XXXI International Meeting of the Spanish Society for Comparative Psychology

SEPC 2019

MÁLAGA, SEPTEMBER 16TH TO 18TH

PROGRAMME AND SCHEDULE

FUNDING

The International Meeting of the SEPC would not have been possible without the generous support of the University of Málaga, the School of Psychology and Speech Therapy of the University of Málaga, the Department of Basic Psychology of the University of Málaga and the Spanish Society for Experimental Psychology (SEPEX).

INDEX

SCHEDULE

Monday 16th	Tuesday 17th	Wednesday 18th
09:30-10:00 Opening Ceremony	9:20-11:00 Oral Presentations: Session 3	9:40-11:40 Oral Presentations: Sessions 5A and 5B
10:00 - 11:00 Lecture: Lynn Nadel	11:00-11:30 Coffee break	11:40-12:10 Coffee break
11:00-11:30 Coffee break	11:30-12:30 Symposium: Open Science	12:10-13:10 Lecture: Charlotte Bonardi
11:30-13:30 Oral Presentations: Session 1	12:30-13:30 Lecture: Bram Vervliet	
13:30-15:20 Lunch	13:30 – 15:20 Photo and Lunch	13:10 – 15:00 Lunch
15:20-17:00 Oral Presentations: Session 2A and 2B	15:20-17:00 Poster session and coffee	15:00-17:00 Oral Presentations: Sessions 7A and 7B
17:00-17:30 Coffee break	17:00-18:00 SEPEX Lecture: Ignacio Loy	17:00-17:30 Coffee break
17:30-18:30 Symposium: Translational psychology	18:00-19:00 Oral Presentations: Session 4	17:30-18:30 SEPC Society Meeting
20:00 Social Event Welcome reception and celebration of Victoria Chamizo's retirement (Rectorado)	20:15 Social Event Málaga at sunset Walking sightseeing tour (Plaza de la Constitución)	21:00 Social Event Conference dinner (Club Mediterráneo)

Oral presentations

SESSION 1 (Salón de Actos) Monday 16th - 11:30 to 13:30

1. Renewal in human instrumental avoidance. *Gonzalo P. Urcelay, Kadell Symmons & Arthur Prével*
2. The effect of emotional impulsiveness on sensitivity to outcome devaluation in both instrumental discrimination and slips-of-action test. *Irene Hinojosa-Aguayo & Felisa González*
3. The EMACS effect is enhanced when testing is conducted within familiar contexts. *Pedro M. Ogallar, José E. Callejas-Aguilera, Juan M. Rosas & Jeffrey A. Lamoureux*
4. Caffeine-based flavour learning by rats. *Robert Boakes & Liyana Farabi*
5. Rats exposed to sweet flavours have offspring with enhanced sweet flavour preference. *Ignacio Loy, Clara Muñiz-Diez & Judit Muñiz-Moreno*
6. Running-based food avoidance learning in mice. *Sadahiko Nakajima*

SESSION 2A (Salón de Grados) Monday 16th - 15:20 to 17:00

1. Effects of stimulus pre-exposure in humans. *Manuel Aranzubia-Olasolo, James Byron Nelson & Mª del Carmen Sanjuán*
2. Perceptual Learning of Relationships between Stimuli. *Marcela Lugo, Rosalva Cabrera & Bernardo Jiménez*
3. Salience loss of unique elements after the intermixed pre-exposure of AX and BX. *Antonio A. Artigas & Jose Prados*
4. A forlorn search for a spaced-interval pre-exposure advantage in a biased looking task of recognition memory. *Jasper Robinson & Leona Ryan*
5. Assessing Self-Reinforcing Mechanisms of Stimulus Comparison Using Object Recognition in Rats. *Gabriel Rodríguez & Gumersinda Alonso*

SESSION 2B (Aula 0.04) Monday 16th - 15:20 to 17:00

1. Behavioural inflexibility under negative outcomes and glutamatergic modulation in high compulsive rats selected by schedule-induced polydipsia. *Ángeles Prados-Pardo, Elena Martín-González, Santiago Mora, Carlos Martín, Ana Merchán, Pilar Flores & Margarita Moreno*
2. Chocolate-craving reduction: Targeting intrusive thoughts and consequent thought elaboration triggered by palatable-food cues. *Felisa González, Irene Hinojosa-Aguayo & Daniel Cruz*
3. Risky decision-making and flexibility through Iowa Gambling Task: hemodynamic activity and somatic markers. *José Juan León Domene, Antonio González-Rodríguez, Ángeles Fernández Estévez, Pablo Sayans-Jiménez, Fernando Cañadas Pérez, Fernando Sánchez-Santed & Pilar Flores Cubos*
4. Using a model of autoshaping in rats to develop computer applications to identify vulnerability to traits of cognitive disorders. *Juan Pedro Vargas, Almudena Serrano-Barroso, Estrella Díaz & Juan Carlos López*
5. Smaller-Sooner or Larger-Later? Impulsive choice in Adolescents with Attention-Deficit Hyperactivity Disorder (ADHD). *Pilar Fernández Martín, José Juan León Domene, Rocío Rodríguez Herrera, Rosa Cánovas López, Margarita Moreno Montoya, Fernando Sánchez-Santed & Pilar Flores Cubos*

SESSION 3 (Salón de Actos) Tuesday 17th - 09:20 to 11:00

1. Nicotine-induced Tolerance Development in *Planaria*. *Fatih Sal, Gonzalo P. Urcelay & José Prados*
2. Habituation learning as a tool to study the reactivity of earthworms to environmental stimuli. *Concepción Paredes-Olay, María José F. Abad, Juan A. Membrive-Galera & David Reyes-Jiménez*
3. Context dependence in habituation in earthworms. *David Reyes-Jiménez, María José F. Abad, Juan A. Membrive-Galera & Concepción Paredes-Olay*
4. Context specificity of Latent Inhibition in the snail *Cornu aspersum*. *Judit Muñiz-Moreno, Manuel Rivero & Ignacio Loy*
5. Heat shock disrupts memory expression and recovery from extinction in *Planaria*. *Zehra B. Turel, José Prados & Gonzalo P. Urcelay*

SESSION 4 (Salón de Actos) Tuesday 17th - 18:00 to 19:00

1. Causal illusions can be modulated by political attitudes. *Fernando Blanco, Braulio Gómez & Helena Matute*
2. Bias in assessing awareness in research on unconscious mental processes. *David R. Shanks, Simone Malejka & Miguel A. Vadillo*
3. The role of attention in the illusion of causality. An ERP study. *Ion Yarritu, Joaquín Morís, Antoni Rodriguez-Fornells & Helena Matute*

SESSION 5A (Salón de Grados) Wednesday 18th - 09:40 to 11:40

1. The role of information in signaled versus unsignaled outcomes. *Alejandro Macias & Marco Vasconcelos*
2. State-Dependent Valuation Learning in Rats: Effects on Delay-Discounting. *Óscar García-Leal, Zirahuén Vílchez, Jonathan Buriticá, Héctor O. Camarena & Erick Barrón*
3. Qualitatively-varied reinforcement has no effect on Schedule-induced behavior. *Felizdania Hernández-Hernández, Raquel Pascual-Beato, Gabriela E. López-Tolsa, Jesús Cuitláhuac Núñez Santana & Ricardo Pellón*
4. The effects of different probabilities of reinforcement in suboptimal choice preference. *Valeria V. Gonzalez, Armando Machado, Aaron Blaisdell & Marco Vasconcelos*
5. Performance during a transitive inference procedure is affected when probabilistic reinforcement is introduced. *Héctor Octavio Camarena Pérez*
6. The pebble in the shoe: The teaching of Math/Stats in Psychology. *Armando Machado*

SESSION 5B (Aula 0.04) Wednesday 18th - 09:40 to 11:40

1. A methodological proposal for study generalization of context-switch effects in humans. *Fátima Rojas-Iturria, Rodolfo Bernal & Javier Vila*
2. Behavioral control of outcomes and time in rats and pigeons. *Cristina Santos, Federico Sanabria, Marco Vasconcelos & Armando Machado*
3. Second Order Conditioning and Conditioned Inhibition under different A+/AX trial proportions in a magazine training procedure with Wistar rats. *Clara Muñiz-Diez, Judit Muñiz-Moreno & Ignacio Loy*
4. Contextual modulation of emotion processing: behavioral and neural evidence. *Luis Aguado, Teresa Diéguez-Risco & J. Antonio Hinojosa*
5. Effects of stimulus intensity on response acquisition and generalization in a behavioral task with humans. *Paula Balea, María del Carmen Sanjuan & James Byron Nelson*
6. Does surprising reward omission play a role in behavioral invigoration under reward uncertainty? *Patrick Anselme & Mike J. Robinson*

SESSION 6A (Salón de Grados) Wednesday 18th - 15:00 to 17:00

1. More is better than less: Behavioural Response to the Environmental Changes of Various Types in Rats. *Wojciech Pisula, Klaudia Modlinska & Anna Chrzanowska*
2. Source memory errors in chimpanzees (*Pan troglodytes*) and preschool children. *Gema Martín-Ordás*
3. Comparative cognition across nine ungulate species: innovation, neophilia and social learning. *Alvaro López Caicoya, Montserrat Colell & Federica Amici*
4. Geometry learning in a navigation task: the role of pool-shape difficulty and previous experience. *Aguilar, A., Romera, V., Torres, M.N., & Chamizo, V.D.*
5. HeiDI: An integrated model of Pavlovian learning and performance. *Robert C. Honey, Dominic M. Dwyer & Adela F. Iliescu*
6. Attentional processes and stimulus coding in sign and goal trackers. *Estrella Díaz, Juan Pedro Vargas, Esperanza Quintero, Manuel Portavella, Juan José Villa & Juan Carlos López*

SESSION 6B (Aula 0.04) Wednesday 18th - 15:00 to 17:00

1. Successive negative contrast in humans: dissociation between affective and behavioral measurements. *Morillo-Rivero, L., Ibáñez-Molina, A., Fernández, S. & Torres, C*
2. Augmented alcohol consumption induced by reward loss: Effects on behavior in the hole board test. *Rocío Donaire, Noelia Serrano, Mauricio R. Papini & Carmen Torres*
3. Relative and absolute reward value in free-choice consummatory behavior. *Sara Guarino, Shannon E. Conrad & Mauricio R. Papini*
4. Activity as goal-directed behavior in activity-based anorexia. *Pedro Vidal, Ana de Paz & Ricardo Pellón*
5. Neuroplastic changes underlying inhibitory control deficit in a preclinical model. *Santiago Mora, Ana Merchán, Susana Aznar, Pilar Flores & Margarita Moreno*
6. Haloperidol-based conditioning of locomotor activity, but not conditioned catalepsy, is affected by classical conditioning factors. *Luis Gonzalo De la Casa, Mª Francisca Arias, Lucía Cárcel, Luis Eladio Gómez-Sancho, Mª Auxiliadora Mena & Juan Carlos Ruiz-Salas*

PLENARY LECTURES
(Salón de Actos)

MONDAY 16TH 10:00 – 11:00 (SALÓN DE ACTOS)

THE HIPPOCAMPUS IN EVOLUTIONARY PERSPECTIVE

LYNN NADEL

University of Arizona

Recent findings challenge the view that the hippocampal cognitive map is fundamentally spatial. In the first part of this talk I will consider whether the hippocampus is part of a domain-general or domain-specific system. Did it, in other words, evolve in response to selective pressures imposed by spatial conditions of the environment, or did the pressure come from the need for "relational" binding in general. In the second part of the talk I will discuss the longitudinal axis of the hippocampus, which supports spatial maps of different "scales". What is the function of this multi-scale system, and did all scales evolve simultaneously? Both of these issues raise questions that can be approached from a comparative perspective, and I will close by suggesting some possibilities.

TUESDAY 17TH 12:30 – 13:30 (SALÓN DE ACTOS)

FEAR REGULATION: FROM PASSIVE EXTINCTION TO ACTIVE AVOIDANCE

BRAM VERVLIET

KU Leuven

It is adaptive to fear stimuli that signal imminent danger and to stop fearing these stimuli when they no longer signal danger. The topic of extinction research is to investigate the mechanisms of fear reduction when passively observing such change in contingency. But, we can also actively intervene and change contingencies by executing actions that prevent the signalled danger. Such avoidance behaviour is an active form of fear regulation that is adaptive when it serves to protect against imminent danger, but becomes maladaptive when it is not appropriate to the actual level of threat. In this presentation, I will describe how the well-known extinction mechanism of fear regulation guides novel research into the development of maladaptive avoidance.

TUESDAY 17TH 17:00 – 18:00 (SALÓN DE ACTOS - SEPEX LECTURE)

COMPARATIVE PSYCHOLOGY FROM THE PERSPECTIVE OF EXPERIMENTAL PSYCHOLOGY OF ASSOCIATIVE LEARNING AND VICEVERSA

IGNACIO LOY MADERA

University of Oviedo

Associative learning has developed so productive a set of procedures and theories that it can be considered a closed epistemological structure to guide future research both positively and negatively. If Hume demonstrated with his philosophical thinking that association, unlike gravity in physics, did not allow us to establish causal relationships which might help found a science of the mind, the contemporary psychology of learning has reached the same conclusion experimentally. There is no way to understand association without counting on something provided by the subject: surprise, attention, comparison or decision are essential concepts in current learning theory. However, the extension of Pavlovian conditioning procedures under this paradigm to the study of simple organisms is developing two tendencies: on the one hand, it is extending the range of organisms susceptible of showing attentional or decision-making processes (all invertebrates, protists - paramecia, slime mould - plants) and, on the other, it is revealing the limitations of the concept of association, perhaps already too complex to cover all organic experiences. Complementarily, the comparative perspective of simple minds demands respect to the ecological conditions of learning in order to detect even simpler ways in which the experience modifies the organic activity to allow the subjects to learn the causal texture of their environment.

WEDNESDAY 18TH 12:10 – 13:10 (SALÓN DE ACTOS)

CONDITIONING AND TIMING: THEORY AND SUBSTRATE

CHARLOTTE BONARDI

University of Nottingham

In a classical conditioning task a neutral conditioned stimulus (CS) signals delivery of an unconditioned stimulus (US), usually of motivational value. In such tasks the CS is of the same temporal duration on every trial and signals a punctate US—so that CS onset can be used to accurately predict the time of US occurrence. This suggestion is supported by a large body of evidence showing timing in conditioning tasks - the rate of conditioned responding increases steadily over the course of the CS to reach a maximum at the point of US delivery (Roberts, 1981).

Conditioning and timing occur side-by-side, yet traditionally have been explained with completely different theoretical frameworks (Kirkpatrick, 2014), and relatively little attention has been paid to exploring the effects of learning-relevant manipulations on timing, or timing-relevant manipulations on learning. Moreover, although the hippocampus was originally implicated as being a central mediator of timing behaviour, some later models have been proposed that overlook the role of this structure in favour of other areas such as striatum (e.g. Matell & Meck, 2004). I will present a series of experiments we have conducted that attempt to shed light on some of these issues.

SYMPOSIA
(Salón de Actos)

MONDAY 16TH 17:30 – 18:30 (SALÓN DE ACTOS)

TRASLATIONAL PSYCHOLOGY

PILAR FLORES, JUAN FRANCISCO NAVAS & BRAN VERVLIET

University of Almería; Autonomous University of Madrid; KU Leuven

It is becoming more frequent that we justify our research projects on its potential translational impact either in the clinical, educational, or social domain. However, sometimes this justification is more theoretical than real. There is a great leap between laboratory conditions, including laboratory participants, and real people and real conditions in these different domains. How do these differences impact on such translational value? What are the factors that impose boundary conditions for such real-world impact? How can we overcome these limitations? These are all relevant questions, among others, that will be addressed in this symposium.

TUESDAY 17TH 11:30 – 12:30 (SALÓN DE ACTOS)

OPEN SCIENCE

HELENA MATUTE, DAVID SHANKS & MIGUEL ÁNGEL VADILLO

University of Deusto; University College London; Autonomous University of Madrid

Psychology as a discipline has been part of what has been called the reproducibility crisis and, later on, of the open science reform. In this symposium the causes of the reproducibility crisis, the role of researchers' behaviour and biases, the current state of associative learning and comparative psychology, current initiatives and possible solutions will be discussed.

ORAL PRESENTATIONS
(Salón de Actos, Salón de Grados and Aula 0.04)

SESSION 1 (Salón de Actos)

Monday 16th - 11:30 to 13:30

SESSION 1 (SALÓN DE ACTOS)

RENEWAL IN HUMAN INSTRUMENTAL AVOIDANCE

GONZALO P. URCELAY, KADELL SYMMONS & ARTHUR PRÉVEL
University of Leicester; Ghent University

Avoidance behaviour is a hallmark of anxiety disorders and OCD, yet there is a pressing need to understand how extinction of avoidance proceeds and what variables if any determine recovery from extinction. In this study, we adopted the task developed by Flores et al., (2018), to investigate recovery from extinction achieved through changes in context. We used a within-subjects design in which participants learned to avoid a loud noise signalled by discrete visual stimuli (CS+1 and CS+2), by pressing the space bar in the computer keyboard. We manipulated the background colour of the screen so that CS+1 was trained in context A, and CS+2 was trained in context B. During the training stage, participants learned to avoid the noise upon seeing the CS+ stimuli in each context during 4 blocks (in addition to CS- stimuli presented in both contexts but without noise). During 8 extinction blocks, CS+ stimuli were presented in the alternative context (CS+1 in context B and CS+2 in context A) and participants allowed to freely respond, but the loud noise was never presented. Finally, CS+1 and CS+2 were tested in contexts A and B (counterbalanced across participants), resulting in a within-subjects ABA vs ABB comparison. Participants (n=30) increased avoidance behaviour over the 4 blocks of training, and decreased responding during the 8 blocks of extinction. During test, responding was significantly higher when CS+ stimuli were tested in the A vs the B context, thus showing renewal of instrumental avoidance in humans.

Flores, A., López, F. J., Vervliet, B., & Cobos, P. L. (2018). Intolerance of uncertainty as a vulnerability factor for excessive and inflexible avoidance behavior. Behaviour Research and Therapy, 104, 34–43.

SESSION 1 (SALÓN DE ACTOS)

THE EFFECT OF EMOTIONAL IMPULSIVENESS ON SENSITIVITY TO OUTCOME DEVALUATION IN BOTH INSTRUMENTAL DISCRIMINATION AND SLIPS-OF-ACTION TEST

IRENE HINOJOSA-AGUAYO & FELISA GONZÁLEZ

University of Granada

According to dual-system theory, optimal instrumental learning and performance are mediated by the balance between goal-directed and habitual systems of behavioral control. Impaired emotion regulation may lead to the development of emotionally impulsive personality traits that would lead to overreliance on habitual control. Specifically, negative urgency (NU), the tendency to act rashly when experiencing negative emotional states, has already been linked to impairments in behavioral control using paradigms as Pavlovian-to-Instrumental Transfer. In the present experiment, we study the effect of NU on the balance of goal-directed and habitual action control in a sample of young women using a validated discrimination learning task. Participants were exposed to relationships among discriminative stimuli, instrumental responses, and outcomes, before performing two different tasks in which some of the outcomes were devalued through instructions: devaluation on instrumental responding and slips-of-action test. All participants learnt the discrimination readily, and showed devaluation effects on these two tasks. In addition, we found a reliable negative correlation between self-reported negative urgency and sensitivity to devaluation in the slips-of-action test, showing that the higher the levels of NU, the lower the sensitivity to devaluation. This might imply that decision-making was less sensitive to the current incentive value of the outcome for individuals with this personality trait, indicating the preponderance of the habit system of action control.

