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ORAL COMMUNICATIONS

SESSION 1

Thursday 23rd - 9:30 to 10:50

SESSION 1

ILLUSIONS OF CAUSALITY DEPEND ON HOW YOU INTERPRET AMBIGUOUS OUTCOME INFORMATION

Fernando Blanco[1], María Manuela Moreno-Fernández[1] & Helena Matute[2]

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Previous research described the tendency to overestimate null contingencies, thus leading to illusions of causality (i.e., the erroneous belief that two unrelated events are causally connected). One of the factors that produce the illusion is the "outcome-density bias": the more often the outcome occurs, the stronger the illusion. However, in real life it is not always easy to determine when an outcome has occurred, as it can be open to interpretations. In this research, we present ambiguous stimuli to convey the outcome information in a contingency learning task. We find that (1) people spontaneously vary in their tendency to interpret ambiguous information as an outcome occurrence, and (2) this tendency predicts their subsequent judgments, so that those people who more often report seeing an outcome show stronger illusions of causality. In sum, we conclude that individual differences in the way people interpret information can be a useful tool to better understand causal judgments and their biases, and in particular illusions of causality.

SESSION 1

FROM COMPETITION TO FACILITATION: HOW TEMPORAL CONTIGUITY MODULATES INTERACTIONS BETWEEN EVENTS IN HUMAN ACTION-OUTCOME PERFORMANCE

José A. Alcalá[1,2], Jessica Bray[2], Richard D. Kirkden[2], José Prados[2,3] & Gonzalo P. Urcelay[1,2]

[1]*University of Nottingham*

[2]*University of Leicester*

[3]*University of Derby*

Action-Outcome (A-O) learning occurs widely in humans and other animals as it enables control over the environment to fulfill the organism's needs. In three experiments, we explored the role of an intervening signal on A-O performance and causal attribution in humans. Using a Free Operant Procedure (FOP), we manipulated the temporal contiguity of A-O and assessed whether a signal competed, facilitated, or had no effect on A-O performance. In Experiment 1, with strong temporal contiguity (2sec of trace between A-O), an intervening signal (presented 1.5sec after the action) reduced A-O performance with no effect on causal judgments. However, when A-O contiguity was weak (6sec trace), the same signal facilitated both A-O performance and causal judgments. Experiment 2 focused on weak contiguity (6sec) and evaluated whether the temporal position of the signal, either at the beginning of the trace or at the end, affected competition or facilitation. The signal facilitated A-O performance and causal judgments only when it was presented contiguously with the A (beginning of trace) – it had no effect when presented at the end of the 6sec trace (contiguous with O). Finally, in the last experiment, we observed that magnitude of Overshadowing depends on the salience of the signal as anticipated by learning models. A high-salience signal competed to a greater extent with the A than a low-salience signal. In summary, depending on the temporal contiguity between A-O, an intervening signal overshadows or potentiates the instrumental performance of participants. These results are discussed in light of associative learning models and underscore the key role played by temporal contiguity in determining cue-interaction phenomena.

SESSION 1

JUMPING TO CONCLUSIONS INCREASES ILLUSIONS OF CAUSALITY, BUT NOT THROUGH TRAINING LENGTH

María Manuela Moreno Fernández[1], Fernando Blanco[1] & Helena Matute[2]

[1]*Faculty of Psychology, University of Granada*

[2]*Faculty of Psychology and Education, University of Deusto*

According to associative learning models, causal estimation results from the formation and strengthening of associations between the mental representations of causes and effects. From this perspective, causal illusions (believing that two events are causally related when they are not) has been explained as a pre-asymptotic effect produced by the accumulation of trials containing both the cause and the effect at early stages of the learning process. Importantly, this explanation proposes that illusions disappear as more information is collected. Therefore, individual differences in the tendency to collect information may be considered as a vulnerability factor for experiencing causal illusions. Specifically, people with high tendency to "jump to conclusions" (JtC) would stop the information collection earlier and thus they are expected to experience stronger causal illusions than those who prefer to collect a higher amount of information before making any decision. In our experiments, we explored the potential relation between JtC and causal illusions. Our results suggest that the two biases are correlated, but also that the proposed associative mechanism is not responsible for this association. Alternative accounts for this result are discussed.

SESSION 1

THE ROLE OF BIG 5 PERSONALITY TRAITS AND CULTURAL DIFFERENCES IN MEDIATING LEARNED PREDICTIVENESS

Mah[1] & Haselgrove[1]

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Despite being a prominent component in the literature of personality, the Big 5 personality traits (Costa & McCrae, 1992) have been underused in the context of the study of associative learning. Furthermore, previous studies have also overlooked the potential role of cultural differences in learning about relationships between stimuli. Two learned predictiveness tasks (Le Pelley & McLaren, 2003) were conducted (lab-based and online) which required participants to learn about the associative consequences of stimuli that had a history being either relevant or irrelevant to the solution of a previous, unrelated, task. We found that a bias towards learning about a previously relevant stimulus was present in individuals from individualistic but not collectivistic cultures. Furthermore, there was also an effect of openness and conscientiousness on learning about previously relevant stimuli, and extraversion about previously irrelevant stimuli. Importantly, there were also cultural differences in how the Big 5 mediates learning. Participants low in openness and high in conscientiousness in the individualistic group showed greater learning about the previously relevant stimulus but those in the collectivistic group showed the opposite pattern of results. Past studies (Nisbett et al., 2001) have shown that individuals from an individualistic culture tend to think analytically, which could help in distinguishing between relevant and irrelevant stimuli. A predisposition by the collectivistic culture to think holistically may then impact on processing the stimuli as a whole rather than separating them by relevance.

SESSION 2

Thursday 23rd - 11:20 to 12:40

SESSION 2

SOCIAL OVERSHADOWING: REVISITING CUE-COMPETITION IN SOCIAL INTERACTIONS

Maïka Telga[1,3,4], José A. Alcalá[2,3] & Gonzalo P. Urcelay[2,3]

[1]*University of St Andrews*

[2]*University of Nottingham*

[3]*University of Leicester*

[4]*University of Granada*

Cue-competition phenomena, in particular blocking and overshadowing, have been extensively investigated across a large range of domains including causal learning, predictive learning, spatial learning, or categorization learning. However, these effects have received much less attention in the context of social learning. The present research examined whether overshadowing, that is, reduced learning about a cue when trained together with another cue relative to when trained alone, characterises learning in social interactions. Using an iterated Trust Game, we compared participants' learning of the cooperative tendencies of partners presented either alone or in a pair of partners, and explored whether social factors (e.g., gender category membership) modulated learning. In Experiment 1, we observed an overshadowing effect as participants were more likely to cooperate with cooperative partners who were presented alone (either one male or one female partner) as compared to those who were presented in a pair (either a pair of male or a pair of female partners). In Experiment 2, we replicated and extended the results from Experiment 1 in a context where participants were also presented with mixed-gender pairs of partners (one male and female partner). Finally, in Experiment 3, we found that overshadowing was independent of participants' understanding of how cooperative decisions were made between a pair of partners (e.g., consensual vs. unilateral). Across experiments, social factors related to group membership did not modulate the magnitude of the overshadowing effect. These results suggest that social learning may be sustained by similar mechanisms to asocial learning.

SESSION 2

AN EXPLORATORY STUDY OF TACTICAL DECEPTION IN SOCIOSEXUAL BEHAVIOUR OF STUMP-TAILED MACAQUES (MACACA ARCTOIDES)

Itzel De Aquino[1,4], Diana Platas-Neri[2], José Carlos Sánchez-Ferrer[3], Said Jiménez[1,4] & Jairo Muñoz-Delgado[1,4]

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Tactical Deception (TD) is a social strategy in which a subject performs an action to its own benefit causing disadvantage for a competitor. In primates, the cognitive mechanisms involved in TD have been described at different levels. Sneaky mating is a common context within which to study TD because in many primate groups, dominant males monopolize access to females and subordinate males must find a way to copulate with females avoiding the alpha's presence. The objective of this study was to explore which of the TD behavioural strategies are involved in the male sociosexual behaviour of a group of stump-tailed macaques (Macaca arctoides). We found that the subordinate males participated in more interactions when they were in a section of the enclosure where the alpha male was not present. The alpha male had more copulation interactions, but the beta male's interactions lasted longer on average. Our data offer evidence in support of the hypothesis that stump-tailed macaques may use TD strategies that are related to operant conditioning.

