until the first animal learning and behavior laboratories emerged in the mid 1970s. The founding of the SEPC put an end to this erratic start, and this institution has come to play a pivotal role in the understanding of the scientific vitality which our research currently enjoys in the national and international arenas.