Funding: PSI2015-64345-R (MINECO-FEDER).

SESSION 1 (SALÓN DE ACTOS)

THE EMACS EFFECT IS ENHANCED WHEN TESTING IS CONDUCTED WITHIN FAMILIAR CONTEXTS

PEDRO M. OGALLAR, JOSÉ E. CALLEJAS-AGUILERA, JUAN M. ROSAS & JEFFREY A. LAMOUREUX

University of Jaén; Boston College

Attentional theory of contextual processing (ATCP, Rosas, Callejas-Aguilera, Álvarez-Ramos & Abad, 2006) suggests that the experience of Extinction Makes Acquisition Context Specific (EMACS effect; Rosas & Callejas-Aguilera, 2006). However, context-specificity of acquisition is often found in the absence of the extinction experience. Three experiments were conducted with the goal of further isolating the EMACS effect from the deleterious effect of switching the context upon simple acquisition in human predictive learning. In Experiment 1, a cue was trained in one context (A: E+) and extinguished in a different one while the target cue was trained (B: E-, P1+). The test with the target cue was then conducted in both, the acquisition and the extinction contexts (A: P1 / B: P1). Experiments 2 used the same design with the exception that the test was conducted in the extinction context and in a novel one (B: P1 / C: P1). Experiment 3 was identical to Experiment 2 with the exception that participants had previous experience with context C, so that this context was not novel at the time of testing. The deleterious effect of changing the context upon acquisition in the absence of extinction disappeared when acquisition and extinction were conducted in different contexts, allowing for an isolation test of the EMACS (Experiment 1). When the test context was new, the context switch effect in the absence of extinction was boosted, precluding the observation of the EMACS effect (Experiment 2). Finally, Experiment 3 found that giving participants experience with the test context allowed for the clearest observation of the EMACS effect (Experiment 3).

SESSION 1 (SALÓN DE ACTOS)

CAFFEINE-BASED FLAVOUR LEARNING BY RATS

ROBERT BOAKES & LIYANA FARABI
University of Sydney

Many non-alcoholic beverages that are popular throughout the world contain caffeine. As experiments with human participants have shown, caffeine is included in such drinks because it supports acquisition of liking for the flavour of these beverages. Apart from demonstrating that caffeine can support flavour preference learning, little is known about the properties of such human learning. The same is true of caffeine-based flavour learning in rats. In contrast, several studies have examined the properties of nutrient- and taste-based flavour preference learning in rats, especially with regard to the impact of extinction and latent inhibition procedures. Experiment 1 used a within-subject design: one flavour was added to a saccharin + maltodextrin base solution that also contained a low dose of caffeine and a second flavour was added to the base solution without caffeine. Both hungry and thirsty rats acquired a preference for the flavour associated with caffeine. During a subsequent extinction treatment preference for the caffeine-associated flavour declined in the thirsty rats, but not in the hungry rats. Why motivational state had this unexpected effect will be discussed, as well as the results of Experiment 2 that examines whether pre-exposure to a flavour would produce latent inhibition of caffeine-based preference learning.

SESSION 1 (SALÓN DE ACTOS)

RATS EXPOSED TO SWEET FLAVOURS HAVE OFFSPRING WITH ENHANCED SWEET FLAVOUR PREFERENCE

IGNACIO LOY, CLARA MUÑIZ-DIEZ & JUDIT MUÑIZ-MORENO

University of Oviedo

Three groups of male Wistar rats were exposed to different sweet substances for 10 days: saccharin, stevia and sugar. There was also a control group that was exposed to water. During this phase, rats that drank saccharin and rats that drank sugar preferred the respective substance over water, while rats that drank stevia did not show any preference. The preference for saccharin versus stevia was tested, showing that only animals exposed to saccharin and animals exposed to stevia preferred saccharin over stevia, being this preference higher in saccharin group. These rats were mated with experimentally naïve female rats and were removed as soon as pregnancy was detected. The offspring´s preference for sweet flavour, measured as saccharin intake, was tested at 30 and 60 days of age. For subjects tested with 30 days of age, those whose fathers drank saccharin showed a lower preference than the rest of subjects. For subjects tested with 60 days of age, those whose fathers drank stevia and those whose fathers drank sugar showed a significantly higher preference than those whose fathers drank water. Subjects whose fathers drank saccharin showed an intermediate preference. Taken together our results indicate that rats exposed to sweet substances produced offspring that, at 60 days of age, showed a higher preference for saccharin than rats exposed to water, being this preference lower when fathers drank a synthetic sweet flavour, as saccharin. These results are partially coincident with similar experiments (Rodriguez-San Juan & Rodriguez, in press), but paradoxically, we did not replicate the inherited increment of saccharin intake in the offspring of fathers that drank saccharin.

SESSION 1 (SALÓN DE ACTOS)

RUNNING-BASED FOOD AVOIDANCE LEARNING IN MICE

SADAHIKO NAKAJIMA

Kwansei Gakuin University

Voluntary wheel running has hedonically bivalent properties in laboratory rats. While it works as a reward for instrumental performance such as lever pressing (e.g., Belke, 1997; Collier & Hirsh, 1971; Iversen, 1993; Kagan & Berkun, 1954; Pierce et al., 2018), it also functions as an aversive stimulus to establish Pavlovian conditioned avoidance of the paired stimulus (e.g., Forristall et al., 2007; Lett & Grant, 1996; Hayashi et al., 2002; Heth et al., 2001; Nakajima, 2014; Nakajima et al., 2000). The former effect is also the case for laboratory mice: wheel running positively reinforces mice's lever pressing (Belk & Garland, 2007). The present study focuses on the latter effect in laboratory mice. Neophobic reaction to unfamiliar target food is conventionally habituated by repeated trials: mice gradually increase the consumption of the target food. However, the consumption remains low in mice that voluntarily run in activity wheels after the target food access. This effect implies that running yields Pavlovian conditioned flavor aversion, which suppresses, otherwise increasing, consumption of the target food. I present three recently published experiments and three unpublished experiments on running-based food avoidance learning in mice. All experiments are successful in demonstrating the effect.

SESSION 2A (Salón de Grados)

Monday 16th - 15:20 to 17:00

SESSION 2A (SALÓN DE GRADOS)

EFFECTS OF STIMULUS PRE-EXPOSURE IN HUMANS

MANUEL ARANZUBIA-OLASOLO, JAMES BYRON NELSON & Mª DEL CARMEN SANJUÁN
University of the Basque Country (UPV/EHU)

Two experiments determined the combined effects of reinforced (negative transfer) and non-reinforced (latent inhibition) stimulus pre-exposure in humans. In a video game task, Conditioned Stimuli (CSs) were presented in the form of colored "sensors" paired with an attack from a target spaceship (US). Participants learned to press specific keys (CR) to defend the galaxy against different ships (+ and !). Non-reinforced (LI) or reinforced (NT) pre-exposure to the CS or both (LINT) should retard learning to respond to the other ship. The results are consistent with the occurrence of both latent inhibition and Hall-Pearce negative transfer. Non-reinforced pre-exposure did not appear to affect later learning, but the effect could be disrupted by the absence of the stimulus in Phase 2. Reinforced pre-exposure to the CS retarded subsequent learning. When the stimulus received both reinforced and non-reinforced pre-exposure (LINT) the retardation effect was greatest. The results are discussed in terms of current debates on demonstrations of human latent inhibition, negative transfer effect, and the possibility of mutual outcome inhibition.

SESSION 2A (SALÓN DE GRADOS)

PERCEPTUAL LEARNING OF RELATIONSHIPS BETWEEN STIMULI

MARCELA LUGO, ROSALVA CABRERA & BERNARDO JIMÉNEZ
National Autonomous University of Mexico

Evidence about Perceptual Learning in humans has been widely reported, when discrimination is supported by absolute values of stimuli, for example: AX is same or different of BX? (Hall, 2009). However, the discrimination based in relational properties of the stimuli hasn´t received attention. This study evaluated the facilitation of a discrimination based in the relation between two stimuli properties in an experimental preparation of perceptual learning. In a series of experiments, the students were pre-exposed alternately with the stimuli AX/BX; the distinctive characteristics had a constant specific color (blue or red) associated to up or down position. During test, participants choose from a panel with 6 exemplars, the three correct stimuli according the pre-exposed rule (for example: blue-up). The results showed that the experimental groups (pre-exposed) had a greater percent of correct responses (70%) as when they were asked by one of the rules (AX or BX rule), as when they were asked about both, the two pre-exposed relationships (AX and BX rule), unlike the control groups, whose percent were at level chance (45%). This evidence allows to suggest that pre-exposure to examples of rules based on dimensional properties of stimuli facilitates the rules abstraction.

SESSION 2A (SALÓN DE GRADOS)

SALIENCE LOSS OF UNIQUE ELEMENTS AFTER THE INTERMIXED PRE-EXPOSURE OF AX AND BX.

ANTONIO A. ARTIGAS & JOSE PRADOS

University of Barcelona; University of Leicester

Using interference as well as acquisition of a conditioned response tests, the last experiments carried out in our laboratory have showed a reduction of effectiveness of the unique stimuli (i.e. A) after the intermixed pre-exposure to two compound stimuli (AX / BX) in comparison to a pre-exposure in separate blocks of trials (AX-BX). Taking the model of McLaren and Mackintosh (2000; McLaren, Kaye and Mackintosh, 1989) as starting point, we have suggested that stimuli are differently represented during intermixed or blocked pre-exposure to AX and BX. The intermixed would lead to the establishment of elemental representations of A, B and X; whereas the blocked would lead to stablish configural representations of the compound stimuli AX and BX. We discuss these results taking in account our approach (Artigas & Prados, 2014; 2017).

SESSION 2A (SALÓN DE GRADOS)

A FORLORN SEARCH FOR A SPACED-INTERVAL PRE-EXPOSURE ADVANTAGE IN A BIASED LOOKING TASK OF RECOGNITION MEMORY

JASPER ROBINSON & LEONA RYAN

University of Nottingham

Rodents' "Spontaneous Object Recognition" involves their pre-exposure to an object, "A" (e.g., a bottle) before a test with familiar, object A and novel object, B (e.g., a jug). Rodents bias their exploration of novel object B relative to familiar object B, during the test. We describe an analogous "Biased Looking Task": people were presented with image A (e.g., an elephant) on a computer screen before being viewing familiar, image A and novel image, B (e.g., an umbrella). On the test, participants biased their looking toward, novel image, B. For both rodents and people, recognition is objectively quantified by their bias toward novel B.

One analysis of recognition here that pre-exposure to allows a 'context' → object/image A association to form, which suppresses exploration/looking on test. But associative learning is offset by a short-term reduction in the processing of object/image A. Support for this analysis comes from rodent studies in which pre-exposure to object A occurs on multiple trials before testing. Spacing trials augments test performance. This could be the result of each successive presentation of object A having sufficient time to be more fully processed on the next trial, which allows better context → object learning than with shorter pre-exposure intervals.

We report findings from parallel experiments with the human Biased Looking Task. Experiments systematically varied pre-exposure intervals, the 'retention' interval before testing and explicitly manipulated the contextual stimuli. Despite this, we found no evidence of enhanced recognition with spaced pre-exposure trials—a finding challenging the generality of the rodent work and of its theoretical interpretation.

SESSION 2A (SALÓN DE GRADOS)

ASSESSING SELF-REINFORCING MECHANISMS OF STIMULUS COMPARISON USING OBJECT RECOGNITION IN RATS

GABRIEL RODRÍGUEZ & GUMERSINDA ALONSO

University of the Basque Country (UPV/EHU)

In previous experiments, using object recognition procedures, we found that rats pre-trained under conditions promoting stimulus comparison then transfer a tendency to compare other different stimuli in other contexts. We present new experiments supporting that this effect critically depends on the success in finding differences between the stimuli when comparing them during the pre-training. These results are consistent with the notions that detecting differences is intrinsically reinforcing in animals, and that the comparison response is susceptible of being modulated by this reinforcement.

Funding: Spanish Ministerio de Economía y Competitividad (Grant No. PSI2015-64309-P, MINECO/FEDER) and Gobierno Vasco (Grant No. IT-694-13)

SESSION 2B (Aula 0.04)

Monday 16th - 15:20 to 17:00

SESSION 2B (AULA 0.04)

BEHAVIOURAL INFLEXIBILITY UNDER NEGATIVE OUTCOMES AND GLUTAMATERGIC MODULATION IN HIGH COMPULSIVE RATS SELECTED BY SCHEDULE-INDUCED POLYDIPSIA

ÁNGELES PRADOS-PARDO, ELENA MARTÍN-GONZÁLEZ, SANTIAGO MORA, CARLOS MARTÍN, ANA MERCHÁN, PILAR FLORES & MARGARITA MORENO

University of Almería

Compulsivity is associated with the loss of inhibitory control over a broad range of behaviours that are prone to excess. Increased repetitive acts and behavioural inflexibility, could be under an alteration in the neurobiological mechanisms of learning and memory retrieval in vulnerable individuals. Our purpose was to test memory, cognitive flexibility, and fear acquisition and expression in compulsive rats selected by SIP, as well as to assess the therapeutic potential of different glutamate modulators in the same population. After 20 sessions, Wistar male rats (approx. 250 g) were selected as either high compulsive (HD) or low (LD) drinkers according to their level acquisition of water intake (ml) on SIP (fixed time schedule of 60s). Second, we assessed memory and cognitive flexibility in HD and LD rats by Morris water maze, novel object recognition memory and learning and memory retrieval by fear conditioning test. Finally, we measured the effects of acute administration (i.p.) of N-Acetylcysteine (25, 50, 100 and 200 mg/kg), memantine (3.1 and 6.2 mg/kg) and lamotrigine (15 and 30 mg/kg mg/kg) on compulsive drinking on SIP. HD rats showed an altered memory retrieval in the first trial in the reversal and in the extinction condition on the Morris water maze compared LD rats. These differences were also accompanied by a reduced fear extinction on the fear conditioned test. The psychopharmacological analyses revealed that the altered memory retrieval in HD rats might be related to a dysregulation in glutamatergic signaling compared to LD rats. Future studies on SIP as a model of compulsivity could contribute to identify the underlying mechanisms and improving the treatments for inhibitory control related disorders.

Funding: Ministerio de Economía y Competitividad (Spanish Government) and Fondo Europeo de Desarrollo Regional (Grant numbers: MINECO-FEDER PSI2015-70037- R, MICINN-FEDER PGC2018-099117-B-C21)

SESSION 2B (AULA 0.04)

CHOCOLATE-CRAVING REDUCTION: TARGETING INTRUSIVE THOUGHTS AND CONSEQUENT THOUGHT ELABORATION TRIGGERED BY PALATABLE-FOOD CUES

FELISA GONZÁLEZ, IRENE HINOJOSA-AGUAYO & DANIEL CRUZ
University of Granada

A priority challenge in managing healthy weight maintenance is the difficulty to resist the intense desire to consume excessive and unhealthy food in the presence of high-palatability edible cues. Craving, the urge to consume specific food regardless of the actual level of hunger, is a predictor of weight gain in lean as well as in overweight and obese individuals. Therefore, strategies for temptation control on craving-related eating are needed. Elaborated Intrusion Theory postulates that craving develops in two distinct stages. First, food cues automatically trigger craving-related intrusive thoughts; second, those are elaborated with vivid mental imagery, using working memory, where affective-charged sensory images are mainly maintained in the visuospatial sketchpad. The chief aim of our study was to compare the effectivity of two interventions, targeting either the impact of intrusive thoughts (cognitive defusion) or the elaboration of vivid mental elaborated imagery (loading visuospatial sketchpad), in the reduction of craving for chocolate induced in the laboratory in a sample of young women chocolate cravers. Additionally, we were interested in studying the relationship between the size of craving reduction, if found, and the reduction in both chocolate consumption, and unhealthy vs healthy food-choice. Our results suggest that visuospatial loading (unlike its control) and cognitive defusion (as well as its control) reduced self-reported craving; this reduction, in the case of cognitive defusion, or the final level of craving, in the case of loading the visuospatial sketchpad, predicted subsequent chocolate consumption in a bogus taste test. Funding: PSI2015-64345-R (MINECO-FEDER).

SESSION 2B (AULA 0.04)

RISKY DECISION-MAKING AND FLEXIBILITY THROUGH IOWA GAMBLING TASK: HEMODYNAMIC ACTIVITY AND SOMATIC MARKERS.

JOSÉ JUAN LEÓN DOMENE, ANTONIO GONZÁLEZ-RODRÍGUEZ, ÁNGELES FERNÁNDEZ ESTÉVEZ, PABLO SAYANS-JIMÉNEZ, FERNANDO CAÑADAS PÉREZ, FERNANDO SÁNCHEZ-SANTED & PILAR FLORES CUBOS

University of Almeria

Decision-making processes are essential for daily life activities. One of the neuropsychological tasks most widely used to assess these processes is the Iowa Gambling Task (IGT). In this task, participants have to learn to differentiate long-term advantageous choices from long-term disadvantageous choices. Due the task demands, flexibility seems to be a critical process in this learning. Following the somatic marker hypothesis, decision-making is strongly influenced by bioregulatory processes and emotion, so these choices should be related to different physiological responses. Impairments in IGT performance have been shown in patients with neuropsychological disorders such as pathological gambling and obsessive-compulsive spectrum disorders. Both disorders share a dysfunctional prefrontal activity as well as behavioral inflexibility. In order to explore the neurological bases and the role of physiological responses in risky decision-making and flexibility, healthy undergraduate students performed the IGT, followed by three reversal learning phases. Their skin conductance and their hemodynamic response were registered during the whole process. Results showed that orbitofrontal cortex and dorsolateral prefrontal cortex are differentially related to the performance in the IGT and reversal learning phases. The somatic marker hypothesis is discussed.

Funding: Ministerio de Economía y Competitividad, Spanish Government and FEDER (grants number PSI2015-70037-R, PSI2017-86847-C2-1-R and PGC2018-099117-B-C21).

SESSION 2B (AULA 0.04)

USING A MODEL OF AUTOSHAPING IN RATS TO DEVELOP COMPUTER APPLICATIONS TO IDENTIFY VULNERABILITY TO TRAITS OF COGNITIVE DISORDERS

JUAN PEDRO VARGAS, ALMUDENA SERRANO-BARROSO, ESTRELLA DÍAZ & JUAN CARLOS LÓPEZ
University of Sevilla

Animal models of mental illness could be useful tools to characterize indicators as biological markers to facilitate proper classification of the possible cognitive dysfunctions in humans. Recent studies have investigated impulsivity inter-variability among rats undergoing an autoshaping experiment, where a lever (conditioned stimulus, CS) is followed by delivery of a food pellet-reward into an adjacent food magazine. The endophenotypes that emerge from this procedure, might follow different behavioral patterns regarding to environmental stimuli and their influence in processing. On the one hand, the Sign Tracker profile would value the preceding stimuli. On the other hand, the Goal Tracker group shows a repetitive behavior at the arrival of the reward. The way these profiles respond to cues might predict vulnerability to impulsive behavioral disorders and could work as a model to evaluate individual differences regarding impulsivity and attention factors.