SESSION 2

PSYCHOLOGICAL AND SOCIAL PAIN: AN EXPERIMENTAL STUDY IN HUMANS

Inés Álamo[1], Antonio J. Ibáñez-Molina[1] & Carmen Torres[1]

[1]*University of Jaén*

Experiencing stressful events that threaten feelings of social belonging (including refusal, exclusion, segregation and bullying) have deep negative impact on mental and physical health. Cyberball is an experimental paradigm widely used to investigate social pain in the human laboratory. It consists of an online ball-tossing game that participants believe they are playing with two or three others. In fact, the "others" are controlled by the programmer, enabling to induce social inclusion and exclusion conditions. The present study was conducted with the aim of analyzing whether Cyberball can be used to induce a successive negative contrast effect (SNC), that is, a disruption of behavior and emotion by unexpectedly reducing the magnitude of a reward (from high to low social inclusion), relative to a control condition always exposed to the small reward (low social inclusion). Sixty-eight students (13 men, 55, women; (M = 19, SD: 2.11) were randomly assigned to two conditions: (a) SNC (in which participants played the game with an 80% probability of receiving the ball –preshift phase- that was suddenly reduced to 20% (postshift phase); and (b) Control (always playing the game with a 20% probability of receiving ball-tossing). Measurements of affectivity, social pain, response latency, and mental stress were collected before, during, and after completing the task. Lower response latencies were obtained in the SNC group relative to the Control group in the posthift phase, along with lower feelings of belonging, self-esteem and purpose in the latter relative to the former group after completing the task. These results suggest that our manipulation induced a reversed SNC effect.

SESSION 2

ARE ALL NON-HUMAN ANIMALS EQUALLY MORAL ACCORDING TO HUMAN ANIMALS?

Claudia Suárez-Yera[1], María Sánchez-Castelló[1], Jorge L. Ordóñez-Carrasco[1] & Antonio J. Rojas Tejada[1]

[1]*Departamento de Psicología, Universidad de Almería*

The importance of assessing the morality of the out-group or their members has undoubted adaptive value. Morality is related to the perceived intentions of others toward us and/or our in-group (whether they pose harm or benefit). When we evaluate the morality of an out-group, our thoughts are quicker, more extreme, and more strongly associated with socially shared universal prescriptions. Typically, studies on moral perception have focused on human social groups, but this paper aims to provide evidence on the similarity between how human groups and animal groups morally perceive each other. The present study aims to evaluate whether there are differences in the perception of morality that people manifest towards different groups of animals (pets, wild animals, profitable animals, and pests). In addition, we will test whether there are differences according to diet type (omnivore vs. vegetarian/vegan). Data were obtained from 470 participants who filled out an online, abbreviated version of the Moral Stereotype Content Scale, which measures the perception of morality that humans attribute to different groups of animals. A mixed factorial ANOVA was conducted, having as intrasubject variables the scores on the moral stereotypes measure and the four animal groups, and as intersubject variable the type of diet. The results showed a very small interaction effect between the intrasubject variables, although the main effects were more noticeable, due to the groups of animals evaluated and the type of diet. The post hoc analysis of the interaction provided interesting results, as the highest degree of moral attribution is given by vegetarians/vegans towards profitable animals and pets. Based on the results obtained, it is concluded that not all animals are perceived as equally moral by humans and that, in addition, this perception is related to the type of diet.

SESSION 3

Thursday 23rd - 16:00 to 17:20

SESSION 3

ALTERED NEUROCOGNITIVE AND EMOTIONAL MECHANISMS IN A PRECLINICAL MODEL OF COMPULSIVITY

Elena Martín-González[1], Manuela Olmedo[1], Ángeles Prados-Pardo[1], Daniel J. Cruz-Garzón[1], Steve J Sawiak[2], Jeffrey W Dalley[3], Pedro Ramos-Cabrer[4], Pilar Flores[1], Santiago Mora[1] & Margarita Moreno[1]

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Compulsivity has been proposed as a transdiagnostic trait presenting high comorbidity between compulsive behaviour and other neuropsychiatric disorders such as obsessive-compulsive disorder, autism, and schizophrenia. The purpose of the present research was to assess cognitive domains, emotional and motivational behaviors and biological correlates in the vulnerability to compulsive-like behaviour. Animals were characterised as high (HD) or low (LD) drinkers according to their compulsive behaviour in Schedule-Induced Polydipsia (SIP). Then, we assessed cognitive inflexibility by Probabilistic Spatial Reversal Learning (PSRL), impulsivity by Variable Delay-to-Signal (VDS), decision making by Rodent Gambling Task (rGT), propensity to attribute incentive salience to rewards and stimuli by Pavlovian Conditioned Approach (PavCA), motivation to gain reward by Progressive Ratio Schedule of Reinforcement (PRSR), social dominance by Tube Test (TT) and emotional memory by Passive Avoidance (PA). Moreover, plasma corticosterone (CORT) levels were measured immediately after SIP, at 45 minutes and at 90 minutes. Finally, we used high-resolution magnetic resonance imaging to evaluate structural alterations. HD rats performed fewer reversals on PSRL. HD animals also showed more premature responses on VDS and performed more disadvantageous elections on rGT. HD rats showed less victories against unknown competidor on TT and more latency of avoidance on the PA compared to LD rats. There were no differences in PavCA, or PRSR. Neuroendocrine analysis exhibited a blunted stress response in HD rats after SIP. Finally, voxel-based morphometry revealed significant differences in grey matter density between phenotypes. These results highlight the importance of measuring different behavioral and biological markers for enhancing the knowledge about the vulnerability to developing a compulsive spectrum disorder.

SESSION 3

ADAPTING THE DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (DSM) TO THE EVALUATION OF PSYCHOPATHOLOGIES IN A GROUP OF EX-PET AND EX-PERFORMER CHIMPANZEES: A PRELIMINARY INVESTIGATION

Yulán Úbeda[1], Jaume Fatjó[2,3], Carles Rostán[1], Dietmar Crailsheim[1,4], Alba Gomara[5], Javier Almunia[6] & Miquel Llorente[1,7]

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Animal models of mental disorders connects comparative and clinical psychology. Nonhuman primates has received increasing interest in the last decade as a comparative model to psychopathology with humans. Nevertheless, only a limited number of mental disorders have been evaluated using adapted versions of the Diagnostic and Statistical Manual of Mental Disorders (DSM) in chimpanzees. In this research, we created a questionnaire for the assessment of psychopathologies in 23 rescued ex-performer and ex-pet chimpanzees, based on an inclusion-exclusion adaptation of the DSM-V. A total of 70 items were included in the questionnaire in accordance with 3 main criteria: deleting those that could not be applied to the subjects, retaining those that could be applied, and adapted when needed. Data reduction revealed 9 statistically significant factors with acceptable standards of interrater reliability and validity, accounting for 70.78 % of the variance. The factors obtained were clear and similar to some of the main categories of diagnosis for humans, including: depressive disorders, anxiety disorders, or disruptive, impulse-control, and conduct disorders, among others. Nevertheless, the limitation of the sample, the subjectivity in the creation of the questionnaire, as well as the theoretical and methodological challenges of the adaptation of the DSM to chimpanzees, led to the fact that this research should be considered as a first contact study on the identification of disorder categories in a group of chimpanzees. With this study we try to promote comparative research on psychopathology in chimpanzees and other animals, so as to provide interesting information on the evolutionary origins of human psychopathology. Likewise, it is important to emphasize that the diagnosis of psychopathologies in chimpanzees could be translated to important pragmatic aspects for the species related to awareness, legal protection and welfare.

SESSION 3

DECISION MAKING AND COGNITIVE FLEXIBILITY IN OBSSESIVE-COMPUSIVE DISORDER: NEUROBEHAVIOURAL AND NEUROFUNCTIONAL ANALYSIS

Rocío Rodríguez-Herrera[1,2], Ana Sánchez-Kuhn[1,2], José García-Pinteño[1,2], Pilar Fernández-Martín[1,2], José Juan León[1,2], Miguel Soto-Ontoso[3], Laura Amaya-Pascasio[3], Patricia Martínez-Sánchez[3] & Pilar Flores[1,2]

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Obsessive-Compulsive Disorder (OCD) is one of the most prevalent mental health disorders worldwide and causes great functional disability. This population is characterized by poor tolerance to delays and/or preference for the immediate reinforcer, low cognitive flexibility, high level of impulsivity and risky decision making. Neuroimaging studies indicate that these difficulties may be related to the activity of the prefrontal and motor brain areas. Hence, inhibitory control is postulated as a possible biomarker for this disorder that needs to be explored. The objective of this work was to perform behavioural and functional analysis of the different components of inhibitory control of a sample of adults (ages 18 to 55 years) with OCD diagnosis (n = 15) in comparison with a healthy control group (n = 14). For this aim, we used four neurobehavioral tasks for each of these processes: Delay Discounting Task (DDT) (impulsive decision making), Probabilistic Reversal Learning (PRLT) (cognitive flexibility), Stop-Signal Reaction Time (SSRT) (motor impulsivity) and Iowa Gambling Task (IGT) (risky decision making). The Functional Near-Infrared Spectroscopy (fNIRS) (16x16) neuroimaging technique was used to record the resting-state functional connectivity of the prefrontal cortex and motor cortex activity. These data were completed with standardized self-reports of the impulsive-compulsive dimension, neuropsychiatric and socio-emotional status, and health-related lifestyle. The results showed that the OCD group displayed a poorer performance in the DDT and PRLT tasks in comparison with the control group. However, no significant differences were found in the performance of the SSRT and IGT tasks. We also found indicators of different resting-state functional connectivity between motor and prefrontal cortex channels. Considering these results, it seems necessary to adopt a dimensional perspective to explain OCD. This study can help to further explore the neurobehavioral and neurofunctional dimensions that underlie this disorder, leading to an improvement in its diagnosis and treatment.