The aim of the present study is to develop a videogame application based on this autoshaping procedure in order to identify populations of children with propensity to impulsivity related to attention disorder. This tool would reduce time and number of tests to evaluate possible risk population and could serve as a preclinical screening for attention related dysfunctions.

The results of our study suggest that this videogame could help to identify propensity to impulsivity by differentiate between profiles associated with possible impulsive behavior and attentional problems in children from 4 to 5 years old.

Funding: PSI2015-65500-P grant (MINECO, FEDER, UE)

SESSION 2B (AULA 0.04)

SMALLER-SOONER OR LARGER-LATER? IMPULSIVE CHOICE IN ADOLESCENTS WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD).

PILAR FERNÁNDEZ MARTÍN, JOSÉ JUAN LEÓN DOMENE, ROCÍO RODRÍGUEZ HERRERA, ANA SÁNCHEZ-KUHN, ROSA CÁNOVAS LÓPEZ, MARGARITA MORENO MONTOYA, FERNANDO SÁNCHEZ-SANTED & PILAR FLORES CUBOS

University of Almería; Instituto de Neurorehabilitación Infantil, InPaula (EBT-UAL)

Inhibitory control is an essential executive function, necessary for psychological well-being and adaptative behavior. The majority of neuropsychiatric disorders share a deficit in inhibitory control manifested by the appearance of impulsive/compulsive symptoms. Impulsive decision-making, as the tendency to make rapid and risky decisions without adequate accumulation and consideration of the available evidence, is a core symptom of Attention-Deficit Hyperactivity Disorder (ADHD). This process have been traditionally measured by Temporal Discounting Tasks, which evaluate the preference of a small and immediate reward over a larger but delayed one. Impulsive choice, represented by the smaller-sooner reward, can be the result of alterations in reward processing and delay aversion. In this study, behavioral and neurofunctional measurements of impulsive choice were carried out in clinic-referred teens (ages 12–16) with ADHD and matched controls through a Temporal Discounting Task and functional Near-Infrared Spectroscopy (fNIRS). Participants prefrontal hemodynamic event-related response was recorded while they were performing a real-time Delay Discounting Task. Discounting rate of future rewards was calculated for each group. The different patterns of hemodynamic activity in specific prefrontal areas associated to behavioural performance are discussed.

Funding: Ministerio de Ciencia, Innovación y Universidades (Spanish Government) and Fondo Europeo de Desarrollo Regional (FEDER), PSI2015-70037-R, PSI2017-86847-C2-1-R and PGC2018-099117-B-C21.

SESSION 3 (Salón de Actos)

Tuesday 17th - 9:20 to 11:00

SESSION 3 (SALÓN DE ACTOS)

NICOTINE-INDUCED TOLERANCE DEVELOPMENT IN PLANARIA

FATIH SAL, GONZALO P. URCELAY & JOSÉ PRADOS
University of Leicester

Chronic nicotine exposure reduces sensitivity to the effects of nicotine, which then results in behavioural changes (i.e., tolerance development). In planaria, changes in locomotor activity following acute nicotine administration have been reported (Rawls, 2011), but it is unknown whether chronic exposure leads to tolerance development. Because planaria can be used as a first-stage preclinical model, here we assessed the acute and chronic effects of nicotine on the locomotor activity of planaria (*Dugesia*). In different experiments, we used different concentrations and lengths of exposure to nicotine. We tested for tolerance development as assessed by a reduced sensitivity of nicotine's effects, and the presence of conditioned compensatory responses. We observed that acute nicotine administration produced hypoactivity in a consistent concentration-dependent manner. However, we observed similar hypoactive responses to nicotine following acute and chronic administrations. Along with the absence of tolerance, we did not observe systematic conditioned responses with *Dugesia*. Lastly, we decided to test for tolerance development in a different species of planaria, the *Schmidtea Mediterranea*. In this species, we did observe tolerance development to the unconditioned effects of nicotine, but no conditioned compensatory responses. In summary, with the parameters tested, we observed the development of tolerance to the unconditioned effects of nicotine in the *Schmidtea Mediterranea* but not in the *Dugesia*.

SESSION 3 (SALÓN DE ACTOS)

HABITUATION LEARNING AS A TOOL TO STUDY THE REACTIVITY OF EARTHWORMS TO ENVIRONMENTAL STIMULI

CONCEPCIÓN PAREDES-OLAY, MARÍA JOSÉ F. ABAD, JUAN A. MEMBRIVE-GALERA & DAVID REYES-JIMÉNEZ

University of Jaén

Odours, lights and vibrations are part of the earthworms' ecological niche where these stimuli become potential cues for detecting predators of food. These are the stimuli that we employ in our experiments of habituation of head retraction response in earthworms. The head retraction response of earthworms is usually employed as dependent variable in behavioral experiments in which light, vibration and odour are used as stimuli. In these experiments we compare the habituation response to each of these stimuli under different conditions: inter stimulus interval, dishabituation and spontaneous recovery. The results of these experiments show a higher reactivity of earthworms to the light than to the odour or the vibration. Finally, both the pertinence of this kind of studies and the need of suitable behavioural indexes for the appropriate design and interpretation of behavioral experiments, will be discussed.

SESSION 3 (SALÓN DE ACTOS)

CONTEXT DEPENDENCE IN HABITUATION IN EARTHWORMS

DAVID REYES-JIMÉNEZ, MARÍA JOSÉ F. ABAD, JUAN A. MEMBRIVE-GALERA & CONCEPCIÓN PAREDES-OLAY

University of Jaén

The habituation has been considered one of the simplest phenomena in learning. The decreasing in the intensity of response to neutral stimuli is critical to the survival of the organisms. This non-associative learning has been deeply studied, but not evidences of contextual dependence in habituation have been found in earthworms. In this studies, the relationship between the recovery of the response of a habituated stimulus and the context where the habituation took place is tested. The earthworms, sensitive to odours, are habituated to a bright light in one odorous context, and changed to other one where the same stimulus is presented again. The increase in the number of responses in this second context was higher in the experimental group where the odorous context was different than in the control group where the context was the same. These results encouraged us to keep researching on this field providing additional evidences with a within-subject procedure.

SESSION 3 (SALÓN DE ACTOS)

CONTEXT SPECIFICITY OF LATENT INHIBITION IN THE SNAIL *CORNU ASPERSUM*

JUDIT MUÑIZ-MORENO, MANUEL RIVERO & IGNACIO LOY
University of Oviedo

Contextual specificity is relevant for associative learning theories and the study of associative learning in invertebrates is showing an increasing complexity in the psychological processes involved in these species. However, evidence on contextual effects in invertebrates is scarce. In this research, two experiments evaluated context specificity of Latent Inhibition (LI) using tentacle lowering conditioning in the snail *Cornu aspersum*, in which odours played the role of conditioned stimuli (CSs) and food the role of unconditioned stimulus (US). In Experiment 1 circadian cues (time of the day and lighting) played the role of contexts, while this role was played by just lighting in Experiment 2. The results showed that subjects preexposed to CS in a different context did not exhibit a retardation of the acquisition of the conditioned response (attenuation of LI).

SESSION 3 (SALÓN DE ACTOS)

HEAT SHOCK DISRUPTS MEMORY EXPRESSION AND RECOVERY FROM EXTINCTION IN PLANARIA

ZEHRA B. TUREL, JOSÉ PRADOS & GONZALO P. URCELAY

University of Leicester

In planaria, as seen in rodents, natural reinforcers (sucrose) and drugs of abuse support Conditioned Place Preference (CPP), which is a form of Pavlovian learning to examine the rewarding effects of drugs of abuse. Using this preparation, we have previously observed acquisition, extinction and reinstatement of sucrose CPP. In the present experiments, we used planaria to investigate extinction learning, and assess the effects of Heat Shock (HS, a known stressor in planaria) following different amounts of CPP extinction sessions. Experiment 1 showed that planarians developed a CPP response to a sucrose-paired surface. Heat shock did not reinstate the CPP response when given after 4 extinction sessions, instead it produced amnesia as assessed by a subsequent sucrose reinstatement test. We interpreted that the amnesic effect of HS was due to HS affecting the dominant excitatory memory at the time of HS exposure. Thus, we hypothesized that after extensive extinction training (10 exposures), HS would lead to recovery from extinction (when the new inhibitory memory is dominant at the time of HS exposure). Experiment 2 showed that Planaria given HS following 10 extinction sessions showed slightly higher (but not significant) CPP response to the sucrose-paired surface than the control group. In Experiment 3, we expected that 16 sessions would produce a stronger (and hence dominant) inhibitory trace, which then would be vulnerable to HS. We observed that HS had no effect on CPP following 16 exposures. These results reveal different effects of HS on CPP memories depending on the amount of extinction, and suggest that planaria is a promising pre-clinical model to assess extinction and its recovery.

SESSION 4 (Salón de Actos)

Tuesday 17th - 18:00 to 19:00

SESSION 4 (SALÓN DE ACTOS)

BIAS IN ASSESSING AWARENESS IN RESEARCH ON UNCONSCIOUS MENTAL PROCESSES

DAVID R SHANKS, SIMONE MALEJKA & MIGUEL A VADILLO

University College London; Autonomous University of Madrid

Studies of unconscious mental processes often compare a performance measure (e.g., some assessment of perception or memory) with an awareness measure (such as a verbal report or a forced-choice response) taken either concurrently or separately. A common practice is to eliminate from the analysis all participants who score above some threshold on the awareness measure in order to ensure that the assessment of performance in the remaining participants is uncontaminated by awareness. We show here that this practice can lead to the erroneous inference that a process is unconscious when it is not. Specifically, we demonstrate that the measured level of awareness in participants retained in the analysis typically underestimates their true awareness, often by a surprisingly large degree. This arises because of systematic bias caused by regression to the mean in the assessment of awareness.

SESSION 4 (SALÓN DE ACTOS)

CAUSAL ILLUSIONS CAN BE MODULATED BY POLITICAL ATTITUDES

FERNANDO BLANCO, BRAULIO GÓMEZ & HELENA MATUTE

University of Deusto

The causal illusion is a cognitive bias that induces beliefs of causality that are unsupported by evidence. Although causal illusions are typically understood as learning phenomena, and explained in associative terms, they could also include a social dimension. Here, we report two experiments framed in a political scenario, in which participants must judge the ability of a ruling political party to achieve improvements in citizens' well-being. In one condition, the political party is described as "left-wing", whereas in another condition, it is described as "right-wing". The actual contingency between the party's actions and the achievements was always null (i.e., their actions were completely useless to produce the achievement). However, we observed a causal illusion when participants judged the party with which they aligned ideologically. That is, left-wing participants tended to overestimate the effectiveness of the left-wing party in improving well-being, whereas right-wing participants showed exactly the opposite pattern. When interpreting these results, we suggest that causal illusions can occur selectively, or be modulated by attitudes, to protect previous beliefs and self-esteem.

SESSION 4 (SALÓN DE ACTOS)

THE ROLE OF ATTENTION IN THE ILLUSION OF CAUSALITY. AN ERP STUDY

ION YARRITU, JOAQUÍN MORÍS, ANTONI RODRIGUEZ-FORNELLS & HELENA MATUTE

University of the Basque Country (UPV/EHU); University of Málaga; Bellvitge Biomedical Research Institute (IDIBELL); University of Barcelona, Barcelona; Institució Catalana de Recerca i Estudis Avançats (ICREA); University of Deusto

Under certain conditions people develop illusions of causality, concluding that causal relationships exist between events that are actually uncorrelated. The generally accepted explanation assumes that, in order to assess causality, people do not use the information about the co-occurrence of events in a balanced way. This bias results in a greater impact of the cases in which the cause is present than those in which it is absent. However, the mechanism by which this differential processing occurs is still unclear. The present study uses Event-related brain potentials (ERPs) in order to explore the potential role of attention in this differential processing of cause-present trials and, accordingly, in the development of illusions of causality. We focused on the N1 ERP component, associated with visual processing and with early attentional processes. Participants were exposed to several causal learning situations in which cause and outcome events were always causally unrelated. Behavioral data showed the development of illusions of causality. In addition, we observed differences in the amplitude of the visual N1 component associated with stimuli representing the presence of the cause event and its absence, suggesting differential attention paid to them. The implications of that finding for the explanation of the illusion of causality are discussed.

SESSION 5A (Salón de Grados)

Wednesday 18th - 9:40 to 11:40

SESSION 5A (SALÓN DE GRADOS)

THE ROLE OF INFORMATION IN SIGNALED VERSUS UNSIGNALED OUTCOMES

ALEJANDRO MACIAS, ARMANDO MACHADO & MARCO VASCONCELOS

University Of Minho; University of Aveiro

Pigeons prefer an alternative that signals in advanced whether food will be available after a short or a long delay over one that doesn't (Bower, McLean & Meacham, 1966). We propose this preference arises because in nature this signaling gives the advantage for a more efficient behavior. For example, an animal can redirect its foraging efforts to another alternative if the long delay is significantly more costly (longer) than the short delay. Therefore, we tested if the preference for the signaled alternative varied depending on how different the delays were. In this study, pigeons chose between two alternatives that deliver food after a short or a long delay. For one of the alternatives the short and long delays were associated with distinctive cues (e.g. green for short, red for long). For the other alternative the delays were not associated with a specific cue (blue and yellow were presented randomly). Along different conditions, we manipulated the difference between the short and long delays but keeping the average delay to food constant. Animals preferred the signaled alternative. On average, this preference varied with the difference between the delays, however individual differences were founded. The results are discussed in terms of the role of information in choice.

SESSION 5A (SALÓN DE GRADOS)

STATE-DEPENDENT VALUATION LEARNING IN RATS: EFFECTS ON DELAY-DISCOUNTING

ÓSCAR GARCÍA-LEAL, ZIRAHUÉN VÍLCHEZ, JONATHAN BURITICÁ, HÉCTOR O. CAMARENA & ERICK BARRÓN

University of Guadalajara

If a subject learned about the properties of an alternative under a high state of food deprivation, such alternative will be preferred above a similar one during a later choice test, although the subject is currently under a relative state of satiety at the moment of choosing. The effect is explained through a process named State-Dependent Valuation Learning. This effect might be involved in a higher preference for long-larger alternatives in subjects previously food deprived, in comparison with subjects without a previous experience of deprivation. Sixteen male Wistar rats were trained to respond to an alternative, half of the subjects being under a high state of deprivation and half under a relative state of satiety. Twenty session later, their weight was recalibrated to a state of relative satiety. Afterwards, they were exposed to a delay-discounting task where the long-larger alternative was the one previously used during training. Rats that learned about the LL alternative under high deprivation level showed shorter latencies of response and a strong preference for this alternative than rats initially trained under a relative state of satiety. Our results suggest that the reinforcement value may be sensitive to the deprivation state during previous sequential encounters, which could affect the animal's preference during simultaneous encounters.

SESSION 5A (SALÓN DE GRADOS)

QUALITATIVELY-VARIED REINFORCEMENT HAS NO EFFECT ON SCHEDULE-INDUCED BEHAVIOR

FELIZDANIA HERNÁDEZ-HERNÁNDEZ, RAQUEL PASCUAL-BEATO, GABRIELA E. LÓPEZ-TOLSA, JESÚS CUITLÁHUAC NÚÑEZ SANTANA & RICARDO PELLÓN

National Distance Education University (UNED)

Qualitatively-varied reinforcement refers to the delivery of two or more consequences for the same operant response. It has been suggested that QVR should produce higher response rates than a single reinforcer. The aim of this study was to compare the lever pressing and wheel running response rates during a component in which qualitatively varied reinforcement QVR was available to those in which a single-reinforcer was available. Subjects were 8 experimentally naïve rats deprived of food and water. Rats were exposed to a multiple schedule with 3 components in which different consequences were available; food, water or either food or water (QVR) according to a variable interval 120-s schedule. Each component lasted 30 minutes. During the experimental sessions subjects had access to a running wheel. Response rates were higher during the food component, followed by those recorded during the QVR component and response rates were the lowest during the water component. The opposite occurred with wheel-running rates, which were higher with water than with QVR and lower with food. QVR did not produce higher rates of responding. A second experiment with a similar procedure but the rats received double amount of reinforcer (food, water and food and water) yielded similar results, but with higher response rates during the QVR component. Results are consistent with the hypothesis that schedule-induced behaviours behave as operants.

SESSION 5A (SALÓN DE GRADOS)

THE EFFECTS OF DIFFERENT PROBABILITIES OF REINFORCEMENT IN SUBOPTIMAL CHOICE PREFERENCE

VALERIA V. GONZALEZ, ARMANDO MACHADO, AARON BLAISDELL & MARCO VASCONCELOS
University of Minho; University of Aveiro; University of California Los Angeles

Suboptimal choice is often studied using a concurrent chain schedule with two initial links, A and B. Choosing A leads to one of two 10s terminal links, a rare (p=0.2) Red stimulus that always ends in food, or a frequent (p=0.8) Green stimulus that never ends in food. Choosing B leads to one of other two terminal links, a rare (p=.2) Blue or a frequent (p=0.8) Yellow stimulus, each ending in food with probability 0.5. Even though the overall probability of food in option A is 2.5 times lower than in option B, pigeons develop a strong preference for A. The reasons for this preference remain unclear, but the difference between the terminal link probabilities, D, seem critical. These differences are, typically, 1 in A (1-0) and 0 in B (.5-.5), yielding an overall D=D(A)-D(B)=0.5. We hypothesize that preference should increase as overall D increases, a sort of local contrast effect. Two experiments tested this idea. In Exp 1, we varied D (1, 0.5 and 0.0) and, as predicted, found a linear relation between D and preference. In Exp 2, D remained constant at 0.5 but it was obtained from different constituent D(A) and D(B): 0.5-0.0, 1.0-0.5, 0.9-0.4 and, 0.6-0.1. Contrary to our hypothesis, preference varied with the specific D(A) and D(B). In Experiment 3, we tested whether the Green stimulus (that usually predicts no food) acquires inhibitory properties. We found evidence for inhibition that it also correlates with preference. Together, the results highlight the variables that seem to be controlling the suboptimal behavior.

SESSION 5A (SALÓN DE GRADOS)

PERFORMANCE DURING A TRANSITIVE INFERENCE PROCEDURE IS AFFECTED WHEN PROBABILISTIC REINFORCEMENT IS INTRODUCED

HÉCTOR OCTAVIO CAMARENA PÉREZ

University of Guadalajara

Transitive inference (TI) has been understood as a logical conclusion of the form if A>B>C>D>E, therefore B>D. This logical conclusion has been studied in several species, such as: fishes, rodents, birds (pigeons and crows) and humans (children and adults). The basic procedure implies the training in a conditioned discrimination between pairs of stimuli: A+B-, B+C-, C+D-, D+E-. During the test the subject is exposed to untrained pairs (BD, AC, CE, AD, BE, AE). If the subject prefer B over D, TI is assumed. In the present experiment, five pigeons were exposed to the same conditional discrimination, but with probabilistic reinforcement. So that, positive stimulus (+) were associated with a .7 probability of reinforcement and negative stimulus (-) were associated with a .3 probability of reinforcement. The widely reported effects in TI tasks: serial position effect (SPE) and symbolic distance effect (SDE), were distorted. SPE is assumed when more extreme pairs are better solved than more central pairs during training. Consequently, performance during training takes the form of a "U" like shape (plotting correct responses from A to D). SDE is assumed when more extreme pairs are better solved than more central pairs. Thus, the performance takes the form of an ascending function (plotting correct responses from BD to AE). The obtained results are discussed in terms of the complexity of the task and the reinforcement effects.