Funding: Ministerio de Ciencia, Innovación y Universidades (MICIU) [PID2019-108423RB-I00].

SESSION 3

ANIMAL LEARNING MODELS FOR THE STUDY OF ANOMALOUS EATING BEHAVIOR

Marta Valero[1], Milagros Gallo[1] & David Garcia-Burgos[1]

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Dysfunctional cognitions seem to play an important role in the development and maintenance of restrictive eating patterns. However, to our knowledge there are not animal models experimentally addressing how our thoughts can promote a decrease in high-calorie food intake. In this regard, the present experiments try to fill this gap by exploring the changes in the acceptance and preference for sweet solutions induced by aversive mental representations in both male and female rats. In Experiment 1 we used a second order conditioning protocol (n=32) in which along two repeated cycles we paired drinking a sucrose solution (10%) with an aversive context previously associated with body rotation. Animals belonging to the control group, drank the sucrose solution in neutral contexts without experiencing body rotation. The results showed a significant lower consumption of the sweet solution in the experimental group in comparison with the control group during the first and second cycle. In Experiment 2 we used a mediated conditioning protocol (n=32), in which to the animals drank the taste solution in an initially neutral context which was later associated with body rotation during six daily sessions. We found similar results to those found in Experiment 1 except that they were evident only during the first cycle. Otherwise, in both experiments, the sucrose preference ratio tested in the home cage was significantly higher than .50 in both groups, showing a preference for this taste. These results support the role of unpleasant cognitions in modulating the expression of taste preferences for sweet substances. The potential translational value of this protocol for developing animal models of eating disorders is discussed.

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SESSION 4

Thursday 23rd - 19:10 to 20:30

SESSION 4

PRIMACY AND RECENCY IN THE SNAIL CORNU ASPERSUM

Pablo Rubio[1], Judit Muñiz-Moreno[1] & Ignacio Loy[1]

[1]*Universidad de Oviedo*

Primacy and recency effects have been studied in few vertebrate species. It is of importance to Comparative Psychology to study whether these effects are present in other species, such as invertebrates. Pavlovian Conditioning of tentacle lowering in the snail Cornu aspersum has been proven useful for the study of Associative Learning and it is also a powerful tool for the study of animal cognition. In the present work this procedure was employed to study primacy and recency effects in snail. Experiment 1 found that serial presentation of five reinforced odors resulted in a higher response rate for the initial and final odors in comparison with the middle ones. Experiment 2 replicated the previous experiment, adding appropriate counterbalances of odor presentation order. Therefore, it can be concluded that snails possess cognitive processes related to primacy and recency effects. The fact that primacy and recency were found through Pavlovian Conditioning implies that the cognitive processes related to them are present in Associative Learning, like other processes as well (e.g., attention, surprise, expectation). Furthermore, these results contrast to primacy and recency effects theories that appeal to language (e.g., rehearsal) or certain neuronal structures (e.g., prefrontal cortex).

SESSION 4

CHARACTERISING DIFFERENT FACTORS THAT ARE CRITICAL FOR CUE COMPETITION: A T-MAZE SPATIAL NAVIGATION STUDY IN HUMANS

Estibaliz Herrera[1], José Prados[1,2] Matthew G. Buckley[3] & Gonzalo P. Urcelay[4]

[1]*University of Leicester*

[2]*University of Derby*

[3]*Aston University*

[4]*University of Nottingham*

Our previous studies (Herrera et al., under review) suggest that landmark-goal proximity might be a critical factor for competition to occur in human spatial navigation. To extend the generality of these findings, we decided to test participants' geometry encoding abilities outside rather than inside of the arena. Our aim was twofold: first, to assess how people learn to navigate through a virtual T-Maze arena and evaluate whether the landmark proximity to the goal (a Wi-Fi hotspot) affects learning about the global shape representation of the arena. Second, to assess whether the starting-point locations where participants are released during training have any impact on the global geometric representations. To test geometry encoding following training, participants were placed outside of the arena and instructed that they have to look for the WI-FI signal outside of the arena, which might be weak. Therefore, they had to mentally represent the global shape of the environment by looking for wall boundaries that are closer to the goal location. High rates of time spent nearby the goal location allowed us to assess to what extent participants encoded the global representation of the arena. In Experiment 1, three groups experienced a landmark placed at varying distances from the goal (close, middle, far) and the control group was trained in the absence of any landmarks. The results show overshadowing (cue competition) of geometry in the group that was trained with the closer landmark to the goal, but not in the others. In Experiment 2, groups and conditions were kept the same, but participants' starting-point location were changed from trial to trial, hence each participant was released 5 times from each arm of the maze, rather than 15 from the same arm. The overshadowing effect in the Close group was no longer observed. These results suggest that close, but not distal landmarks can overshadow geometry encoding, and this may be mediated by a stimulus-response strategy.

SESSION 4

THE MAGNITUDE OF THE RENEWAL EFFECT IN THE SNAIL CORNU ASPERSUM

Judit Muñiz Moreno[1] & Ignacio Loy[1]

[1]*Universidad de Oviedo*

In previous studies it was shown the three renewal paradigms (ABA, AAB, and ABC) using an appetitive Pavlovian Conditioning procedure and the light as context in invertebrates. However, these studies have not explored whether the magnitude of the renewal effect is equivalent among the three paradigms. The aim of the present study was to examine the magnitude of renewal among the three paradigms in the snail Cornu aspersum. Firstly, all of the subjects were exposed to an odour (CS) pairing with the access to food (US) in context A during training. Then, in extinction phase, half of the subjects were exposed to the CS alone in the context A (AAB and AAA groups) whereas, the other half were exposed to the CS alone in context B (ABA and ABC groups). Finally, during renewal test, subjects were exposed to CS alone and the context change depended on the group, so ABA and AAA groups received renewal test in context A, AAB in context B and ABC in context C. The results showed renewal effect in the three paradigms, but these results were not statistically conclusive regarding the magnitude of the effect among the three paradigms. These results have several implications in the study of the mechanisms involved in extinction phenomenon.

SESSION 4

THE IMPACT OF EXTINCTION OF A CUE ON CONTEXT-SPECIFICITY OF A DIFFERENT CUE DEPENDS ON THE LENGTH AND THE TIME OF THE EXTINCTION TRAINING

Pedro Ogallar[1], José E. Callejas-Aguilera[1] & Juan Manuel Rosas[1]

[1]*Universidad de Jaén*

Recent studies show that experiencing extinction makes the acquisition of a new cue context specific (EMACS effect). Attentional Theory of Context Processing suggests that this effect appears because experiencing sudden changes in the prediction error leads to a general increase in attention that makes the organism to code the target information together with the context where that information is learned. Prediction error decreases as extinction learning progresses. Thus, the EMACS effect should be transient, disappearing when the extinction training is elongated, or it is finished before starting with acquisition training with the target cue. An experimental series in human predictive learning tested that hypothesis manipulating (1) the time in which the extinction was carried out (concurrent or previous) and (2) the number of extinction trials (12 or 24). Results reported here show that both manipulations affect EMACS effect, suggesting that the elevation of attention to context by the extinction experience is attenuated or disappears when extinction occurs prior to the presentation of the new cue or when the number of extinction trials increases. These results are discussed in relation to attentional theories of information processing.

SESSION 5

Friday 24th - 09:00 to 10:20

SESSION 5

FLAVOR NEOPHOBIA IS ATTENUATED IN A CONTEXT ASSOCIATED WITH SODIUM VALPROATE

Lucía Cárcel[1], Mª de los Ángeles Cintado[1] & Luis Gonzalo De la Casa[1]

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When a new context is repeatedly paired with the effects of a drug, the context acquires the capacity to elicit a conditioned response that plays a relevant role in preparing the animal for the appearance of the unconditioned stimulus. In some cases the response is similar to the unconditioned effects of the drug, but on other occasions the conditioned response is opposite to the effect of the drug. By other hand, flavor neophobia appears when an organism consumes for the very first time a new flavor, and it is expressed behaviorally by the reduced consumption of the novel flavor in comparison with consumption of an already familiar flavor. A topic that has received relatively little attention in the analyses of the neophobic responses is the influence of the context in which the flavor is first encountered, and in this work we analyzed the effect of testing flavor neophobia in presence of a context that has previously been repeatedly paired with sodium valproate, an anticonvulsant drug that has showed additional pharmacodynamic effects in animal models, including an anxiolytic action. Previous results revealed that valproate injected at 100 mg/Kg and 300 mg/Kg doses before allowing animals to consume a new flavor solution (saccharin + citric acid) resulted in an attenuation of neophobia (Shepard, 1988). In our first experiment we failed to replicate such a result using a 3% vinegar solution, since the animals drank less of the new flavor after valproate administration as compared to a control group injected with saline. In a second experiment, we observed again a reduction in consumption of the new flavor after the administration of valproate, but neophobia was reduced when registered in a free-drug test in presence of a context previously paired with the drug. These results are interpreted considering the effect of the drug as a function of the hedonic vs. aversive properties of the new flavor, and the role of context to modulate neophobia.