SESSION 5A (SALÓN DE GRADOS)

THE PEBBLE IN THE SHOE: THE TEACHING OF MATH/STATS IN PSYCHOLOGY

ARMANDO MACHADO
University of Aveiro

It has become a commonplace to say that most undergraduate and graduate students in psychology have great difficulties in learning Statistics. They do not understand the fundamental concepts of the discipline, nor the procedures and techniques of data analysis that derive from them. As a consequence, Statistics classes are a recurrent source of frustration. To succeed in the discipline, students memorize algorithms without ever really understanding what they are doing. After the final exam, they quickly forget what they have learned; many confess they do not want to revisit the subject. Frustration is often felt by teachers as well. In this talk I examine the pebble in the shoe of every teacher of Math/Stats in Psychology, the reasons for the current state of affairs, and conclude with some suggestions on how to mitigate the problem.

SESSION 5B (Aula 0.04)

Wednesday 18th - 9:40 to 11:40

SESSION 5B (AULA 0.04)

A METHODOLOGICAL PROPOSAL FOR STUDY GENERALIZATION OF CONTEXT-SWITCH EFFECTS IN HUMANS.

FÁTIMA ROJAS-ITURRIA, RODOLFO BERNAL & JAVIER VILA
National Autonomous University of Mexico

Generalization decrement effect occurs when a discrepancy exists between elicited responding by the original and a novel CS. Two experiments explored the role of context during a generalization test after a second order matching to sample training with humans. A second order sample was used as physical context during acquisition which was varied during a generalization test after training. Experiment 1 was made for replicating the context-switch effect using a second order matching to sample procedure. Experiment 2 was made to investigate the generalization gradient of the variation of second order sample after training. In both experiments, participants were trained to respond to comparative stimulus X1 when a sample X was presented in presence of a second order sample A. In Experiment 1 after acquisition, a test with a new second order sample B was made. In Experiment 2 after acquisition, a generalization test with 3 variations of the second order sample were presented; One with the original second order sample and other two with variations of the angle orientation of the figure inside the sample. They were presented in 3 groups with different angles (G45, G90, and G135). Experiment 1, shows that a novel second order sample B during test decreases correct responses, replicating the context-switch effect. Experiment 2 shows that correct responses during generalization tests, were greatest during the original second order sample for all groups. But a gradual decrease of the responses occurred when orientation of the angle of the figure was varied in each group, showing a generalization gradient. These results suggest a new method to study context-switch effects and its generalization to new stimuli.

SESSION 5B (AULA 0.04)

BEHAVIORAL CONTROL OF OUTCOMES AND TIME IN RATS AND PIGEONS.

CRISTINA SANTOS, FEDERICO SANABRIA, MARCO VASCONCELOS & ARMANDO MACHADO
University of Minho; Arizona State University; University of Aveiro

The goal of this study was to assess how time and consequences compete for behavioral control when (1) they are both good predictors of reinforcement, (2) one of them is a better predictor than the other, or (3) they are both poor predictors of reinforcement. We used a midsession reversal task to set up a situation in which at least two discriminative stimuli can gain control of behavior: the outcome of the previous response, and the time into the session. In every trial, animals had a choice between two stimuli, responses to one were reinforced during the first half of the session, and responses to the other one were reinforced during the second half. Experimental results and model simulations suggest that rats and pigeons use time and consequences simultaneously, but in different degrees, to flexibly shift behavioural control and rapidly adapt to changing environments.

SESSION 5B (AULA 0.04)

SECOND ORDER CONDITIONING AND CONDITIONED INHIBITION UNDER DIFFERENT A+/AX TRIAL PROPORTIONS IN A MAGAZINE TRAINING PROCEDURE WITH WISTAR RATS

CLARA MUÑIZ-DIEZ, JUDIT MUÑIZ-MORENO & IGNACIO LOY
University of Oviedo

Training with an A+/AX design can lead to opposite results regarding responses to X: if X acquires excitatory properties, this effect can be named Second Order Conditioning (SOC); if X acquires inhibitory properties, this effect can be named Conditioned Inhibition (CI). In rats conditioned lick suppression procedure, it has been shown that few AX trials promote the appearance of SOC, while many AX trials promote the appearance of CI. This variable interacts with the temporal relationship between the stimuli in AX compound: an intermediate number of serial presentations promote SOC, while simultaneous presentations promote CI (Yin, Barnett & Miller, 1994; Stout, Escobar & Miller, 2004). Here are presented a series of experiments where different proportions of A+ and simultaneous AX trials are used in training and how this affects the appearance of SOC, CI or both phenomena along the sessions. With the same number of A+ and AX trials, SOC appears at the beginning of training, disappearing and turning into CI in the last sessions (according to a retardation test), whereas extreme proportions fail to produce both effects. These results provide further insight into the parameters under which SOC and CI appear and provide the first evidence of both phenomena along the same treatment. In addition, implications of the results for associative learning models are reviewed.

SESSION 5B (AULA 0.04)

CONTEXTUAL MODULATION OF EMOTION PROCESSING: BEHAVIORAL AND NEURAL EVIDENCE

LUIS AGUADO, TERESA DIÉGUEZ-RISCO & J. ANTONIO HINOJOSA
Complutense University of Madrid; European University of Madrid

Facial expressions of emotion (FEE) are a central feature of communication in human social interaction. In daily life FEE are not perceived in isolation but in the context of specific social and emotional encounters that modulate how expressions are processed and decoded. We here report selected results of a series of studies using behavioral (RT and accuracy) and electrophysiological measures (ERP, or event-related potentials). The common experimental paradigm involved the presentation of EFE pictures on the background of specific situational contexts (short sentences describing events related to different basic emotions). Our studies showed that 1) explicit evaluation of the meaning of facial expressions is influenced by their congruency with the context in which they are perceived; 2) congruency between the emotional meaning of the context and the target facial expression modulates neural activity indicative of face processing at perceptual (N170, a face-sensitive ERP component) and post-perceptual/evaluative stages (the congruency-sensitive N400 and the LPP, affect-sensitive ERP component); 3) contextual modulation of emotion processing interacts with task demands; and 4) congruency influences in a different way processing of faces expressing positive or negative emotions. These results have implications for general issues such as the relationship between affect and perception, the computation of affective congruency and the different structure of positive and negative emotions.

SESSION 5B (AULA 0.04)

EFFECTS OF STIMULUS INTENSITY ON RESPONSE ACQUISITION AND GENERALIZATION IN A BEHAVIORAL TASK WITH HUMANS

PAULA BALEA, MARÍA DEL CARMEN SANJUAN & JAMES BYRON NELSON

University of the Basque Country (UPV/EHU)

We reviewed the literature on the relationship between conditioned stimulus (CS) intensity and conditioned response (CR) strength. Overall, studies indicate that both variables are positively related, however, such a relation has seldom been found in humans, especially when between-subjects designs are used. Moreover, in humans, the effect has only been investigated using auditory CSs in galvanic skin response and eyelid conditioning procedures. By using a videogame task, we assessed the relationship between CS intensity and the CR along two conditioning phases in human participants. In phase 1, participants were trained to respond to a light that signaled an imminent spaceship attack. The light could be bright or dim (between-groups). In phase 2, the alternate stimulus was used. The intensity had no effect on phase 1 but had a small effect in phase 2, after participants had the opportunity to compare both stimulus intensities. An assessment of the shift that occurred between phases showed a slight generalization decrement only in the bright-to-dim group, allowing some room for improvement during phase 2 in that group. The absence of a decrement with the stimulus shift in the dim-to-bright group could be ascribed to the bright stimulus having energizing properties that compensate for the decrement.

SESSION 5B (AULA 0.04)

DOES SURPRISING REWARD OMISSION PLAY A ROLE IN BEHAVIORAL INVIGORATION UNDER REWARD UNCERTAINTY?

PATRICK ANSELME & MIKE J. ROBINSON

Ruhr-Universität Bochum; Wesleyan University

Reward uncertainty has been shown to invigorate rather than attenuate cue attraction and responding. For example, in autoshaping, partial reinforcement increases response rates to a conditioned stimulus (CS) in comparison with continuous reinforcement – a phenomenon referred to as the partial reinforcement acquisition effect (PRAE). However, identifying the nature of this effect remains a topical question. A traditional idea is that animals are not similarly sensitive to rewards and non-rewards, causing a contrast in responding to these two types of trials. Frustration theory posits that animals are frustrated by reward loss and predicts that enhanced responding results from higher response rates to CS presentations that follow non-rewarded trials rather than rewarded trials. Some studies suggest, however, that animals are relatively indifferent to non-rewarded trials and should instead exhibit higher response rates after rewarded trials. A third option is the incentive hope hypothesis, which posits that animals are motivated by ("hope" for) possible future rewards and predicts similar response rates after rewarded and non-rewarded trials. Our results, which mainly consist of a reanalysis of previously published data, are consistent with the incentive hope hypothesis, as no differences were found between trials that follow rewarded or non-rewarded trials, or between trials that follow small or larger amounts of food reward in rats. There was also no evidence for an accumulation of frustration across each training session, with rats instead displaying enhanced yet stable responding from beginning to end. New experimental results allowing a clarification of this contrast-motivation debate are also discussed.

SESSION 6A (Salón de Grados)

Wednesday 18th - 15:00 to 16:40

SESSION 6A (SALÓN DE GRADOS)

MORE IS BETTER THAN LESS: BEHAVIOURAL RESPONSE TO THE ENVIRONMENTAL CHANGES OF VARIOUS TYPES IN RATS

WOJCIECH PISULA, KLAUDIA MODLINSKA & ANNA CHRZANOWSKA
Institute of Psychology, Polish Academy of Sciences

The animal preference for complexity is most clearly demonstrated when the environmental change takes the form of an increase in complexity. Therefore, one of the potential difficulties in interpretation is that the preference for perceptual novelty may be confounded with the change in environmental complexity. In this study, the environmental complexity was controlled by manipulating with tunnels inside the experimental chamber. Adding new tunnels triggered a very profound change in behaviour, which was demonstrated by the animals' prolonged stay in the proximity of the novel objects, sniffing, touching, and climbing on top of the tunnels. The removal of the tunnels from the test arena turned out to have the least influence on behaviour compared to the other manipulations used in this study. The reduction of complexity of the tunnels had a moderate effect on rat behaviour. Tunnels are important elements in the rats' environment, since they provide various possibilities for hiding, resting or moving inside the tunnel. They may be treated as a good example of affordances in rat-environment interactions. The results of this study may therefore serve as a basis for constructing a modified theory of animal curiosity which could incorporate the concept of ecological psychology. Both published data and newly obtained are discussed.

SESSION 6A (SALÓN DE GRADOS)

SOURCE MEMORY ERRORS IN CHIMPANZEES (*PAN TROGLODYTES*) AND PRESCHOOL CHILDREN

GEMA MARTIN-ORDAS
University of Stirling

Human memory is not a perfect representation of past events but rather a process susceptible to distortion (e.g., false recollection). In the human literature, source memory errors (i.e., misattributing contextual features of a past event) are considered to be false recollections. The studies reported here addressed whether preschooler children and chimpanzees misattribute the source of two different past events. Using a reward-location paradigm, we show that chimpanzees' and younger children's memories for the location of a reward in a target task could be modified by the presentation of a different food location in an interference task – presented after the encoding of the target task. In contrast, older children's memories were not affected by the presence of the interference task. These findings have crucial implications for the understanding of the development and evolution of memory, in general, and the reconstructive nature of memory, in particular.

SESSION 6A (SALÓN DE GRADOS)

COMPARATIVE COGNITION ACROSS NINE UNGULATE SPECIES: INNOVATION, NEOPHILIA AND SOCIAL LEARNING.

ALVARO LÓPEZ CAICOYA, MONTSERRAT COLELL & FEDERICA AMICI

University of Barcelona; Max Planck Institute for Evolutionary Anthropology; University of Leipzig

Comparative studies on ungulate cognition are almost inexistent. Here we present a first direct comparison across nine ungulate species in a battery of three different tasks. The species included giraffes (*Giraffa camelopardalis*), dwarf goats (*Capra aegagrus hircus*), skudde sheep (*Ovis aries*), lamas (*Lama glama*), red deer (*Cervus elaphus*), dromedaries (*Camelus dromedaries*), guanacos (*Lama guanicoe*), przewalski's horse (*Equus ferus*) and barbary sheep (*Ammotragus lervia*). In a neophilia task, we compared individuals' feeding behaviour in the presence and in the absence of a novel object close to their feeder. In an innovation task, animals had to remove a lid in order to eat from novel cups. Finally, in a social learning task, we assessed whether individual colour preferences changed based on the other group members' choices. We tested different evolutionary hypotheses on the emergence of intra- and inter-specific differences in innovation, and specifically assessed the role played by several factors to test intra- and inter-specific variation in innovation and neophilia (e.g. sex, age, rank, social integration, exploratory skills, brain size, social structure complexity, dietary breadth). Our results showed important intra- and inter-specific differences in neophilia and innovation, with exploratory skills reliably predicting inter-individual differences in the ability to innovate. In the social learning task, we detected no changes in the individual colour preference. Overall, these results confirm ungulates as a good model to test evolutionary hypotheses, while at the same time expanding our knowledge about a range of species which have long been neglected by comparative psychology.

SESSION 6A (SALÓN DE GRADOS)

GEOMETRY LEARNING IN A NAVIGATION TASK: THE ROLE OF POOL-SHAPE DIFFICULTY AND PREVIOUS EXPERIENCE

AGUILAR, A., ROMERA, V., TORRES, M.N., & CHAMIZO, V.D.
University of Barcelona

In both rats and humans, males tend to outperform females when geometry learning. However in 2016 (Urrutia et al., SEPC) we presented a set of experiments showing that male and female rats did not differ when geometry learning in a rectangular-shaped pool. Those experiments also showed that all the rats learned very little with respect to a three-dimensional landmark which was also present during training. A final experiment compared the performance of females only when learning in two pool-shapes (in the absence of the landmark) and offered an explanation of the previous findings based on differential pool difficulty. The present Experiment 1 addresses this issue, while working with both males (Ex. 1a) and females (Ex. 1b). For all rats finding a hidden platform in the rectangular-shaped pool was quicker than in the triangular shaped-pool. Therefore when the problem was made substantially easier (i.e., in the rectangular-shaped pool), both males and females learned faster than when the problem was more difficult (i.e., in the triangular pool). Experiment 2, only with female rats, addresses the role of previous experience with geometry learning (the target dimension) when learning a second task where both geometry learning and landmark learning are now equally relevant to find the platform. Previous experience in geometry learning clearly benefited subsequent learning based on the geometrical cue in the second task. The results of Experiment 2 are consistent with an explanation based on selective attention (Mackintosh, 1975).

SESSION 6A (SALÓN DE GRADOS)

HEIDI: AN INTEGRATED MODEL OF PAVLOVIAN LEARNING AND PERFORMANCE

ROBERT C. HONEY, DOMINIC M. DWYER & ADELA F. ILIESCU
Cardiff University

Associative models of how Pavlovian conditioning influences behaviour are rudimentary. Their simplifying assumption is that there exists an ordinal mapping between associative strengths (Vs) and conditioned behaviour. For example, Rescorla and Wagner (1972; p. 77) noted that it was "*sufficient simply to assume that the mapping of Vs into magnitude or probability of conditioned responding preserves their ordering.*" The inadequacy of this simplification is highlighted by recent studies that have taken multiple measures of conditioned behaviour: With different measures providing the basis for contradictory conclusions about Vs. While Wagner and Rescorla (1972; pp. 303-304) and Pavlov (1941; pp. 373-378) acknowledged that individual differences might affect conditioning, there has been little appetite to address such differences (empirically or theoretically) and to move beyond simple (group level) assumptions about the translation of learning into performance. Here, we present a simple integrated computational model of how learning affects performance, HeiDI, which simulates qualitative individual differences in conditioned behaviour. The new model also provides an analysis of a broad range of phenomena, which are either beyond the scope of extant associative models or require additional (learning) processes.

SESSION 6A (SALÓN DE GRADOS)

ATTENTIONAL PROCESSES AND STIMULUS CODING IN SIGN AND GOAL TRACKERS

ESTRELLA DÍAZ, JUAN PEDRO VARGAS, ESPERANZA QUINTERO, MANUEL PORTAVELLA, JUAN JOSÉ VILLA & JUAN CARLOS LÓPEZ

University of Sevilla

One of the most interesting questions when we are evaluating cognitive processes is how individual differences could affect subjects' response. The high variability in response might be contingent on several factors, and some of them could serve as risk factors of possible mental disorders. One of the current animal models used to analyse these individual differences is focused on incentive salience of a conditioned stimulus(CS). Recently autoshaping have worked as a model to evaluate this process. This model focuses on the relationship between the subject, the response to the CS and the way to get the reinforcer. Considering the kind of response showed by animal before US releases, the model is able to divide populations in two groups, the named sign trackers (ST) and goal trackers (GT) (Flagel et al., 2011). In order to analyse if both populations show differences in CS processing, the present experiment studied the responses of a cohort of rats to different presentations of a stimulus in a latent inhibition procedure. This procedure is able to measure the response of animals to different CS contingencies, testing their attentional capacity. The use of several types of exposure to CS will allow us to observe how ST and GT populations transfer from a controlled to an automatic process. This is a relevant fact for its relationship with attentional mechanisms, given that a reduced ability to not attend to irrelevant stimuli could be a vulnerability trait. Furthermore, if both groups show different responses to the future CS, we might use this model to identify modulation factors of cognitive processes.

SESSION 6B (Aula 0.04)

Wednesday 18th - 15:00 to 17:00

SESSION 6B (AULA 0.04)

SUCCESSIVE NEGATIVE CONTRAST IN HUMANS: DISSOCIATION BETWEEN AFFECTIVE AND BEHAVIORAL MEASUREMENTS

MORILLO-RIVERO, L., IBÁÑEZ-MOLINA, A., FERNÁNDEZ, S. & TORRES, C.
University of Jaén

The main aim of the present study was to analyze the impact of a sudden reduction in the magnitude of an expected reward on performance and affective states in humans. One hundred and twenty one students performed Raven's Progressive Matrices test and received positive (correct) or negative (incorrect) feedback after each trial, and a cumulative score according to the presented feedback. Participants were first asked about their performance expectancy (in terms of final cumulative score) and were assigned to two groups depending on their stated expectancy. The successive negative contrast (SNC) group (high performance expectancy) was exposed to the abrupt devaluation of the cumulative score (from 20 points in a preshift phase to 3 points in a posthift phase). The control group (low performance expectancy) received a cumulative score according with their expectancy throughout the training phase. Accuracy, reaction time, and pre-and post-task subjective measurements of positive and negative affective states were used as dependent variables. The SNC group exhibited higher accuracy and lower reaction time in preshift phase compared to postshift phase, whereas the opposite results were found in the control group. No group differences were found with respect to affective states, both exhibiting an increase in negative affect (anger, frustration) and a decrease in positive affect (joy, pleasure) after completing the task. The present results indicate a dissociation between behavioral (accuracy, reaction time) and affective measurements (self-report) in situations involving reward loss. SNC was detected in behavioral measurements, but not in self-report affective measurements.