SESSION 5

NON-GENETIC INHERITANCE OF A SWEET FLAVOR PREFERENCE IN RATS

Fernando Rodríguez-San Juan[1], Mirari Gaztañaga[1] & Gabriel Rodríguez[1]

[1]*Universidad del País Vasco (UPV/EHU)*

Four groups of male rats received different schedules of exposure to fluids: Group SA-20 and Group SA-10 were given 24-h free access to a solution of saccharin (0.4%) (for 20 and 10 days, respectively); Group STV-20 received 24-h free access to a solution of a different sweetener (2% stevia) (for 20 days), and a control condition, Group W, was not exposed to any sweetener, only to filtered water. The offspring of these groups were distributed in three different experiments. The offspring of Experiments 1 and 2 received a two-bottle test (water vs. saccharine) for assessing its level of preference for saccharine. Subjects in Experiment 1 were tested on the 30 postnatal day (PD) and those in Experiment 2 were tested on the 60 PD. An enhanced preference for saccharin was found in the offspring of Groups SA-20, SA-10, and STV-20 relative to the offspring of Group CTRL, which was more marked in Experiment 2. These results were presented in a previous meeting of this society. Now we present the results of Experiment 3 in which the remaining part of the offspring was tested on the PD 13 using a taste reactivity test. We found that the offspring from Groups SA-20, SA-10, and STV-20 showed more appetitive responses (e.g., more mouthing and less locomotive activity) during the consumption of both saccharine and stevia, relative to the offspring of Group CTRL. All these results are consistent with the existence of an intergenerational transmission of a sweet flavor preference. We discuss these findings in the light of previous literature.

This research was supported by grants from the Gobierno Vasco (Grant No. PRE-2016-1-0078 and Grant No. IT-1341-19).

SESSION 5

SUCCESSIVE POSITIVE CONTRAST WITH BITTER SOLUTIONS: EUPHORIA RESPONSES IN AVERSIVE CONTEXTS

Matias Avellaneda[1], Matias Serafini[1] & Giselle Kamenetzky[1]

[1]*Centro de Altos Estudios en Ciencias Humanas y de la Salud (CAECIHS-UAI)*
Universidad Abierta Interamericana

Positive incentive contrast is a phenomenon observed when a group of subjects exhibits a higher consumption of a reinforcer, compared to a control group, under the condition of having been previously exposed to a similar reinforcer of lower magnitude. Traditionally, this effect is studied with rats using sweet solutions. This preparation, even though widely used, does not consistently result in this effect. However, a positive incentive contrast effect was recently reported using bitter solutions instead of sweet ones. On the other hand, the presence of a familiar odor has been shown to be effective in attenuating the responses elicited by aversive stimuli, a phenomenon denominated social buffering. This experiment was designed to study whether the presence of a familiar odor decreases the rejection responses towars bitter solutions in the context of positive incentive contrast. To extend the findings of previous studies, we used a quinine solution of 0.2% during the preshift phase. Two groups of rats received solutions of 0.2% (experimental group) and 0.01% (control group) quinine during the preshift phase. During the postshift phase, the solution of the former was replaced by that of 0.01%, and half of the subjects in each group were tested in the presence of the homecage's odor. A positive incentive contrast was observed among the subjects of the experimental group, which consumed more of the low-concentration solutions during the postshift phase than the control group. The presence of the odor, however, exerted no effect. These results replicate and extend previous findings of positive incentive contrast with bitter solutions to a higher concentration but suggest the homecage's odor is not effective in attenuating the responses that these solutions elicit. The latter finding may be due to the solutions used being too aversive for their rejection to be attenuated, or to the social buffering effect not being applicable to this context.

SESSION 5

HIGH-FAT DIET INDUCES LONG-TERM VULNERABILITY TO IMPULSIVE BEHAVIOR: PRECLINICAL STUDIES

Santiago Mora[1], Diego Ruiz-Sobremazas[1], Elena Martín-González[1], Ángeles Prados-Pardo[1] & Margarita Moreno[1]

[1]*University of Almeria and Health Research Centre*

Impulsivity, defined as actions or decisions prematurely expressed, performed without appropriate forethought and/or unduly risky that might result in potential negative outcomes for the individual, is a key symptom across several neuropsychiatric disorders such as attention-deficit/ hyperactivity disorder and schizophrenia. However, little is known about the vulnerability factors that might underpin the phenomenon. Attention has been raised during the last decade towards neuroinflammation as a putative factor in inhibitory control deficit, and the impact of diet is being assessed. To our knowledge, however, few studies have addressed the topic to the date using specific behavioral paradigms. Thus, the present study aimed to do that exposing Wistar rats to either a control (Chow) or a high-fat (HFD, supplementing Chow with commercial cheesecake) diet from early adolescence (postnatal day 33, PND33) to adulthood (PND77), for later assessing inhibitory control by Variable Delay-to-Signal (vDS), delay discounting task (DDT), and 5-choice serial reaction time task (5-CSRT task). A long-term increase in impulsive behavior due to HFD, as measured by the premature responding in vDS and 5-CSRT task, was found, although no differences between animals exposed to HFD and controls appeared in DDT. Interestingly, the aforementioned vulnerability to impulsivity was not attributable to body composition and weight, which goes a step further from the results of the existing literature, thus pointing to a more subtle vulnerability putatively mediated by inflammation during critical developmental stages following exposure to dietary metabolic stress.

This work was supported by MINECO-FEDER funding (PGC2018-099117-B-C21).

SESSION 6

Friday 24th - 12:10 to 13:30

SESSION 6

WITHIN-SUBJECT LATENT INHIBITION AND PSYCHOTICISM IN HUMANS

Pilar Niño[1] & Luis Gonzalo De la Casa[1]

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Repeated presentations of an irrelevant stimulus without any consequence result in a reduction of the conditioned response when the same stimulus is subsequently associated with a relevant consequence. This phenomenon, termed Latent Inhibition (LI), has received ample attention in the field of comparative psychology not only by its role in the experimental analysis of associative learning and attentional processes, but also by the proposal of a model explaining schizophrenic disorder using LI as an empirical tool to validate it. Evidence supporting such model comes from animal experiments revealing the effect of dopaminergic changes on LI, and from experiments with human participants showing that LI is disrupted in schizophrenic patients and non-pathological samples scoring high in tests evaluating psychotic-proneness. In this paper we report the results of a LI experiment with healthy participants scoring low and high in the items from the PID-5 questionnaire related to psychoticism. In addition, for a sample of subjects the experiment was conducted in a traditional face-to-face well-controlled experimental situation, and for other sample the procedure was conducted on-line. The results revealed that LI was reduced in high-psychotic prone participants, but this result was significant in the face-to-face experimental condition and felt short of significance in the online condition. These results give support to an attentional interpretation of LI, and confirm the reliability of on-line experiments when the appropriate control measures are established.

SESSION 6

INDIVIDUAL DIFFERENCES IN EYEWITNESS MEMORY: COGNITIVE FACTORS THAT MODULE THE ASSOCIATION BETWEEN THE DEFICIT IN LATENT INHIBITION AND THE QUALITY OF THE TESTIMONY

Ixone Badiola[1], Naiara Arriola[1] & Gabriel Rodríguez[1]

[1]*Universidad del País Vasco (UPV/EHU)*

In this study, participants performed several tasks across four sessions: a latent inhibition (LI) task, the Guildford alternative uses task (AUT), the Deese, Roediger and McDermott (DRM) task, and a recall task after viewing the short video of a robbery (including two tests, one immediately after the video and the other 14 days later). We found a relation between LI and the quality of the testimonies that was modulated by the performance in the other cognitive tasks. Specifically, participants that showed a deficit in latent inhibition and a quite poor performance in the DRM and AUT tasks offered testimonies with fewer details than 1) participants with similar poor performance in the DRM and AUT tasks but showing latent inhibition, and 2) participants showing a deficit in latent inhibition and a good performance in the DRM and AUT tasks. These results are consistent with a shared vulnerability model of the creativity/psychopathology relationship. According to this, a deficit in LI is related with attentional advantages (that would enhance the ability to introduce veridical details in a testimony) only in the presence of additional cognitive strengths (which might be marked by the AUT and DRM tasks). In the absence of these extra strengths, a deficit in LI would be related to attentional dysfunctions (that would impair the acquisition and/or retrieval of a good testimony rich in veridical details).

This research was supported by a grant from Gobierno Vasco (Grant No. IT-1341-19).

SESSION 6

COGNITIVE INFLEXIBILITY MEDIATED BY MEMORY IMPAIRMENT AND DECREASED FRONTAL GENE EXPRESSION OF HTR2A, GRIN1, AND BDNF IN A PRECLINICAL MODEL OF COMPULSIVITY

Ángeles Prados-Pardo[1], Elena Martín-González[1], Santiago Mora[1], Carlos Martín[1], Lucía Sánchez Salvador[1], Manuela Olmedo-Córdoba[1], Cristian Pérez-Fernández[1], Fernando Sánchez-Santed[1], Margarita Moreno[1]

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Compulsivity is observed in different neurobiological disorders associated with cognitive inflexibility mediated by memory impairments. Previous results suggest the implication of serotoninergic, glutamatergic, and BDNF systems in regulating memory involved in inhibitory control. The present study was designed to investigate the possible association between behavioral inflexibility mediated by memory disruptions and glutamatergic, serotoninergic, and BDNF genes expression in the frontal cortex, the hippocampus, and the amygdala in high compulsive rats selected by schedule-induced polydipsia (SIP). First, after 20 sessions, male Wistar rats were selected as either high compulsive (HD) or low compulsive (LD) drinkers according to their acquisition level of water intake (ml) in SIP. Second, we assessed cognitive flexibility and memory in HD and LD rats by Morris water maze and radial arms maze. Finally, we carried out real-time qPCR quantification of the genomic sequences from HTR2A, HTR2C, Grin1, Grin2a, Grin2b, Grin2c, GRM2, and BDNF promoter genes in the frontal cortex, the hippocampus, and the amygdala in HD and LD rats. Our data showed cognitive inflexibility in classical memory tasks, as the memory reference Morris Water Maze and radial arms maze, accompanied by differences in the expression of HTR2A, Grin1, and BDNF genes in the frontal cortex of our compulsive drinker rats.

Supported by Grant MICINN-FEDER PGC2018-099117-B-C21.

SESSION 6

EXECUTIVE FUNCTIONS EVALUATION IN OBSSESIVE COMPULSIVE DISORDER PATIENTS USING A VIRTUAL REALITY TEST

Ana Sánchez-Kuhn[1,2], Rocío Rodríguez-Herrera[1,2], José García-Pinteño[1,2], Pilar Fernández-Martín[1,2], José Juan León[1,2], Miguel Soto-Ontoso[3], Laura Amaya-Pascasio[3], Patricia Martínez-Sánchez[3] & Pilar Flores[1,2]

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Obsessive-Compulsive Disorder (OCD) is the sixth most disabling psychiatric disorder with 1.9–3.3% of lifetime prevalence. One of the core explanations underlying the difficulties of this population to adapt to daily life functioning is a poorer performance in executive functions (EF). So far, the evaluation of specific EF deficits in humans have been assessed using scales, tests and computer-based tasks. However, a limitation of such standard assessment tools is their low ecological validity. In this sense, virtual reality tasks have provided a new approach that enables the simulation of naturalistic and complex challenges while maintaining all variables controlled. To explore the suitability of such an evaluation approach in OCD patients, this work aimed to evaluate planning, working memory and cognitive flexibility in an OCD population in comparison to a healthy control group in a virtual reality test. We counted with n=10 diagnosed OCD patients (2 women, age range: 23-53) and n=8 healthy controls (6 women, age range: 21-50) that performed the virtual reality test Ice Cream (Nesplora), specially designed for the EFs assessment. This test involves the performance of an ice-cream shop serving that requires planning (give customers turn based on environmental criteria), working memory (maintain the information related to the types of ice creams), and cognitive flexibility (assed by the adaptation to change in contingencies). Results indicated that OCD patients had significant lower planning, displaying less speed in turn giving and more errors, and compromised working memory, being more slowly when selecting the type of ice cream. Although the performance in cognitive flexibility was lower in OCD patients, no significant differences were found between groups in this variable. The principal limitation of this work was the small sample size, which will be expanded in future studies. However, these results confirm the deficiencies in EF showed by patients with OCD, supports a dimensional approach for the characterization of this pathology, and indicates that virtual reality tests could be a suitable and ecological evaluation tool for the measurement of EF in OCD.

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SESSION 7

Friday 24th - 16:30 to 18:10

SESSION 7

PERCEPTUAL LEARNING IN A TARGET IDENTIFICATION TASK: COULD SAME AND DIFFERENT TRIALS ENGAGE DIFFERENT COGNITIVE PROCESSES?

Rocio Angulo[1], Germán Cipriani[2], Alejandra Carboni[2] & Dominique Kessel[3]

[1]*Universidad de O´Higgins*

[2]*Universidad de la República*

[3]*Universidad Autónoma de Madrid*

This study aimed to test whether “same” and “different” trials in a target identification task assessing perceptual learning could elicit different cognitive processes. Following concurrent pre-exposures to the stimuli, one of these was designated as the “target” and both stimuli were then presented in an intermixed schedule to be judged as either same or different from the target. In addition to the accuracy of same/different judgments, reaction time and event-related potentials were recorded for same and different trials. The participants (n= 41) showed similarly high levels of accuracy on both same and different trials. However, on different trials, reaction times were slower and P3 latencies were longer than on the same trials. Further, reaction times and P3 latencies were positively correlated. The different time course of the same and different trials indicates that different cognitive processes might be engaged to accurately respond “same” or “different.” Moreover, the relevant process could be more simplistic in the former case than in the latter. The importance of these findings for theories of perceptual learning is discussed.

SESSION 7

PSYCHOPHYSICS OF THE FEATURE NEGATIVE DISCRIMINATION: SOC OR CI DEPENDS ON RESPONSE CRITERION

Clara Muñiz-Diez[1] & Ignacio Loy[1]

[1]*Universidad de Oviedo*

In the feature negative discrimination, a stimulus A is reinforced when presented alone (A+), but non-reinforced when presented in compound with another stimulus X (AX-). With this design, X can gain excitatory properties, a phenomenon known as second order conditioning, or X can gain inhibitory properties, a phenomenon known as conditioned inhibition. The appearance of one or the other phenomena depended on the number of A+ and AX- trials presented per session (Muñiz-Diez et al., 2021). This result is consistent with predictions from Signal Detection Theory, and here we present an analysis of the results in terms of this theory. The analysis shows that variations on the number of A+ and AX- trials affect the response criterion. However, these results cannot be accounted by some of the most important associative learning models: Pearce configural model (1994), Pearce & Hall model (1980), Rescorla and Wagner model (1972) and Wagner's SOP (1981).

SESSION 7

FUNCIÓN TEMPORAL DEL REFORZADOR EN LA ORGANIZACIÓN DE LA CONDUCTA

Armin Rezaeian[1], Gabriela E. López Tolsa[2], Sarah Cowie[3] & Ricardo Pellón[4]

[1]*Universidad Nacional de Educación a Distancia*

[2]*Universidad Nacional Autónoma de México*

[3]*Universidad de Auckland*

[4]*Universidad Nacional de Educación a Distancia*

Existe el debate de como el reforzador afecta a la conducta: de manera retrospectiva ("reforzamiento") o prospectiva ("inducción"). En esta investigación realizamos un experimento con ratas para comprobar la función temporal que tiene el reforzador. Las ratas disponían de dos palancas a las que responder, una con un programa de IV 5s, la otra con un programa de IV50s, ambos de reforzamiento con comida. El tipo de programa en el ensayo dependía del lugar donde el reforzador fue entregado anteriormente. Si el lugar del reforzador del anterior ensayo coincidía con el reforzador del próximo ensayo, entonces hablaremos de un IV 50s; si no coincidía, el programa sería de un IV 5s. Además, hubo tres condiciones: no señalada, señala-futuro y señala-pasado. En la condición no señalada el único estímulo discriminativo era la presencia de palanca; en la de señala-futuro se añadió una luz que indicaba el lugar del próximo reforzador; y en la de señala-pasado se añadió una luz que indicaba el lugar del anterior reforzador. Comparamos las distribuciones de las conductas entre condiciones. Encontramos que las conductas en la condición no señalada fueron similares a las de señala pasado, sugiriendo una función discriminativa del reforzador. Por otro lado, la distribución de conductas donde se señalaba el futuro reforzador las ratas respondieron claramente en la palanca adecuada. Estos resultados parecen indicar que el reforzador en sí mismo tiene una función inductiva, pero que la organización de la conducta depende también de la función retrospectiva del reforzador, como sugieren los datos de la condición señala-futuro.