SESSION 6B (AULA 0.04)

AUGMENTED ALCOHOL CONSUMPTION INDUCED BY REWARD LOSS: EFFECTS ON BEHAVIOR IN THE HOLE BOARD TEST

ROCÍO DONAIRE, NOELIA SERRANO, MAURICIO R. PAPINI & CARMEN TORRES

University of Jaén; Texas Christian University

Rats exposed to reward downshift increase 2% alcohol (A) intake in a 2-h, free-choice preference test which also offered water (W). In a previous study, this effect was accompanied by augmented general activity in the elevated plus maze test with translucent closed-arm walls (Donaire et al., 2018, Behav Proc, 150, 59-65). We will present data on a similar design using the hole board (HB) test, a procedure also used to assess anxiety in rodents. Sixteen food-deprived females Wistar rats, with prior experience with partial or continuous reinforcement (PR, CR) training in a runway, received 32% sucrose for ten 5-min daily sessions (preshift) and were then downshifted to 4% sucrose for 5 trials (postshift). Immediately after each session, rats were tested in a 2-h, 2-bottle preference test for 2% A vs. W (Group A) or W vs. W (Group W). On postshift sessions 1 and 2, animals were exposed to reward downshift, followed by the preference test, and finally received a 6-min HB test. Sucrose downshift significantly reduced fluid intake in Group A and W (previous experience, PR vs. CR, had no measurable effect). Fluid consumption was higher in Group A than in Group W on postshift session 1, but not on preshift session 10, thus replicating the increase in alcohol consumption after reward downshift. This increased alcohol consumption was followed by augmented head-dipping frequency in the HB test on postshift session 1 in Group A relative to Group W. The results are discussed in terms of the anxiolytic effects of alcohol on negative affect induced by reward loss.

SESSION 6B (AULA 0.04)

RELATIVE AND ABSOLUTE REWARD VALUE IN FREE-CHOICE CONSUMMATORY BEHAVIOR

SARA GUARINO, SHANNON E. CONRAD & MAURICIO R. PAPINI
Texas Christian University

A negative discrepancy between expected and actual rewards can reduce the value of the actual reward and cause a revaluation of an option signaling an unshifted reward in a choice situation. These effects illustrate reward relativity. For example, rats trained in a 2-lever autoshaping situation with large and small rewards, prefer the lever signaling the large reward in free-choice trials. However, after a large-to-small reward devaluation, choice switches to the unshifted lever that always offered the small reward (Conrad & Papini, J Exp Psychol: Anim Learn Cog, 2018). Would similar reward revaluation be detected in consummatory behavior? In Experiment 1, two groups of rats received alternating exposure to 16% vs. 2% or 4% vs. 2% sucrose in different bottles. Occasional free-choice trials in which both bottles were simultaneously presented were also administered until a preference for the large reward was detected. As expected, preference for the large reward was a function of the size of the reward disparity (i.e., greater in 16-vs.-2% than in 4-vs.2%). After the downshift, free-choice responses adjusted in both groups without showing evidence of revaluation (i.e., without a switch in preference to the unshifted reward). Experiment 2 replicated the same training procedure, but free-choice trials were administered on a separate session with empty bottles. Again, the magnitude effect was a function of the size of the discrepancy. Rats also showed a reduction of responding for the downshifted bottle, but there was no evidence of revaluation of the unshifted reward. Consummatory behavior is usually quite sensitive to reward relativity, but free choices uncovered strong control by absolute reward value.

SESSION 6B (AULA 0.04)

ACTIVITY AS GOAL-DIRECTED BEHAVIOR IN ACTIVITY-BASED ANOREXIA

PEDRO VIDAL, ANA DE PAZ & RICARDO PELLÓN
National Distance Education University (UNED)

Anorexia Nervosa (AN) is a disorder characterized by the high failure of treatment approaches, both psychological and pharmacological. The low rate of clinical success may be due to a mischaracterization in most commonly used classifications, which implies a therapeutic approach focused on non-nuclear symptoms and delayed diagnosis. Activity-based anorexia (ABA) protocol has been widely accepted as an animal model of the disorder. Experimental evidence in ABA shows that excessive activity could be a crucial factor in the development of the phenomenon. The aim of this presentation is to review the results from animal research using the ABA model with an emphasis on the evidence and possible explanatory mechanisms of this excessive activity. Results obtained in our laboratory suggest that the combination of food restriction and exercise is the way to develop anorexia. Increased activity is a common foraging response in mammals subjected to food restriction. This activity in humans is expressed more frequently under diet, which facilitates its subsequent increase by mechanisms of reinforcement and induction. It has been proposed that cultural contingencies encourage people to be involved in diet regimes and exercise, which in some individuals may lead to the combination of strong food restriction and hyperactivity, initiating the cycle of anorexia. This analysis is in line with historical descriptions of the disorder and new clinical and research evidence that reports an excessive physical activity in a high proportion of diagnosed patients. Based on basic research data of several studies that point in the same direction, it is proposed a different framework that can guide future research and clinical approaches to AN.

SESSION 6B (AULA 0.04)

NEUROPLASTIC CHANGES UNDERLYING INHIBITORY CONTROL DEFICIT IN A PRECLINICAL MODEL

SANTIAGO MORA, ANA MERCHÁN, SUSANA AZNAR, PILAR FLORES & MARGARITA MORENO
University of Almería; Bispebjerg-Frederiksberg University Hospital

Schedule-induced polydipsia (SIP), an excessive drinking behavior that arises under intermittent reinforcement in food-deprived animals (Falk, 1961), is considered as a valid model of compulsivity (Platt et al, 2008; Moreno and Flores, 2012). Differences between high (HD) and low drinkers (LD) on SIP concerning serotonin 5-HT2A receptors (Navarro et al, 2015, Mora et al, 2018) have been reported, as well as neuroplastic changes such as increased dendritic spine density in striatal neurons (Ibías et al, 2015), reduced myelin basic protein levels in corpus callosum, striatum and amygdala (Navarro et al, 2017) and increased c-Fos expression in basolateral amygdala (BLA) (Merchán et al, 2019) in compulsive drinker rats.

The present study investigated the volume and 5-HT2A receptor binding of inhibitory control-related brain structures: prefrontal cortex, BLA and hippocampus (HC): male Wistar rats underwent SIP and were selected as LD or HD; then, after one month off, half of each group was re-exposed until reaching the previous drinking levels. Last, brains were collected for volumetric and autoradiographic analyses. Re-exposed HD rats (HD-RE) showed higher BLA and lower HC volume compared to non-re-exposed HD (HD-NRE) and re-exposed LD (LD-RE); higher BLA 5-HT2A receptor binding was found in non-re-exposed LD rats (LD-NRE) compared to HD-NRE and to LD-RE. These results converge with findings in both human and animals reporting 5-HT2A and structural differences underlying inhibitory control deficit under stressful contexts, stablishing a putative role in the development of the vulnerability.

Funding: Ministerio de Economía y Competitividad and Fondo Europeo de Desarrollo Regional (FEDER): PSI2015-70037-R, PGC2018-099117-B-C21 and EEBB-I-16-11260

SESSION 6B (AULA 0.04)

HALOPERIDOL-BASED CONDITIONING OF LOCOMOTOR ACTIVITY, BUT NOT CONDITIONED CATALEPSY, IS AFFECTED BY CLASSICAL CONDITIONING FACTORS

LUIS GONZALO DE LA CASA, Mª FRANCISCA ARIAS, LUCÍA CÁRCEL, LUIS ELADIO GÓMEZ-SANCHO, Mª AUXILIADORA MENA & JUAN CARLOS RUIZ-SALAS
University of Sevilla

The effects of administering the dopaminergic antagonist haloperidol on locomotor activity are dependent on the dose administered: while low doses induce an increase in locomotor activity, higher doses produce the opposite effect. Previous experiments in our laboratory have shown that repeated administration of 0.5 mg/kg of haloperidol (US) in the presence of the same context (CS) gives rise to conditioned catalepsy when the drug-free test consists in placing the front paws of the animal in a elevated bar, whereas a conditioned increase in activity is observed when the spontaneous locomotor activity is recorded over a long period of time. In order to check whether both types of responses are based on processes of pavlovian nature, we conducted two experiments including two manipulations that disrupt conditioning in typical classical conditioning procedures (specifically, to preexpose the to-be-CS, and to increase the Inter Stimulus Interval length). The results revealed that these manipulations were effective in reducing the conditioned increase of the locomotor response, but did not affect to catalepsy, which seems to indicate that both types of responses could be determined by different learning processes.

Funding: PSI2015-64965-P grant from Spanish Ministerio de Economia y Competitividad

POSTER SESSION (Main Hall)

Tuesday 17th - 15:20 to 17:00

THE RELATION BETWEEN IMPULSIVE DECISION-MAKING AND ENVIRONMENTAL ATTITUDES

ANA SÁNCHEZ-KUHN, PILAR FERNÁNDEZ-MARTÍN, FERNANDO SÁNCHEZ-SANTED & PILAR FLORES
University of Almería

Inhibitory control is an executive function that is present in most of the actions performed in our daily life, and is also related to beliefs and attitudes. The lack of inhibitory control can lead to impulsive-decision making, which can be translated into actions followed by negative consequences. In addition, impulsive-decision making seems also to be related with certain beliefs and attitudes. Following this premise, in the present study we counted with a healthy population of undergraduate students and we undertook different measures to asses impulsive decision-making, such as the Probabilistic Delay Discounting Task (DDT) and autoinformed measures of impulsivity and compulsivity traits. For the aim of the study, we assessed the "pro-ecological" world view through the New Ecological Paradigm (NEP) scale. The results are discussed based on the relation between impulsive decision-making and a pro-environmental attitude.

ON THE GENERALITY OF TETRIS AS AN AMNESTIC

COURTENEY T. L. FISHER, PARINITA PAUL & GONZALO P. URCELAY
University of Leicester

Recent research has suggested that a relatively simple behavioural approach (e.g., engaging visuospatial cognitive resources) can attenuate involuntary memory intrusions following exposure to a traumatic event (viewing of aversive film clips). Because this approach is not invasive, and thus has therapeutic potential, we wanted to assess the generality of this phenomenon on two voluntary declarative memories (languages and eye-witnessed events). In Experiment 1, human participants learned English-Swahili and English-Finnish word lists on day 1. On day 2, participants were asked to retrieve one of the two lists and immediately after play Tetris (visuospatial task) or Who Wants to be a Millionaire (control task). On day 3, participants were tested on both lists. We observed better recall of the list that was retrieved on day 2 (i.e., a testing effect), irrespective of which task participants engaged with after retrieval. Thus, we observed that retrieval enhanced memory expression, but no effect of the visuospatial task. In Experiment 2, we assessed the effect of the visuospatial task (or control) when given immediately after viewing a clip of an office theft (i.e., an eye-witnessed event). Participants were tested a day later with a cued recall test regarding the events witnessed in the office theft clip. As in Experiment 1, we did not observe an effect of the visuospatial task – both groups performed similarly during the test in terms of correct, incorrect and blank responses. Overall, these findings suggest that the effects of the visuospatial task (Tetris) on memory expression may be limited to involuntary declarative memories.

COGNITIVE FLUENCY MODULATES THE ASSOCIATION BETWEEN EYEWITNESS MEMORY AND LATENT INHIBITION.

GABRIEL RODRÍGUEZ, FERNANDO RODRÍGUEZ-SAN JUAN, ANDREA PÉREZ & UNAI LIBERAL
University of the Basque Country (UPV/EHU)

In the present study, we continue assessing the possible association between eyewitness memory and latent inhibition (LI). Participants performed three tasks in different sessions: a LI task, an alternative uses (AU) task, and the task in which they reported a testimony after watching a short video (1 min) of a robbery. We found a relation between LI and the quality of the testimonies which was modulated by the level of fluency showed in the AU task. Participants with low fluency and no LI offered fewer details about the stolen object and the scenario than participants that showed LI. However, participants with high fluency and no LI included more infrequent details in their testimonies than participants that showed LI. These results are consistent with a shared vulnerability model of the creative/psychopathology relationship. According to this, a deficit in LI will be related with attentional advantages only in the presence of additional cognitive strengths.

Funding: Spanish Ministerio de Economía y Competitividad (Grant No. PSI2015-64309-P, MINECO/FEDER) and Gobierno Vasco (Grant No. IT-694-13)

EXPERIENCING CONSUMMATORY SUCCESSIVE NEGATIVE CONTRAST FACILITATES SUBSEQUENT TEMPORAL CONDITIONING IN RATS

PEDRO M. OGALLAR, JOSÉ A. ALCALÁ, JOSÉ E. CALLEJAS-AGUILERA & JUAN M. ROSAS
University of Jaén; University of Leicester

Previous results from our laboratory have shown that the experience of discrimination reversal facilitates subsequent acquisition of a temporal discrimination (Alcalá, Callejas-Aguilera, Lamoreoux, & Rosas, 2019). With the goal of testing whether a similar facilitation of learning may be found after experiencing other forms of interference, we conducted an study in which we explored whether the experience of Consummatory Successive Negative Contrast (cSNC) may facilitate subsequent acquisition of a temporal discrimination in rat's appetitive conditioning. During ten days, two groups of animals received access to sucrose at either 32% or 4%. The next three days rats received two daily sessions: a consummatory one in which both groups received 4% sucrose, immediately followed by a temporal conditioning session in which all rats received food under a fixed time schedule of 60 seconds. Sucrose concentration was reduced from 32% to 4% in group 32-4, while it remained at 4% in group 4-4. Consumption in group 32-4 after the shift in the sucrose concentration fell below consumption in group 4-4, showing the well-known cSNC effect. Notably, subsequent temporal conditioning developed faster in group 32-4 than in group 4-4, suggesting that the experience of cSNC facilitated subsequent learning of a temporal discrimination. Results are discussed in terms of current associative theories of human and nonhuman conditioning and attention.

TESTING THE AUTOMATICITY OF PREDICTIVENESS-DRIVEN ATTENTION: THE EFFECT OF TASK DIFFICULTY

MINA JEVTOVIĆ, TOM BEESLEY & DAVID LUQUE

Autonomous University of Madrid; University of Málaga; Lancaster University; UNSW Sydney

It is well established that associative learning, such as learning new cue-outcome pairings, produces changes in attention: Those cues that are good predictors of relevant outcomes become prioritized compared to those that are non-predictive or redundant. This change in attentional processing is known as predictiveness-driven attention. Whether this process is voluntary or automatic in nature is being debated in the literature. While some studies show that top-down goals can completely revert a previously learned predictiveness-driven attentional bias, emphasizing this way the voluntary component of the predictiveness-driven attention, others have argued that predictiveness-driven attention is involuntary and automatic in nature. In order to test the automaticity of this attentional effect we tested two groups of participants preforming both, an associative learning (AL) and a dot probe (DP) tasks. Participants first learned cue-outcome relationships through the AL in which some cues were predictive and others not; attention to predictive and non-predictive cues were later tested on DP trials. The groups differed in overall task demands, given that in the more demanding group AL and DP alternated between each other on every trial, whereas in the less demanding group participants completed longer runs containing eight trials of each type in a row. Results showed that participants prioritize predictive over non-predictive cues regardless task difficulty. Overall, these findings are in line with the literature arguing the automatic nature of predictiveness-driven attention.

PROBABILISTIC CUING OF VISUAL ATTENTION: IMPLICIT AND INFLEXIBLE?

TAMARA GIMÉNEZ-FERNÁNDEZ, DAVID LUQUE, DAVID R. SHANKS & MIGUEL A. VADILLO
Autonomous University of Madrid; University of Málaga; University College of London

In probabilistic cuing of visual search a target object appears more frequently in one region of the search display (e.g., a 'rich' quadrant). This task results in a search bias towards the rich area. Previous results suggest that this bias is both inflexible (once developed it is difficult to unlearn) and implicit (participants seem to be unaware of the biased distribution of targets). In the present study, we hypothesize that those results may have been due to a lack of statistical power and to the inclusion of an unbiased testing stage immediately before the awareness assessment (usually recognition). Participants (N = 160) completed a biased learning stage (with the target appearing more frequently in the rich quadrant) followed by an unbiased testing stage (with the target evenly distributed) and performed a recognition test either after the biased learning stage or after the unbiased testing stage. For the recognition test, they indicated on a 6-point scale whether the target location was biased and ranked each quadrant by how often it contained the target. Search times supported the hypothesis that the bias towards the rich quadrant learnt during the biased stage was attenuated during the unbiased testing stage. In addition, recognition responses suggested that both groups were aware of the bias. Importantly, the unbiased stage affecter participants' reported awareness of the bias. We conclude that probabilistic cuing is flexible and, at least to some degree, explicit. We also conclude that the presence of an unbiased stage can affect the results of an awareness test. Future studies should employ sample sizes that provide adequate statistical power to obtain reliable results.

THE EXPERIMENTAL STUDY ON EXTINCTION OF DISCRIMINATED AVOIDANCE BEHAVIOR IN HUMANS

JOSUÉ DOMÍNGUEZ-MARTÍNEZ, FÁTIMA ROJAS-ITURRIA & JAVIER VILA
National Autonomous University of Mexico

During the discriminated avoidance, if a response is emitted during the signal the aversive stimulus will not occur. The most accepted theoretical approach to explain the maintenance of avoidance behavior is two-factor theory, which proposes an interaction of Pavlovian and instrumental conditioning. A great resistance to extinction is a typical characteristic of avoidance behavior. The aim of the present study was to compare two extinction procedures in human avoidance learning to compare their resistance to extinction. Twenty-seven participants learned a discriminated avoidance virtual task, in two phases: a) Pavlovian phase: pairing of two signals (CS1 and CS2) with an aversive noise (90dB, 60Hz), and b) instrumental phase: If R1 and R2 responses were emitted during CS1 or CS2 respectively, aversive noise was avoided. During the extinction phase, all the participants were assigned to three groups: 1) US: where response R1 ended with the aversive noise, but not with CS1, 2) CS: where response R1 ended with the signal CS1, but not with the aversive noise and 3) CS-US: where response R1 don't terminate both of them. In all groups, R2 continued avoiding the aversive noise if it occurred during CS2. Results showed the extinction of the avoidance response R1 only in groups CS and CS-US. The extinction of R1 observed in CS- US group may be due to the difference of the trials during acquisition and extinction phases. While in the US group, where the response finished the signal the avoidance response was extinguished. These results emphasize the role of the signal in the maintenance of avoidance behavior.