SESSION 7

MECHANISMS UNDERLYING PERCEPTUAL LEARNING: ASSOCIATIVE ACTIVATION & COMPARISON

[1]Jesús Sánchez, [1]Ana González & [1]Isabel de Brugada

[1]*University of Granada*

Perceptual learning refers to the increased discrimination between similar stimuli that have been previously exposed. Depending on the task exposure: spaced (used in animals) or rapid (used in animals and humans), two mechanisms have been proposed to explain this discrimination. The first is the associative activation of the unique elements of the stimuli that maintains its effective salience high; the other is the unitization of the unique elements that form a good representation on memory and reduces its effective salience. In the following experiments with rats as subjects, both proposals are contrasted by using different intervals between stimuli. Experiment 1 uses a rapid exposure with a distractor in between that eliminates comparison, however, a spaced presentation of the common element allows associative activation of the unique ones and leads to better discrimination. Experiment 2 exposes the stimuli in an intermixed spaced manner that results in increased conditioning when unique elements are paired with an LiCl injection that causes discomfort in contrast to the blocked spaced group. Finally, Experiment 3 includes a rapid comparison group that results in a worst conditioning of the unique element in contrast to the intermixed or blocked spaced groups. These results suggest that, depending on the procedure, different mechanisms can support the better discrimination by modifying the effective salience of the stimulus.

Research supported by: Ministerio de Ciencia e Innovación – Agencia Estatal de Investigación/ PGC2018-095965-B-I00 FEDER

SESSION 7

REVISITING UNCERTAINTY AND ITS CENTRAL ROLE IN THE FORMAL MODELS OF CONDITIONING

[1]Gabriel Rodríguez

[1]*Universidad del País Vasco*

I will present some preliminary theoretical work that starts with a reanalysis of the way in which our standard models have related uncertainty, attention, and associative learning. This relationship has been captured in different ways in each model, by using different sorts of error term (and/or interpreting them in a different way). I will then bring two possible general meanings of uncertainty and I will discuss to what extent our formal models capture these two notions: 1) uncertainty as a state in which there is an absence of knowledge, and 2) uncertainty as a state in which it is experienced that the knowledge acquired in the past does not fit with the present reality. Finally, I will suggest that these two sorts of uncertainty control different and interacting attentional mechanisms, and I will also propose a formal model that captures this complex attentional function and its role in modulating the acquisition and flexible redesigning of associative structures.

This research was supported by a grant from Gobierno Vasco (Grant No. IT-1341-19)

POSTER

SESSION 1 (P1-P15)

Thursday 23rd - 17:50 to 18:50

SESSION 1

THERE IS MORE TO CONTEXTUAL CUING THAN MEETS THE EYE: IMPROVING VISUAL SEARCH WITHOUT ATTENTIONAL GUIDANCE TOWARD PREDICTABLE TARGET LOCATIONS

Tamara Giménez-Fernández[1], Miguel A. Vadillo[1], Tom Beesley[2], David R. Shanks[3] & David Luque[1,4]

[1]*Universidad Autónoma de Madrid*

[2]*Lancaster University*

[3]*University College London*

[4]*Universidad de Málaga*

Searching for a target object is often easier within a familiar visual scene than in a completely novel scene. That is, contextual information helps us to constrain our visual search. This phenomenon has been widely studied through the contextual cuing task. In this task, participants have to find a target (usually a rotated T) among several distractors (usually rotated Ls) and report the left or right orientation of the target by pressing a key. Unknown to participants, in some trials search displays repeat throughout the task, while in the remaining trials the locations of the target and the distractors are completely random. Eventually, finding the target becomes faster for repeated displays compared to non-repeated displays. It has been proposed that this effect is due to the fact that participants learn to associate the locations of the distractors to the location of the target. However, we show that previous data reported in the literature contradict this hypothesis. Furthermore, the model by Brady and Chun (2007) predicts that contextual cuing can also be achieved by learning to ignore locations that are frequently occupied by distractors. In two experiments (Ns = 60 and 78) we show that a search advantage can be achieved even when the target's location cannot be predicted by the location of the distractors. These results challenge the association hypothesis and support the idea that ignoring the locations that are usually occupied by distractors contributes to the contextual cuing effect.

SESSION 1

DIFFERENCES IN ETHANOL BINGE DRINKING BETWEEN ADOLESCENT AND ADULT RATS

Ana Vázquez–Ágredos[1], Leandro Ruíz-Leyva[2,3], Milagros Gallo[1], Ignacio Morón[4] & Cruz Miguel Cendán[2,3]

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Binge drinking, i.e., consuming large amounts of alcohol in less than two hours, is one of the most common forms of alcohol consumption, despite its negative health consequences. Although this consumption pattern occurs in both adults and young people, it is more frequent in adolescents, with 32.4% reporting drinking in the last month. Animal models that imitate this type of consumption are especially interesting to study the effects on adolescent health. Previous studies by our research group found that exposing adult rats to a large amount of sweet food under deprivation conditions induced subsequent binge drinking. The aim of this study was to evaluate if this alcohol intake also occurred in adolescent animals and to establish comparisons with adult rats. We used 40 adolescent (PND 28) and 74 adults (PND 84) male Wistar rats deprived at 82-85% of weight two days before the experiment. For the next 10 days, the animals had access for 3 minutes to either a high amount (72 pellets for adults; 36 for adolescents) or a low amount (6 pellets for adults; 1 for adolescents) of sweet reward pellets. Immediately after that, rats were tested in a two-bottle choice test (duration: 90 min) in which they were exposed to one bottle of ethanol (10% w/w) and one bottle of water. While the results from the adult rats showed significant differences in alcohol consumption after day 3 of exposure to sweet pellets, the adolescent rats did not show these differences until day 9. In addition, we found significant differences when comparing the consumption of adult rats with adolescent rats. In this model, adolescent animals seem to take longer to consume large amounts of alcohol, which may be related to the reinforcement deficiency syndrome characteristic of this stage. Moreover, difficulties associated with food deprivation were found in these animals. Funded by PSI2017-86381-P (MINECO. Spain); FPU18/05012 (MCIU. Spain); and the CTS-109 research group (University of Granada, Spain).

SESSION 1

SIMILAR PERFORMANCE IN FEMALE AND MALE CD1 MICE IN THE PEAK PROCEDURE

Marielena Eudave-Patiño[1], Emmanuel Alcalá[1,2], Cristiano Valerio dos Santos[1] & Jonathan Buriticá[1]

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Timing research in mice has taken an important role because the availability of genetically-altered strains allows establishing the causal role of specific genes on such neurodegenerative disorders such as Alzheimer's disease (El Haj and Kapogiannis, 2016) and schizophrenia (Snowden and Buhusi, 2019). In the study interval timing few cases consider differences according to sex in mice, however, among those taken this variable into consideration such differences have appeared but ignored in other studies within the area (Buhusi, M., Bartlett, M. J., & Buhusi, 2017; Gür et al., 2019). This work sought to study if there are differences in performance in the peak procedure according to sex in CD1 mice, and outbred strain. We tested hypotheses presented in other studies, where differences according to sex were explained by motivational factors (Gür et al., 2019), we varied the percentage of peak trials in the session, so we modified motivation using two reinforcement rates. Also a test with interruptions and/or distractors was performed (Buhusi, M., Bartlett, M. J., & Buhusi, 2017).

We computed start, stop, spread and middle time of individual peak trials for the last four sessions of each phase and the eight test sessions with a trial-by-trial analysis (Church et al., 1994). We did not found differences according to sex in none of the manipulations carried out in the experiment, so our results show that male and female CD1 mice have similar performance and motivation in this task. Nevertheless, this conclusion should be considered carefully before generalizing to other mice strains.

SESSION 1

REACHING AND HANDLING FOR FOOD: A MOTOR BEHAVIOR ANALYSIS OF RATS WHILE FEEDING

Inmaculada Márquez[1],Emmanuel Alcalá[2], Adriana Rincón[1] & Felipe Cabrera[1]

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Motor control refers to how the central nervous system manages the coordination of a large number of joints and muscles. In any motor act, mammals adopt a limited number of postures and movements selected due to their degree of functional efficiency. Thus, in a complex and intentional multi-joint action, such as grasping a standing object, several components can be identified that contribute to performance as a whole: localizing the target, reaching the target with the hand, and stabilizing the posture and maintaining balance while handling. The present work analyzed the pattern of behavior in a reach-and-manipulate task in which subjects had to obtain a piece of food through a grid placed on the top of the box. The height of the grid was adjusted according to the maximum-reaching-height the rats could extend their front legs. Four experimental groups were employed: 1) The "Experience on grid" group was daily fed by placing the food on the top of the home ceiling grid; 2) the "Early experience" group, had access to food through the grid only during the first nine days after animals began to ingest solid food by themselves; Afterwards the food was placed inside the home box; 3) for the "Naïve to grid feeding" group, the home box' ceiling was a grid but the food was placed inside its home box; and 4) the "Totally naïve to the grid experience" group was never allowed to reach or manipulate any grid, and the daily food was placed inside the box. Data analysis was performed using DeepLabCut™ (DLC) and custom software written in R, which allowed identifying 3D postural differences in animals while reaching and manipulating the food through the grid. Our data are discussed from an ecological approach to motor behavior.

SESSION 1

EFFECT OF PHYSICAL ACTIVITY ON ALCOHOL CONSUMPTION INDUCED BY REINFORCER DEVALUATION

Elena Castejón[1], Esmeralda Fuentes-Verdugo[1], Ricardo Pellón[1] & Carmen Torres[2]

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Increased voluntary consumption of alcohol and other anxiolytics has been demonstrated in animals after experiencing frustrative reward devaluation or omission. These results have been interpreted in terms of emotional self-medication (ESM). In the present study we analyzed whether voluntary physical activity reduces alcohol intake induced by reward devaluation. Sixty-four male Wistar rats were divided into eight groups (n=8). Thirty-two (downshifted) animals received 32% sucrose during 10 sessions (5 min), whereas 32 (unshifted) controls were always exposed to 4% sucrose. Immediately after each consummatory session, animals were exposed in their home cages to a 2 h- two-bottle preference test involving 32% alcohol vs water, or water vs water. Half of the animals had access to a wheel for voluntary running during the preference test. The results showed lower sucrose consumption in downshifted groups compared with unshifted controls (the frustrative reward devaluation effect). Reward devaluation significantly increased alcohol intake, this effect being absent in downshifted animals with access to the wheel. These findings show the modulatory role of physical activity in alcohol self-medication induced by reward loss.

SESSION 1

THE IMPACTS OF THE US-RETRIEVAL PARADIGM ON THE RENEWAL OF INSTRUMENTAL RESPONSES

Tere A. Mason[1], Rodolfo Bernal-Gamboa[1] & Javier Nieto[1]

[1]*National University of Mexico*

One experiment with rats evaluated the generality of the effectiveness of the retrieval-extinction paradigm for reducing the renewal of instrumental behaviors using food reinforcers. All rats were trained to press a lever for food in Context A. Then, Phase 2 was conducted in Context A; one of the groups (AAB) received the typical extinction procedure, while the other two groups of rats (AAB* & AAB**) were exposed to the US-retrieval extinction paradigm (i. e., free presentations of the reinforcer before the extinction session). The procedure was conducted 15 minutes before each extinction session for the AAB* Group, while for the AAB** Group it took place 120 minutes before each extinction session. Finally, all rats were tested in both Context A and B. Our data indicated the AAB renewal effect in all groups. However, the data also showed that only the rats that were exposed to the US-retrieval extinction paradigm 15 min before each extinction session, presented lower levels of renewal, suggesting that the retrieval-extinction paradigm is an effective behavioral technique to attenuate the reappearance of extinguished behaviors caused by testing the rats in a second context.

SESSION 1

RENEWAL OF PREDICTIVE LEARNING IS REDUCED BY A FOCUSED ATTENTION PROCEDURE

Rodolfo Bernal-Gamboa[1], Mariel Almaguer-Azpeitia[1], Javier Nieto[1] & A. Matías Gámez[2]

[1]*National University of Mexico, Mexico*

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We explored in an experiment with human participants the impacts of implementing a focused attention treatment on renewal using a predictive learning task. During the first phase, all participants learned a specific relationship between a cue and an outcome (X-O1) in Context A. Throughout next phase, the cue was presented with another outcome (X-O2) in Context B for three groups (ABA, ABA_f & ABA_uf), while AAA group received this phase in Context A. Then, participants in ABA_f received focused attention instructions, whereas the ABA_nf received unfocused attention instructions. Finally, testing was conducted in Context A for all groups. Results indicate the ABA renewal for O1. We found a reduction of the renewal effect when participants received focused attention instructions, but not when unfocused attention instructions were used. The findings are consistent with the theoretical view that proposes that an attentional mechanism may underlie the renewal effect.

SESSION 1

TEMPORAL RELATIONSHIPS BETWEEN CONDITIONED AND UNCONDITIONED STIMULI IN HALOPERIDOL-INDUCED CONDITIONED CATALEPSY

Mª de los Ángeles Cintado[1], Lucía Cárcel[1] & Luis Gonzalo De la Casa[1]

[1]*Laboratorio de Conducta Animal y Neurociencia. Dpto. Psicología Experimental. Universidad de Sevilla (España)*

A peculiarity of the experiments in which drug effects are used as the Unconditioned Stimulus (US) compared to other Pavlovian procedures is the temporal relationship established between the Conditioned Stimulus (CS) and the US. Specifically, while in most Pavlovian procedures the CS is presented before the appearance of the US, in experiments with drugs the US is administered before CS presentation, but the effects of the US are experienced simultaneously to CS exposure. Therefore, such arrangement between the CS and the US is a combination of backward and simultaneous conditioning. In this work we conducted an experiment in which a neutral context was repeatedly associated with the effects of haloperidol administration in order to evaluate conditioning of catalepsy when the context was subsequently presented in a drug-free test. In order to confirm whether this response is based on Pavlovian processes, we manipulated the time of joint exposure to the conditioned and the unconditioned stimulus. We did not observe differences neither between the intensity of conditioning nor in a subsequent process of extinction as a function of the length of context-drug pairings during conditioning. These results are discussed in terms of the temporal peculiarities of those procedures that involve drugs as the unconditioned stimulus along with the role of Pavlovian conditioning in context-dependent catalepsy.

SESSION 1

CONTEXTUAL GENERALIZATION IN ONLINE MATCHING-TO-SAMPLE

Fátima Rojas-Iturria[1], Rodolfo Bernal-Gamboa[2], Matías Gámez[3] & Javier Vila[1]

[1]*FES Iztacala UNAM*

[2]*Facultad de Psicología UNAM*

[3]*Universidad de Córdoba, España*

The definition of the context has allowed contextual dependency of learning and information retrieval research. Some studies have defined the context as a discrete stimulus (Bouton & Bolles; 1979) allowing experimental control. The possibility of systematically varying the stimulus defined as context could allow studying contextual generalization. One experiment studied contextual generalization through the context change effect using a second-order sample matching task via a remote computer task (online). The physical context was defined as the second-order sample (SOS). Twenty students were trained to respond to a comparative stimulus (COSa) when sample stimulus (SS) X was presented while SOS A was also present. After the acquisition, a generalization test of the SOS was presented. The results show an increased number of COSa responses during a test with SOS A, and a systematic reduction of COS 1 responses on different generalization tests where physical properties of SOS A variated. The results suggest a method for studying the role of context in generalization testing by replicating the context change effect using a remote modality, providing evidence of contextual generalization using an SOS as a physical context. The second-order matching-to-sample task is suggested as an experimental model to systematically identify how contexts influence learning.

SESSION 1

STOP-SIGNAL TASK IN AN AUTOSHAPING PROCEDURE: A VALID MODEL OF IMPULSIVITY

Nora Calle-Villa[1], Antonio Pérez-Colorado[1], Manuel Portavella[1], Estrella Díaz[1] & Juan Carlos López[1]

[1]*Universidad de Sevilla*

Goal- and sign-tracker (GT/ST) animals show different behavioural pattern when the conditional stimulus is active. Behavior in GT animals is usually focused on the goal or the place where the reward will be released. In contrast, ST animals are keen on the cue. In several papers we have explored the role of the medial prefrontal cortex (mPfc) in GT vs ST profile. It has been reported this structure is involved in behavioural control and the attribution of incentive salience to a stimulus. In fact, lesion to mPfc affects selectively the ST phenotype, suggesting this profile could be acceptable animal model of impulsivity. Impulsivity, or impulsive behavior, is usually assessed as deficit in behavioural control. In order to analyze whether autoshaping procedure could serve as a model of impulsivity, we studied ST and GT animals in a stop-signal task (SST) designed to evaluate response inhibition. This procedure consists of several trials of a go-signal and after that, the stop-signal starts unexpectedly. In this regard, SST measures the ability to stop or cancel an already initiated response to get a reward. Results showed a clear difference between ST and GT performance. While GT decreased the magazine entries along the trials, ST needed more trials to omit responding in the stop trials, which were used as an index of response inhibition. These data support conditioned inhibition in ST and GT as a valid procedure to measure impulsivity.