EFFECT OF DENSITY ON DISCRIMINATION OF FOOD QUANTITIES IN ANGELFISH (*PTEROPHYLLUM SCALARE*)

LUIS M. GÓMEZ-LAPLAZA
University of Oviedo

An ability to discriminate between sets with different quantity of food items has rarely been investigated in fish. A few findings, however, indicate a preference for sets with large over small quantities. The role played by food item size has also been found to be important in the discrimination, but another potentially important non-numerical variable, food density, has not been investigated. Here, the influence of density (inter-item distance) in the decision-making process of food discrimination was examined in angelfish (*Pterophyllum scalare*). In a binary choice task, the number and size of food items was kept constant, but a set containing food items spaced further apart (sparse set) was contrasted to another set with food items spaced more closely (dense set). Sets constituted by small (3 vs 3 food items) and large number range (5 vs 5 food items) were presented with different spatial arrangements of the food items in the sets. Contrary to expectations, angelfish showed a preference for the sparse sets over the dense sets in the 5 vs 5 contrasts, but exhibited no preference in case of the 3 vs 3 contrasts. By lengthening the inter-item distance in the dense sets, a preference for the dense over the sparse sets was found, while the spatial configuration of the items in the sets had no effect in the discrimination. Overall, these results indicate that higher density of the contrasted food item sets significantly influences choice in angelfish, which prefer denser sets if a clear discriminability of each individual item within the sets is provided.

HUNGER AND SATIETY DETERMINE FORAGING DECISSIONS IN LAND SNAILS: EVIDENCE FROM THE INVASIVE SPECIES *THEBA PISANA*

MARCIAL RODRÍGUEZ BUJÁN & IRENE GARCÍA ROJAS
University of Granada

The foraging behaviour of gastropod molluscs usually involves complex decisions that provide a model for the study of high-order cognitive processes. Land snails tested for food-finding in the laboratory, however, have shown an invariable feeding pattern: novel foods are mostly missed (i.e. just found by chance) whilst familiar foods, due to a type of conditioned attraction, are always located and ingested. This effect, known as Food-attraction conditioning, has led to the conclusion that, regardless of their hunger level, land snails are both willing to eat anything at any moment and also blind to the odours of novel foods. An alternative account of these findings emerges from the fact that the snails are usually tested whilst in a moderate state of hunger, so that they benefit from feeding on known foods but not from taking the risk of feeding on those that are unknown. The present experiments suggest that it is the case. Snails of the invasive species *Theba pisana* were tested for food-finding according to their seasonal cycle in a laboratory located in their native Mediterranean region. Subjects collected at the beginning of their aestivation period succeed in locating novel food items after being deprived for a long period (45 days), but ignored a conditioned food when they were sated with this food at the end of their lethargy. The results allow us to conclude that the feeding behaviour of snails is the product of a complex cost-benefit analysis in which their motivational state and the stimuli they perceive (and the memory of such stimuli), are evaluated. Finally, we anticipate that these results will be of use in increasing the efficiency of current baits employed for the protection of crops.

EFFECTS OF THE INTERTRIAL INTERVAL IN EXTINCTION OF THE PAVLOVIAN CONDITIONING AND ANALYSIS OF THE SPONTANEOUS RECOVERY IN THE HABITUATION IN THE EARTHWORM (*EISENIA FOETIDA*)

ALEJANDRO LUQUE, PAULA IZQUIERDO & ROBERTO ÁLVAREZ
University of Almería

In experiment 1, we analyzed the effect of the intertrial interval in extinction of the Pavlovian conditioning using as a subject a species of earthworm (*Eisenia foetida*). The results allow us to conclude that this type of invertebrate is able to learn the association between a vibratory stimulus (CS) and a light stimulus (US) reproducing some basic phenomena of conditioning. In the second experiment, the phenomenon of spontaneous recovery after habituation of the response to a light stimulus was evaluated. Two interim intervals were used on the habituation response to a light stimulus of 30 vs 60 seconds to check the recovery of the response after a rest interval of 30 minutes versus 60 minutes. These data allow the behavioral characterization of an invertebrate species whose data in the literature are scarce. The psychological characterization of the earthworm contributes to the development of comparative psychology and its possible use as a model to study the effects of manipulations of the nervous system on psychological processes.

EXTINCTION OF LEARNED PLACE PREFERENCES IN HUMANS: THE PARTIAL REINFORCEMENT EXTINCTION EFFECT

CRAIG SPERRY, BEATRIZ ALVAREZ & JOSE PRADOS
University of Leicester

Although extinction of learned place preferences have been assessed in the spatial domain in rats and mice, no such evidence is available in human participants. In the present study, using a virtual spatial learning task, human participants were trained to develop a place preference. For the participants in the Group Continuous, the visit of a particular area in the virtual environment was always rewarded; for the participants in the Group Partial, however, the reward was present only in 75% of the trials (a partial reinforcement schedule). Following the acquisition phase, all the participants were given extinction trials in the absence of reward. The participants trained under a continuous reinforcement schedule showed evidence of extinction (they performed at random level after a few extinction trials). The participants in the Partial group, however, showed resistance to extinction—a partial reinforcement extinction effect. These results show that extinction of learned place preferences in humans is ruled by the same principles that govern extinction in standard conditioning preparations.

THE EFFECT OF GOAL-LANDMARK DISTANCE ON COMPOUND CONDITIONING CAN LEAD TO POTENTIATION IN HUMAN SPATIAL LEARNING

TORU TAZUMI, ESTIBALIZ HERRERA DE LA LLAVE, JOSÉ PRADOS & GONZALO P. URCELAY

Bunkyo University; University of Leicester.

Previous studies have revealed that cue competition and facilitation phenomena in compound conditioning depend on several variables such as contiguity, relative duration and contingency (Urcelay, 2017). The aim of this study was to see whether spatial contiguity (i.e., landmark-goal distance) affects learning about geometry (overshadowing or potentiation) in human participants. The task consisted on finding a hidden goal in a trapezium-shaped arena (Geometry) with or without a cube as a landmark. Critically, we varied the size of the arena (Small vs Large), and whether a landmark was present during training or not (Landmark vs Control). In Experiment 1, participants who were trained in either small or large environments and in the presence of a landmark spent significantly longer time in the goal region during tests without landmark compared to control groups. These results show that potentiation of geometric learning by the landmark occurred in small and large environment sizes. The results of the groups trained in the Small arena are inconsistent with previous experiments that revealed overshadowing of the geometric learning by the landmark close to the goal (using similar parameters; Redhead et al., 2013). In Experiment 2 (currently under completion), we used a similar design but with shorter duration of the training trials than Experiment 1. Overall, these results suggest potentiation of geometry by landmarks.

PLACE VERSUS RESPONSE LEARNING IN THE HERMIT CRAB

VALERIA V. GONZALEZ & AARON BLAISDELL

University of Minho; University of California Los Angeles

It has been a fundamental issue in psychology to know what we learn when we learn. Cognitive theorists such as Tolman proposed that animals acquire knowledge of 'what leads to what' that result in expectations of the consequences of their behavior. In experiments addressing this issue, rats were trained in mazes to discover if learning was based on knowledge (place learning) or response (response learning). The evidence favored the former, suggesting that rats formed what Tolman called 'cognitive maps'. Using a T-maze, we exposed hermit crabs (*Coenobita clypeatus*), to choose between a warm or cold side. Hermit crabs showed a strong preference for warm temperature. Later, we changed the orientation of the maze (e.g. from north to south), and made them choose again. If the hermit crab learned about the response, it should turn the same direction (e.g. left) even though that arm of the maze now corresponded to the cold side. If instead, it learned a map of the maze it should turn to the warm side (i.e. east). The results showed evidence of place learning, suggesting that those 'cognitive maps' can also be found in invertebrate species.

EFFECT OF A CUE ASSOCIATED WITH EXTINCTION IN REDUCING REINSTATEMENT OF HUMAN PREDICTIVE LEARNING

A. MATÍAS GÁMEZ, PEDRO M. OGÁLLAR & RODOLFO BERNAL-GAMBOA
University of Córdoba; University of Jaén; National Autonomous University of Mexico

Some studies have shown how presenting during the test an extinction-cue (a stimulus associated with extinction) can attenuate the reinstatement effect in human predictive learning (e.g., Gámez & Bernal-Gamboa, 2018). To explore whether correlation between the cue and the extinction could be the mechanism involved in this reductive effect, two groups of human participants learned a specific relationship between two cues (X and Y) and two outcomes (O1 and O2) during the first phase. Throughout extinction, both cues were presented without outcomes but in the presence of a new stimulus (the extinction-cue). After an exposure to the original outcomes, reinstatement of the first-learned information was observed during testing in both groups. However, we found that the reinstatement effect was larger in the group in which a novel stimulus, uncorrelated with extinction, was presented during the test.

THE IMPACTS OF ACQUISITION AND EXTINCTION REMINDERS ON ABC RENEWAL OF VOLUNTARY BEHAVIORS

TERE A. MASON, JAVIER NIETO, RODOLFO BERNAL-GAMBOA & METIN UENGOER

National Autonomous University of Mexico; Philipps-Universität Marburg

In two instrumental conditioning experiments with rats, we examined the impact of reminder cues on ABC renewal of extinguished instrumental behavior. In each experiment, animals were reinforced with food for lever pressing in one context, followed by extinction of the response in a second one. Repeated presentations of a brief tone accompanied extinction in Experiment 1 (extinction-cue), while tone presentations occurred during initial acquisition in Experiment 2 (acquisition-cue). Following extinction, testing in a third context revealed recovery of extinguished lever pressing (ABC renewal) in each experiment. In Experiment 1, the ABC renewal effect was completely abolished when tested in the presence of the extinction-cue. In Experiment 2, ABC renewal was augmented in the presence of the acquisition-cue. Thus, both acquisition and extinction reminders modulated ABC renewal of instrumental behavior. We discuss theoretical and clinical implications of our results.

RELAPSE AFTER INCENTIVIZED CHOICE IN HUMANS

JOSÉ A. ALCALÁ & ERIC A. THRAILKILL

University of Leicester; University of Vermont

An experiment with human participants examined relapse of an instrumental response that occurred after the response was suppressed by reinforcing an alternative behavior. Participants pressed keyboard buttons in order to steal snacks from a vending machine presented on a computer monitor. In the first phase, making a target keypress (R1) was reinforced with virtual snacks (O1; e.g., popcorn, M&Ms, potato chips) from a virtual vending machine. In a treatment phase, R1 was still reinforced, but a new response (R2) was introduced and reinforced with virtual money (O2) from a second vending machine. This initial experiment examined how amount of money would influence preference for R2 over R1 during the treatment phase and if O2 amount would influence relapse after treatment. In the treatment phase, three experimental groups received different amounts of money (i.e., 10 ctm, 50 ctm and 2€) and a control group observed a second vending machine without R2 reinforced. In a subsequent test phase, extinction was introduced for R2 while R1 was still reinforced with snacks. Results of the treatment phase found that each experimental group reduced responding on R1 in comparison to the control group. Notably, suppression of R1 was larger in the groups 50 ctm and 2€, suggesting an effect of the value of the O2 incentive on the suppression of R1. The test phase found that each experimental group increased their R1 rate. In summary, the value of the O2 reinforcer during treatment phase modulated the suppression of R1, although did not prevent the relapse of R1 in test phase. These results are consistent with results from rat experiments using parallel designs.

THE REOCCURRENCE OF VOLUNTARY BEHAVIOR IS REDUCED BY RETRIEVAL CUES FROM EXTINCTION

A. MATÍAS GÁMEZ & RODOLFO BERNAL-GAMBOA

University of Córdoba; National Autonomous University of Mexico

Changes in the temporal as well as the physical context produces the reappearance of extinguished behaviors. Furthermore, combining both kinds of contextual stimuli often causes greater levels of recovery. The current experiment explored the impact of extinction reminders on spontaneous recovery, renewal, and a combination of both effects using an instrumental learning task with humans. All participants learned to shoot at enemies in a videogame. Then, throughout extinction, the instrumental response was eliminated. We found a return of the extinguished behavior by introducing a retention interval of 48 hours, by changing the physical background and by testing participants in a spatiotemporal context different from the extinction context. However, we also found that the presentation of a stimulus directly associated with extinction attenuates all three forms of operant reoccurrence. These results are consistent with the perspective that emphasizes that context plays a key role in response-recovery phenomena. Moreover, our findings may be promissory for therapeutic strategies involving relapse treatment.

MEASURING HABIT FORMATION THROUGH GOAL-DIRECTED RESPONSE SWITCH

SARA MOLINERO, POPPY WATSON, FRANCISCO J. LÓPEZ, MIKE LE PELLEY & DAVID LUQUE
Autonomous University of Madrid; University of Málaga; UNSW Sydney

Habitual and goal-directed systems are involved in reward-learning. The former is thought to rely in stimulus-response (S-R) links and is insensitive to outcome devaluation, while goal-directed actions rely on response-outcome (R-O) links and are sensitive to changes in outcome values. While goal-directed behaviour is especially evident in new learning, repeated training will strength S-R links until they eventually control behaviour. Indeed, animal research has shown that, after extended training, behaviour becomes habitual, while animals with less training act in a goal-directed fashion. Interestingly, despite its theoretical and applied interest, there is not convincing demonstrations of this (over)training effect in humans. We propose a new approach to this issue. Previous experiments took the rate of overt-responses leading to devalued outcomes as the only index of behaviour habitualization. We propose an alternative measure: response times (RTs) from trials in which participants must switch their previously trained response (given the same stimulus). The cost of response-switching should larger after prolonged training of the pre-existing S-R association. This was the result obtained in these experiments: the cost of overriding previous S-R associations increased for overtrained participants as compared with conditions with less training. We conclude that, although human goal-directed system is very effective overriding pre-existing habits when necessary, their interfering effect can be detected in RTs from such goal-directed actions.

HABITUATION IN EARTHWORMS: DIFFERENCES BETWEEN SPECIES *APORRECTODEA LONGA* AND *EISENIA FOETIDA*

DAVID REYES-JIMÉNEZ, MARÍA JOSÉ F. ABAD & CONCEPCIÓN PAREDES-OLAY
University of Jaén

Habituation is a basic learning process essential for survival. It has been studied in many different organisms using a wide variety of type of stimuli and protocols. Our previous experiments with *Aporrectodea longa* have showed successful acquisition of a habituation response with stimuli that are part of the earthworms' ecological niche as vibration, light and odour. Additionally, some studies have showed a phenotypic flexibility in *L. terrestris* light response under different environmental conditions (Nuutien, Butt, Jauhiainen, Shipitalo & Sirén, 2014). These facts lead us to think that the way to respond to stimuli could be different attending to the ecological niche of the species studied. In these experiments we compare *Aporrectodea longa*, an anecic species that lives into soil and *Eisenia foetida*, a epigeic species that lives in the uppermost part of the soil. The results show the differences found in three different experiments of habituation to a light, an odour and a vibration comparing these two species.

SIMULATING A NEW MODEL FOR PAVLOVIAN LEARNING AND PERFORMANCE (HEIDI)

ADELA F. ILIESCU, DOMINIC M. DWYER & ROBERT C. HONEY
Cardiff University

Associative treatments of how Pavlovian conditioning affects conditioned behaviour are rudimentary: A simple ordinal mapping is held to exist between the strength of an association (VCS-US) between a conditioned stimulus (CS) and an unconditioned stimulus (US) and conditioned behaviour in a given experimental preparation. The inadequacy of this simplification is highlighted by recent studies that have taken multiple measures of conditioned behaviour: Different measures of conditioned behaviour provide the basis for drawing opposite conclusions about VCS-US. Here, we develop a simple model involving reciprocal associations between the CS and US (VCS-US and VUS-CS) that simulates these qualitative individual differences in conditioned behaviour. We present simulations of the new model, HeiDI, which enables a broad range of phenomena to be accommodated, which are either beyond the scope of extant models or require them to appeal to additional (learning) processes. It also provides an impetus for new lines of inquiry and generates novel predictions.

A COMPUTATIONAL IMPLEMENTATION OF A HEBBIAN LEARNING NETWORK AND ITS APPLICATION TO DISCRIMINATION LEARNING PROBLEMS

SARA BRU GARCIA, DAVID GEORGE & JASPER ROBINSON

University of Nottingham

We report computer simulations of the three-layered Hebbian network informally described by Honey, Close, and Lin (2010). In a formal instantiation of the model, Robinson, George, and Heinke (2019, in press) reported results from simulations of experimental demonstrations of configural acquired equivalence. Although parameter dependent, all four of the forms of configural acquired equivalence were correctly captured by the simulations. We were interested in testing the scope of this model in its application to forms of discrimination learning other than configural discrimination learning.

MEASURING HEDONIC AND MOTIVATIONAL COMPONENTS OF ANHEDONIA IN THE DLG2 HETEROZYGOUS KNOCKOUT RAT MODEL OF PSYCHIATRIC DISORDER

SOPHIE WALDRON, DOMINIC DWYER & JEREMY HALL

Cardiff University

Alterations to the DLG2 gene, including changes in copy number and partial deletion, have been associated with a range of neurodevelopmental disorders encompassing schizophrenia and intellectual disability. Isolating which symptom domains DLG2 disruption impacts will be crucial in determining its exact contribution to disorder. To this end we assessed whether Dlg2 heterozygous knockout produces a schizophrenia-like pattern of amotivation without direct anhedonia in rats. Lick microstructure to palatable sucrose solutions was recorded to assess hedonic response to stimuli. This was compared to the rats instrumental behaviour for a reward across a range of fixed ratios to assess their motivation to work for reward. In our studies behaviour comparable to wild-types was found in the transgenic rats for both domains, indicating that low dose of the Dlg2 gene does not appear to be involved in negative symptoms of schizophrenia or anhedonia in general.

PRESERVED ACQUISITION AND EXTINCTION OF CONDITIONED FEAR, ALONGSIDE HEDONIC DEFICITS CONSISTENT WITH ANHEDONIA, IN A HEMIZYGOTIC DELETION OF CACNA1C RAT MODEL

PATRICIA GASALLA, JEREMY HALL, KERRIE THOMAS, LAWRENCE WILKINSON & DOMINIC DWYER
Cardiff University

GWAS has strongly related genetic variation in CACNA1C (which plays an important role in regulating gene expression relating to L-Type Voltage Gated Calcium Channels involved in synaptic plasticity and learning) with Schizophrenia and Bipolar Disorder. Recent studies from our laboratory revealed cognition deficits in a hemizygotic deletion rat model (Cacna1c +/-): particularly reduced latent inhibition of contextual fear conditioning and impaired appetitive reversal learning. Moreover, psychotic disorders impact not only on cognition, but also emotion, with anhedonia (impairment in the response to positive/pleasurable stimuli) common across disorders. Here, we investigate if Cacna1c +/- impairments are seen in other associative preparations and also whether it effects reward processing: examining Cacna1c +/- rats in the extinction of context fear conditioning and the hedonic responses to palatable sucrose solutions using the microstructural analysis of licking behaviour. Cacna1c +/- rats acquired and extinguished context fear conditioning in the same manner as controls. However, the same animals showed lower mean lick cluster sizes than controls when drinking sucrose, indicating a blunted hedonic response. These results suggest that low dose Cacna1c expression produced by hemizygotic deletion has selective rather than general cognitive effects, and also produces hedonic deficits consistent with anhedonia.

EMERGENCE CONDITIONS OF LEARNING FROM ERRORS: SEMANTIC RELATION OF THE STUDY MATERIAL AND RECOVERY OF THE ERROR

YERAY MERA & EUGENIA MARÍN-GARCÍA
University of the Basque Country (UPV/EHU)

Traditionally Cognitive Psychology has considered errors during learning as harmful for the subsequent recovery of the correct information. However, experimental evidence has shown that learning that includes experiencing errors, if it is followed by corrective feedback, is beneficial to long-term memory. Even Learning from Errors (LfE) is a well-established effect, the specific conditions in which appears are still not clear. In this study the influence of two factors are analyzed: 1) whether it is required to use semantically related material in order to benefit from the error; and 2) if, at the final test, it is required to explicitly recover the error with the correct answer to have a positive effect on learning, as it is predicted by the Recursive Reminding theory. To study this, participants were randomly assigned into two groups: one group studied semantically related word-pairs and the other group studied unrelated word-pairs. Then, both groups had an initial test, followed by corrective feedback, and a final test. Preliminary results show that generating errors during learning does not impair long-term recovery of the correct information. Moreover, it is not necessary to use semantically related study material in order to produce LfE. Finally, results show that it is not required to explicitly recover the error with the correct answer at the final test, which suggests that the LfE could be based on implicit processes.

TREATMENT FREQUENCY INFLUENCES FURTHER TREATMENT CHOICE

ITXASO BARBERIA & JAVIER RODRÍGUEZ-FERREIRO

University of Barcelona

Research on causal illusions has raised interest for its assumed connection with multiple misbeliefs in daily life, such as confidence in the effectiveness of pseudomedicines. However, while laboratory research on causal illusions has presented participants with one "pseudomedicine" at a time, real life decisions regarding health issues frequently involve choosing between several alternative treatments that are simultaneously available, more than deciding whether to initiate a treatment or remain expectant. In an attempt to mimic more realistic conditions, in the present experiment we modified the typical laboratory task in such a way that participants observed several fictitious patients that could take one of two potential remedies. The same proportion of patients experienced relief irrespective to the remedy taken, but the simple fact of one of the remedies being more frequently administered than the other provoked the participants to conclude that it was more effective. Also, when asked to choose which of the two remedies they would prefer to take in the future, the more prevalent one was favored. These results suggest that the widespread use of some pseudomedicines can reinforce the sensation that they are particularly effective, therefore creating a vicious circle.

Funding: PSI2016-75776-R (AEI/FEDER,UE)

WOULD YOU RATHER HAVE SNAKE OR CUCUMBER? THE ROLE OF SEMANTIC SALIENCE IN OVERSHADOWING PROCEDURE IN HUMANS

JOSÉ A. ALCALÁ, KATY V. BURGESS, SCOTT JONES, KA YUET CHOW, GEE-WON PARK, JOSÉ PRADOS & GONZALO P. URCELAY

University of Leicester; University of Bristol; Bath Spa University

The effect of cue salience in overshadowing procedures using human participants has received little attention, unlike the large body of research in animals. The objective of these experiments was to get a better understating of the salience manipulation in humans. We conducted two experiments using human participants to explore whether the semantic salience of overshadowing stimuli determined the size of the overshadowing effect. We employed a predictive task in which different types of foods were followed by the presence (or not) of an outcome (i.e. illness). The salience of foods was determined according to semantic salience piloted in previous research (Le Pelley et al., 2014). In Experiment 1, four target foods of low salience were paired with the outcome. These cues were trained either alone (L), or as a compound with low (LL), medium (LM), or high (LH) salience foods. In the test phase, participants rated food-illness likelihood for each food individually. Predictive ratings to low cues trained in compound (LL, LM, and LH) were lower relative to the low cue trained alone (L). This overshadowing effect was observed regardless of the salience of the overshadowing cue. Notably, a subsequent test revealed that participants were sensitive to the salience manipulation. In a second experiment, we employed target cues of medium salience (M, ML, MM and MH). Using medium salience targets, the effect of overshadowing was abolished, despite participants still being sensitive to the salience of the overshadowing food. Overall, these findings suggest that, like other animals, humans are sensitive to salience manipulations in overshadowing designs.

CONDITIONAL TEMPORAL DISCRIMINATION; SEQUENCE EFFECTS ON LEARNING AND RETENTION

LUIS ALFARO & MARYED ROJAS
University of Guadalajara

Through a conditional temporal discrimination task with humans was assessed the learning promoted by different pair sequences (by 9 blocks of 10 trials), and after the arrangement was removed (by the last 3 blocks). This work employed six groups exposed to a particular paired sequences with different levels of information. From the most basic to the most inclusive, its order was as follows: Random, Permutations, Disordered, Ramp, Decreasing and Incremental. The results in the training phase showed a direct relationship between the information sources amount and the hits number. However, when the arrangement was removed based on the amount of hits the results were ordered as follows: Ramp, Disordered, Decreasing, Permutations, Increasing and Random. These results suggest that the structure that causes the least interference to attend the relevant cue to mastered the task is one in which gradual differences between cues are shown, both Incremental and Decreasing (Ramp sequence).

INDIVIDUAL DIFFERENCES IN INFORMATION SEEKING PREDICTS CAUSAL ILLUSIONS

MARÍA MANUELA MORENO FERNÁNDEZ, FERNANDO BLANCO & HELENA MATUTE
University of Deusto

Associative learning models treat causal estimations as the result of the formation and strengthening of associations between the mental representations of causes and effects. From this perspective, causal inferences are the product of general principles of learning operating on our experience. However, individual traits may shape the learning output by affecting how we select, interpret or use information. A potentially relevant individual trait for learning situations is the tendency to Jump to conclusions (JtC). Individuals with tendency to jump to conclusions use a reduced amount of evidence to make decisions under uncertainty, that is, they stop collecting information about a problem very soon, and make the decision based on a limited amount of information. This bias is particularly exaggerated in psychiatric patients with delusions, a population that, at the same time, has also been found especially prone to the causal illusions such as the illusion of control. We carried out an experiment to study how this trait affects causal learning in general population, using a causal illusions paradigm. Results showed a significant, positive relation between the JtC measurement and causal illusion. These results are discussed within the framework of associative learning theories.

EFFECT OF YOHIMBINE ON VOLUNTARY ETHANOL INTAKE OF ADULT FEMALE WISTAR RATS

Mª DOLORES ESCARABAJAL, ÁNGELES AGÜERO, INMACULADA RUÍZ & Mª LOURDES DE LA TORRE
University of Jaén

Stress is commonly reported to increase rewarding effects of many drugs of abuse, including alcohol. For example, researchers have shown increased ethanol intake after various stress paradigms. However, results are not always comparable between the different laboratories. Contributing to these contradictory results are the numerous variations in experimental methods. Probably due to these experimental divergences, studies on sex differences in stress-induced intake of ethanol show also inconsistent results. Despite this, the data obtained in preclinic studies point to the fact that females are more sensible to the stress effects and, at least in case of adults, they show higher levels of ethanol intake than males, two observations that might be related. However, is necessary to substantially extend the research in this field in order to understand sexual dimorphism in ethanol intake behaviors. In this work, we analyze the effect of stress (pharmacological induced by Yohimbine, 4 mg/kg) on a free choice drinking procedure (the concentration of ethanol was gradually increased from 2 to 10%). The results showed that the pattern of intake of yoh-injected and saline-injected animals no differed significantly. The intake of the subjects increased significantly as the concentration of ethanol was augmented, reaching 12 g/kg in case of yoh-injected rats (11g/kg saline-injected), an amount that can be consider quite high. A ceiling effect might be the reason why yoh injection had no an evident effect on ethanol intake of the female rats though other possible factors will also be taken into consideration. Further studies are warranted to elucidate sexual dysmorphisms in ethanol intake behaviors.

LONG-TERM AND ACUTE EFFECTS OF **Δ**-9-TETRAHYDROCANNABINOL ON A TIMING TASK IN RATS

ESMERALDA FUENTES-VERDUGO, VLADIMIR ORDUÑA, WILLIAM RODRÍGUEZ, GABRIELA EUGENIA LÓPEZ TOLSA, MIGUEL MIGUÉNS & RICARDO PELLÓN

National Distance Education University (UNED); National Autonomous University of Mexico

Habitual drug use has been linked to problems in time perception and this is one of the subjective reported effects after cannabinoids consumption, the most commonly used illicit drug worldwide. The aims of this research were to study short and long-term effects of preceding △9-Tetrahydrocannabinol (THC) administration on time estimation, as well as to determine its acute effects. In the first phase of the experiment, Wistar rats were administered with THC (10 mg/kg i.p.) or vehicle for 21 days. The effects of this treatment were tested over 30 acquisition sessions using a peak-interval procedure in which 30 s fixed-interval trials were alternated with nonreinforced longer peak trials. In the second phase, half of the rats from the vehicle group were exposed to 21 days of THC administration, and the other half and the first treated group to vehicle. Long-term effects of the first drug exposed group (n=10), and short-term effects of the second treated group (n=10), were tested over 20 sessions with the same timing task, and both were compared with the group treated just with vehicle (n=10). In a third phase, separate sessions served to test the acute THC administration effects (2 mg/kg i.p 1h before) in all groups. The results did not show THC long-term effects, but the acute administration lengthened the peak time in the group without prior experience with the drug and caused a peak response rate reduction in the THC group first injected and in the group that was never exposed before to the drug. These results suggest that THC only influence time estimation under acute administration, and that a long-term consumption may cause a transient tolerance effect in task performance.

CONTEXTUAL MODULATION OF CONSUMMATORY SUCCESSIVE NEGATIVE CONTRAST

JUAN CARLOS RUIZ-SALAS, MAURICIO R. PAPINI, CARMEN TORRES & L. GONZALO DE LA CASA
University of Sevilla

Repeated drug administrations in the same context can endow the context with the ability to induce a drug-related conditioned response that can modulate behavior. We paired a new context with the anxiogenic yohimbine (an alph-2 adrenergic antagonist). Separately, we exposed rats for ten 5-min sessions to either 16% or 4% sucrose in a different context. Animals were then downshifted (16-to-4% sucrose). A 16-to-4% sucrose downshift usually leads to a mild cSNC effect; these concentrations were chosen to minimize potential floor effects. We hypothesized that a context paired with the anxiogenic yohimbine should induce a compensatory response and reduce the cSNC effect. In the experiment, three groups were included: Paired (downshift took place in the context paired with the drug), Unpaired (downshift took place in a context that was explicitly unpaired with the drug), and Control (downshift took place in a context paired with a saline injection). The results did not confirm our hypothesis, since cSNC effect was similar for all experimental groups. In future experiments we will reproduce the same design but pairing the context with drugs which have previously demostrated their effectivity to disrupt cSNC.

Funding: Grant PSI2015-64965-P from Ministerio de Economia y Competitividad, Spain.

EFFECTS OF NUCLEUS ACCUMBENS INACTIVATION ON CONDITIONED CATALEPSY AND CONDITIONED LOCOMOTOR ACTIVITY

LUCÍA CÁRCEL & LUIS GONZALO DE LA CASA

University of Sevilla.

The repeated administration of the dopaminergic antagonist haloperidol (US) in presence of a novel context (CS) produces an association which, depending on the type of behavioral test, is expressed as conditioned catalepsy or as a conditioned increase in locomotor activity. Specifically, when the test consists in placing the forepaws of the animal on a bar located approximately 10 cm from the ground, conditioned catalepsy is observed. On the other hand, if the test consists in allowing the animal to move freely for a long period of time, a conditioned increase of spontaneous activity appears. In order to verify whether both types of conditioning are controlled by similar brain areas we conducted one experiment with two groups: Nucleus accumbens lesioned and sham-operated controls. Once recovered from the surgery, half of the animals on each group received haloperidol before being introduced in the experimental context (Paired condition), and the other half received the drug after context exposure (Unpaired condition). Finally, in a drug-free test trial, catalepsy and locomotor activity was registered. The results revealed the absence of conditioned catalepsy in the Lesioned Group, while conditioning of the locomotor activity remained intact. These results point to the participation of different brain structures in both types of responses.

Funding: Grant PSI2015-64965 from Ministerio de Economía y Competitividad, Spain.

INDIVIDUAL DIFFERENCES IN THE MODULATION OF COMPULSIVE DRINKING BEHAVIOR USING PSYCHEDELIC DRUGS

ELENA MARTÍN-GONZÁLEZ, ÁNGELES PRADOS-PARDO, SANTIAGO MORA, PILAR FLORES & MARGARITA MORENO

University of Almería

Clinical studies have shown that some psychoactive drugs have therapeutic applications in several neuropsychiatric disorders where compulsive behaviors are observed, such as anxiety, depression, and schizophrenia. However, there are few studies that specifically link the therapeutic role of these drugs and inhibitory control deficit. Our main purpose was to assess the therapeutic potential of different modulators in a preclinical model of compulsivity. Male Wistar rats were selected as either high (HD) or low (LD) drinkers corresponding with their water intake in schedule-induced polydipsia (SIP). After that, we measured the effects of scopolamine (0.125, 0.25, and 0.5 mg/kg), methamphetamine (0.25, 0.5, 1.25, and 2.5 mg/kg), ketamine (1.25, 2.5, 5, and 10 mg/kg), cannabidiol (1 and 3 mg/kg), WIN55212-2 (0.5, 075, and 1 mg/kg), and AM404 (0.25 and 0.5 mg/kg) on compulsive drinking on SIP. The results obtained showed a dose-dependent reduction in compulsive drinking in HD compared with LD rats caused by Scopolamine. Methamphetamine induced a dose-dependent inverted U-curve effect in both groups, in which lower doses increased and higher doses reduced compulsive drinking. Ketamine, cannabidiol, WIN21255-2, and AM404 did not have any relevant effects. The effects of Scopolamine and Methamphetamine provide evidence that some psychoactive drugs might therapeutically reduce compulsive behaviors. These data also suggest that there is not a direct participation of the endocannabinoid system in compulsive behavior on SIP. Further studies on SIP, might help to elucidate the neurochemical mechanisms of these psychoactive drugs and provide an additional insight on new therapeutic targets on compulsive spectrum disorders.

Funding: Grant from the Ministerio de Educación, Cultura y Deporte (Spanish Government) and Fondo Europeo de Desarrollo Regional (Grant number MINECO-FEDER PSI2015-70037-R and PGC2018-099117-B-C21).

THE DECREASE OF OPERANT BEHAVIOR DURING DIFFERENTIAL REINFORCEMENT OF OTHER BEHAVIORS IS TIME DEPENDENT

JAVIER VILA, FÁTIMA ROJAS-ITURRIA, CHRISTIAN MENDEZ-CORONEL, ARELY SERRANO- RAMÍREZ, KENNETH PACHECO-LIMÓN & RODOLFO BERNAL

National Autonomous University of Mexico

In a Differential Reinforcement of Other Responses (DRO) schedule, the non-emission of an operant response during a specific time period is reinforced, as a result this response decreases. Spontaneous recovery (SR) occur when a previously extinct response reappears after a retention interval. An experiment was made to evaluate the SR of a decreased operant response after a DRO schedule in human participants. During training phase, participants learned to press two keys (R1; R2) to obtain reinforcement in an VI4s schedule. In a second phase the non-emission of R1 was reinforced during 4s (DRO), while R2 continued to be reinforced. In a test phase, participants chose between R1 and R2 after a retention interval (RI). Two groups were employed (0 and 24h), where each number represents the retention interval presented before the test phase. Results showed a suppression of R1 during the RDO schedule in both groups. During test, a recovery of R1 was observed only in group 24h, showing SR of R1 after a DRO schedule. These data suggest that suppression of an operant response observed during a DRO schedule can be eliminated when temporal context changes. And they are coherent with previous results of contextual renewal of an operant response after a DRO schedule.

SUBOPTIMAL CHOICE IN HUMANS: EFFECTS OF THE USE OF MAGNITUDES OR PROBABILITIES AND THE MOTIVATION LEVEL

MARYED ROJAS LEGUIZAMÓN
University of Guadalajara

In the suboptimal choice procedure animals have to choose between two concurrent-chain schedules in which one alternative gives low-frequency reinforcement but has discriminative stimuli that signal when the reinforcer will be delivered (suboptimal), and the other gives more frequently reinforcement but its stimuli are not predictive (optimal). Most studies about suboptimal choice have used animals as subjects, although the procedure has been proposed as a model for maladaptive behaviors, such as pathological gambling. However, there are at least two challenges to compare the humans and non-humans results: 1) setup used to deliver the consequences in animals and humans is not analogous and 2) human participants, unlike the animals, are less motivated to perform these tasks. The present study tested human participants in the suboptimal choice procedure, in order to establish a point for the comparison between the execution of human and non-human subjects, manipulating the task setup (using magnitudes or probabilities) and the level of motivation of the participants. Independent groups were exposed to the magnitudes and probabilities versions, and each group was subdivided in two; In one case the participants received a fixed reward at the end to the experiment (low motivation), while in the other the reward was dependent on their execution (high motivation). In general, the participants did not show a preference for the suboptimal alternative, however, this preference was greater in the experiment with probabilities than in the magnitude and in the groups with low motivation.

FINGER TAPPING TO EVALUATE MOVEMENT THERAPIES IN PARKINSON DISEASE

SUSANA CARNERO-SIERRA, SARA PINZÓN, JOAQUÍN MORÍS, EDUARDO GONZÁLEZ-CABAÑES & AZUCENA BEGEGA

University of Oviedo

Parkinson disease (PD) is characterized by symptoms like tremor, muscle stiffness and bradykinesia. To deal with these difficulties and optimize daily life functioning, pharmacological treatment usually needs to be accompanied with other non-pharmacology strategies, such as movement therapies that can help to maintain and improve mobility, flexibility and gait. Also, therapies that focus in training rhythm or music could improve complex movement coordination, activating lost motor patterns (Nombela, Hughes, Owen & Grahn, 2013).

For instance, Argentinian tango has been observed as adequate to apply to PD (Lötzke, Ostermann & Büssing, 2015), as it combines listening and responding to rhythms. Therefore, this work was aimed to observe benefits of this dance training in a group of Parkinson patients. Specifically, restoration of the ability to follow a regular tempo was measured. To do this, a finger tapping task was designed to observe responses to 9 different tempos before and after a 7-month tango program.

Results showed an improved ability to follow a regular tempo. Data will be discussed in terms of the suitability of measures that are generally accepted in lab settings for applied research. The use of these measures can provided evidence to validate ecological therapies, such as tango dancing or other movement therapies.

WHAT FACTORS WILL PREDICT YOUR COGNITIVE LEVEL DURING AGING?: BEING A FEMALE, LIVING IN A RURAL SETTING AND IMPULSIVITY

CARIDAD LÓPEZ-GRANERO, PATRICIA SANCHO, ANA BELLIDO, JARA VERGARA & ANGEL BARRASA
University of Zaragoza; University of Valencia

Aging is a universal phenomenon, which does not necessarily impart typical pattern of cognitive decline in all people. Though some sociodemographic and cognitive variables related to the aging process have been identified, the published studies have overlooked factors such as the location of residence. Namely, whether rural or urban residence and its inherent relation to environmental toxicity and pollution is a predictive factor for cognitive reserve or general cognitive state has yet to be determined. Accordingly, our aim was to investigate whether residential setting affects the cognitive reserve and consequently the rate of aging. Secondly, we analyzed the influence of sociodemographic, cognitive, social and emotional activities in a model of cognitive reserve. Seventy five Spanish elderly people (from 65 to 92 years-old), were selected for the study, of which 52% lived in rural environments, with a mean of residence in place for 71.44 years. Women comprised 52% of the sample. Our results show that a Structural Equation Model predicts an important portion of the cognitive reserve with age, gender, place of residence, impulsivity and daily activities of life. Age and being a female are protective factors of cognitive reserve together with living in rural area. On the other hand, impulsive behavior and daily activities of life represent a risk factor for cognitive declive. Our findings suggest these factors may be useful as indicators of cognitive health and aging. New studies are necessary for improved understanding of the relationship between air quality and rural setting, and how they affect cognitive function in the aged.

Funding: Gobierno de Aragón (S24_17R) (Spain) and FEDER 2014-2020 (EU).

MYTHS IN PSYCHOLOGY: MEASUREMENT OF MISCONCEPTIONS AMONG PSYCHOLOGY STUDENTS IN SPAIN

CRISTINA RODRÍGUEZ-PRADA, CRISTINA ORGAZ JIMÉNEZ & CARMELO PÉREZ CUBILLAS
Autonomous University of Madrid; National Distance Education University (UNED)

Myths in Psychology are beliefs that are inconsistent with the empirical evidence available in this field of knowledge. Previous literature shows that myths are relatively stable, resistant to change and prevalent in non-academic population, as well as in students and professionals in this discipline. The aim of this work is to examine the prevalence of certain myths in psychology students from two spanish universities (UAM and UNED) and the influence of two variables: the academic course and the consult of scientific dissemination.

We developed a questionnaire composed by 74-item Likert scale based on Gardner & Brown (2013) to measure the confidence that students have in several psychological misconceptions. Also, we collected demographic data, such academic course and the consult of scientific dissemination. Results showed, overall, a low ratio of belief in misconceptions,a decline of them in the last courses and when scientific material is consumed, although all of this benefits are limited. In addition, an interaction between university and academic year was found. In general, psychology students at UAM belief less in myths than those at UNED, but the latter benefits more from formal education. These results are an interesting tool for teachers to discriminate which myths are most widespread and focus on them in class until they disappear and be replaced by ideas more adjusted to empirical evidence.

AN EXCEL ADD-IN TO TEACH AND LEARN STATISTICAL MODELS

ARMANDO MACHADO

University of Aveiro

I present a free Excel add-in that defines a large number of functions useful to teach and learn stochastic models and statistics. The add-in includes a full set of probability related functions (to generate random numbers, compute densities, cumulative distributions, and quantiles), functions to generate permutations and combinations (useful to teach the topic), functions to sample and shuffle vectors (useful for bootstrap analyses and permutations tests), as well as an engine to simulate simple models and collect data from the simulations. I will illustrate its use with examples.

COMPARISON PROCESS DECREASES THE EFFECTIVE SALIENCE OF UNIQUE ELEMENTS IN RATS PERCEPTUAL LEARNING

JESÚS SÁNCHEZ, ANA GONZÁLEZ, BEATRIZ JUAN & ISABEL DE BRUGADA
University of Granada

Findings from perceptual learning studies using a short interval between presentations of two similar stimuli have shown the Intermixed/Blocked effect and suggest that stimulus comparison is critical for explaining this phenomenon in human and non-human subjects. Comparison in humans has been explained in terms of better processing of the unique elements. This processing bias would allow the formation of associations between the units activated by the unique elements facilitating the formation of a better memory representation of the stimulus. It is expected that a better represented stimulus would not only become more discriminable but will also suffer a loss of effective salience. In order to test this last prediction we ran an experiment with rats as subjects with a taste aversion paradigm, using a short interval between exposures to the stimuli. The results showed that there was a reduction in effective salience of the unique elements after intermixed preexposure in comparison with blocked preexposure. This is at odds with what is usually found in animals when using the standard procedure involving a long interval between exposures to the stimuli. The results are discussed in terms of the different mechanisms underlying perceptual learning, which seem to depend on the details of the task.

VARIATIONS IN THE INTERNAL FEATURES OF COMPOUND STIMULI IN PERCEPTUAL LEARNING: A REPLICA

BERNARDO JIMÉNEZ, JUANA MARCELA LUGO & ROSAVA CABRERA
National Autonomous University of Mexico

In the study by Jiménez, Lugo and Cabrera (2018) was demonstrated that pre-exposition to novel stimulus (asterisk formed by pairs of different thickness lines) in both dynamic and static presentation produced the effects of perceptual learning. The present study was designed as a replica of the previous, to evaluate the effects of the changes in the configuration of the compound stimuli AX and BX, varying the characteristics of the lines, which were presented segmented into 14 parts. Six groups of university students were formed (n = 10), three groups were pre-exposed to the stimuli in an intermixed program: the Static Group, with the stimuli always presented in the same position; the Dynamic Symmetric Group, in which the position of the stimulus changed orderly through trials; the Dynamic Asymmetric Group with random changes in the position of the stimulus through trials; three additional groups were exposed to the same conditions but the pre-exposure was blocked; a Control Group wasn´t pre-exposed. Later, all participants were exposed to an Equal-Different test. The data replicate the previous study, observing better discrimination in the pre-exposed groups than in the control group; likewise, was observed a better performance when the participants were pre-exposed to the stimuli in an intermixed schedule. The data is discussed in terms of the stimulus salience proposal.

Jiménez, B., Lugo, J., Cabrera, R. (2018). Static and Dynamic arrangement of AX and BX sitimuli in perceptual learning. XXX International Meeting of the Spanish Society of Comparative Psychology

MAINTENANCE OF PERCEPTUAL LEARNING EFFECT.

MARCELA LUGO, BERNARDO JIMÉNEZ & ROSALVA CABRERA
National Autonomous University of Mexico

The pre-exposition to stimuli facilitates subsequent performance in discriminative tasks involving it; the persistence of this effect hasn´t evaluated. This study evaluated the performance of Same-Different tasks in students pre-exposed to stimuli AX/BX and it maintenance. Groups GEI-D y GED (n=9) were pre-exposed to intermixed arrangements AX/BX; the GC was no pre-exposed; subsequently, the students were exposed to Same-Different task. GEI-D was exposed to immediate test and delayed test (72 hours after); GED was exposed only to delayed test; GC was exposed to both tests. Percent of correct responses was higher to pre-exposed groups that GC group in their first test; this effect was maintained in second test for GEI-D; the group exposed only to delayed test (GED) obtained percentages similar to GEI-D. Data are discussed in terms of the role of salience as modulator of effect to immediate and long periods.

EFFECTS OF CS PRE-EXPOSURE AND EXTINCTION IN CONDITIONED PREFERENCE USING ORTHO-NASAL ODORS

LUIS ELADIO GÓMEZ-SANCHO, LUIS MIGUEL TRAVERSO & LUIS GONZALO DE LA CASA
University of Sevilla

Conditioned Odor Preference (COP) has usually been studied with procedures in which odors are experienced by retro-nasal route (similar as flavours). It is less common to analyze this situation by presenting odors by ortho-nasal route. In our laboratory, with an ortho-nasal procedure similar to that used by Torquet et al. (2013), we have obtained COP using reinforcers with both nutritional and hedonic value (sucrose) or only with hedonic value (saccharin). In order to extend and generalize these results, we have designed two experiments intended to analyze: (a) whether ortho-nasal pre-exposure to odors disrupts COP at the acquisition phase and (b) if the presentation of the odor without reinforcement decreased the preference in an extinction phase. The experiments were conducted with the same procedure except for the reinforcers following the odor (sucrose or saccharin). Each experiment consisted of three phases: pre-exposure, acquisition and extinction. During pre-exposure half of the subjects received unreinforced odor presentations. In the acquisition stage all subjects received 3 cycles of discriminative conditioning with two odors (odor 1+/odor 2-) followed by a two-bottle test trial (odor 1 vs. odor 2). Finally, in the extinction phase the animals received three two-bottle test trials without reinforcement. The results revealed that to-be-CS preexposure produced facilitation instead latent inhibition in the preexposed group. In addition, the extinction tests significantly reduced the preference for the conditioned odor. These results are discussed attending to those obtained with similar procedures that used odors experienced retro-nasally.

TESTING NEOPHOBIA HABITUATION IN AVERSIVE CONTEXTS

LUCÍA VICENTE & LUIS GONZALO DE LA CASA

University of Sevilla

Taste neophobia is a process common to all species, including human beings, by which a new flavor produces an innate rejection that results in a reduction of its consumption. As the taste is consumed without subsequent aversive consequences, neophobia tends to dissapear. Taste neophobia can increase or decrease depending on several factors, such as, for example, the deprivation level of the organism, the intensity of the flavor, or the context in which the novel flavor appears. In this poster, we focus on the role of context on neophobia attending to the predictions derived from the Contextual Safety Hypothesis, which proposes that the appetitive or aversive properties of the context in which the novel flavor is presented will affect the amount of neophobia and its habituation. Specifically, we explore the effect of an aversive context on neophobia by pairing the context before flavor presentation with either a set of mild shocks or with several injections of lithium chloride. In a control group the animals remained in the context without any additional manipulation. Two dependent variables were collected: taste consumption as an index of neophobia, and locomotor activity as an index of context fear. The results indicated that comsuming the flavor in the context previously paired with the shock retarded habituation of neophobia and decreased locomotor activity. These results are interpreted considering possible associative and non-associative factors, and the possible implications that the context may have in the analysis of eating behavior.

WATCHING A MOVIE WHILE I EAT POPCORN MAKES ME EAT MORE? THE ROLE OF HABITUATION IN SSS.

ANA GONZALEZ, SHAUNA PARKES & ISABEL DE BRUGADA

University of Granada; University of Bordeaux

Sensory specific satiety (SSS) refers to hedonic decline of sensory properties of a particular food as it is eaten. It is characterized by its specificity, so that after having eaten a certain food, other food choices remain appetizing. However, It can also generalise to other foods that share sensory properties with the satiated food (flavour, odour, texture…). This is a temporal hedonic change that recovers spontaneously after a while, reestablishing the initial hedonic value of the food. These characteristics suggest habituation phenomenon as a possible underlying mechanism for SSS. Dishabituation, distraction and contextual changes are some events that can interfere with the habituation process. Accordingly, on the present study we tried to study this hypothesis by testing how distraction could affect to SSS by using an animal model. Two different kind of responses were taken into account: direct consumption (liking measure) and operant responding (wanting measure). We expected that the presence of a distractor during sensory specific satiety process will prevent the expression of the SSS in comparison to a control condition.

EATING ABOVE SATIETY: CAN GOLDEN ARCHES RESTORE THE SENSORY SPECIFIC SATIETY EFFECT?

ANA GONZALEZ, ALBA MATEOS & ISABEL DE BRUGADA
University of Granada

Obesity has become a very worrying problem in the last decades. One of the reasons that can explain the increasing rates for this illness is the omnipresence of the obesogenic environments, which are featured by a huge variety of highly caloric foods, sedentary lifestyles or constant exposure to food related stimuli. It has been shown that the cues associated to food can increase total intake of the specific food they signal. This phenomenon has been called Cue Potentiated Feeding (CPF) and has even been demonstrated with general satiated states. On the other hand, Sensory Specific Satiety (SSS) is the phenomenon by which sensory properties of a specific food are devaluated by the time this food is eaten. Hence, CPF and SSS seem to act in an opposite manner. Accordingly, on the present experiment we tested in a sample of humans whether an associative cue related to a food stimulus that had been specifically sensory satiated could be able to restore the original valued representation of the sated outcome or otherwise, could potentiate the SSS effect.

How contextual learning affects confidence

Nahuel Antonio Salem García, Stefano Palminteri & Maël Lebreton

University of Geneva; Swiss Center for Affective Science; École Normale Superièure (Paris); French Institute of Health and Medical Research (INSERM)

Accurately estimating confidence in one's choices being correct is important for evaluating and adapting strategies. However, confidence is biased: for the same objective difficulty, people are more confident when seeking gains than when avoiding losses, while maintaining the same accuracy. We recently showed how this pattern could be explained by the sum of 1) a context-dependent learning mechanism (considering outcomes on a relative scale centered at the learnt average value of the context), and 2) a confidence calculation biased by the learnt context value. Here we test this idea against different alternative models of confidence, some of which would not require contextual learning.

We use data from five experiments (N = 90) were humans took part in a two-alternative instrumental learning task and a transfer task (where options appeared out of their original context and without feedback). During the learning task, context valence (losses vs gains at stake) and information completeness (feedback about the unchosen option present vs absent) were manipulated. We test combinations of learning models (context-dependent vs independent) and confidence biases to account for confidence reports. We find that 1) contextual models offer better predictions of individual confidence reports, 2) context-independent models are better at replicating the statistical patterns in the data, 3) confidence is biased by the learnt value of the chosen option, and 4) in the learning task, confidence depends on both objective difficulty (difference in learnt values of the options) and bias, whereas in the transfer task the effect of difficulty becomes negligible.

INTOLERANCE OF UNCERTAINTY AND CHOICE RESPONSES: POSSIBLE PREFERENCE FOR LESS UNCERTAIN CHOICES ALTHOUGH AT A GREATER RISK

VÍCTOR MARTÍN, MARÍA JOSÉ QUINTERO, FRANCISCO J. LÓPEZ & JOAQUÍN MORÍS
University of Málaga

Intolerance of uncertainty (IU) is a key underlying dispositional factor for some psychological disorders and dysfunctional responses. One key component of IU is prospective intolerance which can be defined as a desire for predictability and an active engagement in seeking certainty. Recent studies show that individuals scoring high in IU make choices in favor of less uncertain options, even if these choices lead to receiving a lesser amount of reinforcer. In our experiment, we expect that individuals scoring high in prospective IU will opt for choices providing immediate certainty about whether an aversive consequence will take place, even if this leads to an increase in the probability of receiving this consequence. However, the results showed that prospective IU was not related to participants' choices. We discuss some potential limitations of our study regarding the uncertainty associated to each response option and propose new ways to analyze our hypothesis in future research.

DO REALLY PEOPLE HIGH IN INTOLERANCE OF UNCERAINTY OVERESTIMATE THE LIKELIHOOD OF THREATS?

VÍCTOR CONTRERAS, AMANDA FLORES, JOAQUÍN MORÍS & PEDRO L. COBOS
University of Málaga

Previous literature suggests that people with high intolerance of uncertainty tend to overestimate the likelihood of negative events. However, very few experimental studies conducted so far have tested this hypothesis, being some of them subjected to key limitations. For this reason, we conducted an experimental study aimed to test if intolerance of uncertainty is associated with expectancy ratings of threatening events. The task used comprised two pavlovian and two instrumental learning phases administrated in an alternating manner. Both phases included a high and a low uncertainty condition determined by the probability of an aversive US given a specific CS. Orthogonally, the instrumental phase included a controllable (in which correct responses reduced the probability of the aversive outcome) and an uncontrollable condition (in which responses did not change those probabilities). Expectancy ratings were repeatedly requested in each condition throughout the learning task. None of the analyses yielded a significant association between intolerance of uncertainty and expectancy ratings, challenging the claim that people high in intolerance of uncertainty tend to overestimate the likelihood of threatening events.

RETURN OF FEAR PHENOMENA AFTER AN OCCASIONAL REINFORCED EXTINCTION TREATMENT

MARÍA JOSÉ QUINTERO, MARÍA TERESA GUTIÉRREZ, PATRICIA MOLINA, AMANDA FLORES, FRANCISCO J. LÓPEZ & JOAQUÍN MORÍS
University of Málaga

Fear extinction is not permanent but more vulnerable than the original fear memory, as relapse phenomena have traditionally shown. One strategy potentially useful to mitigate relapses is the occasional reinforced extinction treatment, according to which extinction may be potentiated if a gradual and sparse number of CS-US pairings are introduced within the extinction treatment, differing from the standard procedure. We present the results of three experiments in which we used an aversive differential conditioning procedure in humans. Our main aim was to evaluate whether occasional reinforced extinction could reduce two different forms of relapse: spontaneous recovery (Experiments 1A and 1B) and reinstatement (Experiment 2). For Experiment 1A, we used a 6-minute delay between extinction and test, while for Experiment 1B, the retention interval was 24 hours. Overall, our results were not able to show any relapse mitigation produced by an occasional reinforced extinction when compared with standard extinction. However, it proved effective to diminish the magnitude of the US expectation after a first reacquisition trial in a final test phase. From a theoretical point of view, the pattern of results found was more consistent with the idea that extinction entails the acquisition of new knowledge (inhibitory learning) than with the idea that there are conditions in which extinction leads to the erasure of the original conditioning.

FUNCTIONAL COMPARTMENTALIZATION OF HIPPOCAMPAL SUBFIELDS TO CONTEXT-DEPENDENT EXTINCTION AND RENEWAL OCCURRING IN THE ABSENCE OF A PROLONGED CONSOLIDATION PERIOD

MARTA MENDEZ-COUZ & DENISE MANAHAN-VAUGHAN
Ruhr University Bochum

During extinction learning (EL), an individual learns that a previously learned behavior no longer fulfills its original purpose, or is no longer relevant. Recent studies have contradicted earlier theories that EL comprises forgetting, or the inhibition of the previously learned behavior, and indicate that EL comprises new associative learning. This suggests that the hippocampus is involved in this process. Empirical evidence is lacking however. Here, we used an ABA context-associated extinction and renewal paradigm, followed by a fluorescence in situ hybridization of somatic immediate early gene expression to scrutinize if the hippocampus processes EL.
Our results demonstrate a functional contribution compartmentalization along the proximo-distal axis of the hippocampus to extinction and renewal effect of an appetitive task. Specifically, our findings suggest that portions of the same neuronal ensembles participate in both extinction learning and renewal within the Ca1 hippocampal subfield and that this region is crucially involved in the encoding of multiple ('what' vs. 'where') facets of the extinction learning experience. Furthermore, the renewal effect was shown even when animals were confronted with the original context shortly after extinction learning.

Funding: DFG grant to DMV (SFB 1280/A04, project number: 316803389)

SEX DIFFERENCES IN A CONDITIONED TASTE AVERSION PREPARATION: PERCEPTUAL LEARNING, OVERSHADOWING, BLOCKING AND REACQUISITION

CAMILO ARÉVALO-MORENO & ROCÍO ANGULO

University of Chile

This study was aimed to test whether male and female rats might to differ in some conditioning effects employing a conditioned taste aversion preparation in four experiments. Specifically, Experiment 1 tested sex differences in the generalization of a conditioned taste aversion after preexposures to the test stimulus; Experiments 2 and 3 tested sex differences in overshadowing and blocking, respectively; and Experiment 4 tested whether males and females differed in the reacquisition effect. Experiment 1 found that generalization of the conditioned aversion was larger for females regardless the test stimulus was preexposed or not. Experiments 3 y 4 found the typical overshadowing and blocking effects in males but not in females. Finally, Experiment 4 found a stronger reacquisition effect for males. These findings support the increasingly stronger hypothesis that sexual dimorphism might be expressed in classical conditioning, or at least, in some effects with conditioned taste aversion preparations.