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SESSION 1

IMPULSIVITY AND POPULATION VARIABILITY: A STUDY IN WISTAR RATS

Fátima Montiel Herrera[1], Esperanza Quintero Sánchez[1], Paola Revilla Sánchez[1] & Estrella Díaz Argandoña[1]

[1]*University of Seville, Faculty of Psychology*

Impulsivity is a multidimensional concept based on the interaction of environmental and genetic factors. One of the current animal models used to analyze this trait is focused on incentive salience of a conditioned stimulus. This concept refers to the motivational component of the reinforcer, in which sensory information about reward and associated stimuli are transformed into attractive and desired cues (Berridge and Robinson, 1998). Autoshaping describes orientation-approach movements of an animal to a conditioned stimulus (CS) preceding an unconditioned stimulus (US). This procedure focuses on the relationship between the subject, the response to the CS and the way to get the reinforcer. Considering the kind of response shown by the animal before US releases, the model is able to identify two extreme populations, named sign trackers (ST) and goal trackers (GT) (Flagel et al., 2011). In this study, we run this procedure in 264 Wistar rats in order to analyze the population distribution of these phenotypes. Rats were classified as ST, GT or INT (Intermediate) phenotype using the Pavlovian Conditioned Approach Index (PCA) (Meyer et al, 2012). PCA score was measured as the average of three difference score measures: (1) response bias (lever contacts−magazine entries)/(lever contacts +magazine entries) (2) probability difference (lever contact probability−magazine entry probability) (3) latency score (magazine entry latency- lever contact latency)/(8 s). We also analyze the evolution of the phenotypes throughout the 4 autoshaping sessions. The results showed that unlike other strains of rats, the phenotype with the highest prevalence was the ST (43.8%) compared to the GT phenotype (12.7%).

SESSION 1

CONTEXTUAL DEPENDENCE OF AN INSTRUMENTAL RESPONSE WITH HUMANS

Roberto Jiménez-Castillo[1], Mayra Martínez-Cruz[1], Bryan Ibarra-Ocampo[1], Fátima Rojas-Iturria[1] & Javier Vila[1]

[1]*FES Iztacala UNAM*

An experiment with humans studied the contextual renewal of an instrumental response reappearing after being previously suppressed by punishment. Employing an online videogame, in the first phase, two groups (AAA and ABA) learned two instrumental responses (R1 and R2) reinforced in a VI4s program. During a second phase, a punishment procedure was employed to suppress R1; meanwhile, R2 continued being reinforced. The final phase consisted of a test. For group AAA, every phase occurred within the same context, while punishment occurs in a different context for group ABA. For both groups, the test phase took place in contexts A (acquisition) and B (punishment). Results showed that groups learned both responses during the first phase and only reduced R1 frequency during punishment. In the test, in contexts A and B, the R2 rate was high in both groups. The R1 rate remained low in group AAA for both contexts but reappeared in group ABA only in context A. These findings suggest that context modulates the reappearance of an instrumental response suppressed using punishment. Results are consistent with studies showcasing contextual dependency and renewal of responses suppressed in extinction and DRL.

SESSION 1

HAND PREFERENCE FOR A BIMANUAL COORDINATED TASK IN CAPTIVE HATINH LANGURS (TRACHYPITHECUS HATINHENSIS) AND GREY-SHANKED DOUC LANGURS (PYGATHRIX CINEREA)

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Human brain asymmetries between hemispheres are responsible for the predominance of the left hemisphere in language functions, tool use, and manual dexterity. This is translated to a right-handed strong population-level tendency in our species. To comprehend this brain specialization processes in humans, it is important to study and compare manual laterality in our closest living relatives, non-human primates. This comparative perspective may help unravel the evolution and origins of human cerebral lateralisation. Further, it may contribute to the understanding of language phylogenesis. Our study aims to present a first approach to the hand preference of two species of Asian colobine monkeys from Vietnam. The endangered hatinh langur (Trachypithecus hatinhensis) and the critically endangered grey-shanked douc langur (Pygathrix cinerea). The bimanual coordinated tube task was used in eighteen individuals of each species (N=36) to evaluate their responses in terms of manual events and bouts. Our findings support that the individuals showed strong individual-level manual laterality. No group-level population handedness or differences between sexes were found. The dominant finger used in all the extractions was the index finger that was used alone (86%) or in combination with other fingers (14%). Moreover, the results showed a greater strength of hand preference in hatinh langurs compared to grey-shanked douc langurs, leading to a higher manual specialization during the leaf-eating process in hatinh langur individuals. The data obtained in this study gives us more clues about the manual laterality in Asian colobine monkeys and confirms the bimanual tube task as a sensitive measure for assessing manual laterality in non-human primates.

SESSION 1

THE US HEDONIC RESPONSE AS A POSSIBLE COMPONENT OF ACQUIRED FLAVOUR PREFERENCES

Ana González[1], Jesús Sánchez[1] & Isabel de Brugada[1]

[1]*University of Granada*

Pairing a palatable flavour (US) with an initial neutral flavour cue (CS) results in an acquired conditioned preference for the latter. Acquisition of flavour preferences has been mostly explained by two main associations; flavour-flavour and flavour-nutrient learning. However, the hedonic response originated by consuming the US has been left aside as an additional possible component that could underlie the acquired flavour preference. On the present research we studied whether the amount of exposure to the CS-US compound during the conditioning procedure can alter the learnt content favouring a Stimuli-Response association(S-R) by using rats as experimental subjects and saccharine or sucrose as USs. We expected that the more exposure to the CS-US compound, the greater the chance of an S-R association. Furthermore, as S-R associations are featured by not being sensitive to devaluation procedures, we measured the rats´ preference for the CS when the US had been devalued or not by using a Sensory Specific Satiety (SSS) procedure. Results showed how after a limited access conditioning procedure with both sucrose or saccharine USs, rats reduced their preference for the CS when the US was devalued. However, when rats had an ilimited massive exposure to the CS-US compound during conditioning, the devaluation effect was still expressed when saccharine was the US but disappeared when the US was sucrose.

SESSION 1

HABITUATION OF THE RETRACTION RESPONSE TO THE LIGHT IN AN ANECIC SPECIES OF EARTHWORMS (LUMBRICUS TERRESTRIS)

Alejandro Ramírez Gómez[1], Enrique J. Cabrera-Salamanca[1], Ainoa Mejía-López[1], Sergio Iglesias Parro[1], M. José F. Abad[1] & Concepción Paredes Olay[1]

[1]*Universidad de Jaén*

This experiment is the continuation of previous experiments exploring the retraction response habituation to different light intensities in earthworms. In this experiment, Lumbricus terrestris were employed as experimental subjects. L. terrestris is an anecic species that lives at a greater depth in the soil in comparison with epigeic species (Dendrobaena veneta). The habituation training consisted in 120 presentations of the light (3 sec. in duration) with an inter-stimulus interval of 30 sec. Previous experiments have revealed that L. terrestris showed less reactivity to high light intensities (from 5000 to 13000 lux.) than D. veneta. In this experiment, we evaluated the retraction response habituation to a lower range of light intensities in the anecic L. terrestris, and we compared the results with those observed in epigeic especies. The results of these experiments highlight the relevance of the ecological niche in the behaviour of earthworms.

SESSION 2 (P16-P29)

Friday 24th - 10:50 to 11:50

SESSION 2

CARACTERIZACIÓN DE LOS TIPOS DE RESPUESTA DE PARPADEO EN UN PROCEDIMIENTO DE CONDICIONAMIENTO DISCRIMINATIVO EN HUMANOS

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[1]*Universidad de Talca*

[2]*Universidad Santo Tomás*

En esta investigación, reportamos los resultados de un procedimiento de condicionamiento palpebral en humanos destinado a caracterizar distintos tipos de respuestas. Para ello, ocho participantes recibieron entrenamiento discriminativo donde un estímulo condicionado auditivo, A, fue emparejado con un estímulo incondicionado, soplo de aire en el ojo, mientras que un estímulo condicionado vibro-táctil, B, no fue reforzado. Consistentemente con la literatura clásica, los resultados indicaron la existencia de cuatro repuestas claramente distinguibles por su topografía temporal, frecuencia y amplitud. En los primeros 100 ms desde la iniciación de los estímulos condicionados ocurren respuestas de pequeña amplitud, denominadas “alfa”, a las cuales le siguen otras respuestas de amplitud intermedia, denominadas “voluntarias” (200-300 ms) y “condicionadas” (300-400 ms). Finalmente, las respuestas incondicionadas ocurren en los 200 ms que siguen el inicio del estímulo incondicionado y son de gran amplitud. Tanto las respuestas voluntarias como condicionadas son más frecuentes en presencia del estímulo A que B. Discutimos la relevancia de identificar y distinguir estos tipos de respuestas en cualquier rutina de condicionamiento clásico.

SESSION 2

EFFECTS OF ACUTE ADMINISTRATION OF METHYLPHENIDATE IN SIGN AND GOAL TRACKER BEHAVIOR

Reyes Mártinez[1], Antonio Pérez-Colorado[1], Almudena Serrano-Barroso[1], Natividad Sánchez[1], Gabriel Ruiz[1], Manuel Portavella[1] & Juan Pedro Vargas[1]

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Sign and Goal tracker animals (ST and GT) show different patterns of behavior in response to conditioned stimulus. Here, we explored whether ST and GT rats expressed different sensitivity to methylphenidate. This drug has been administered in patients with attentional and hyperactivity problems, increasing attentional processes and reducing the adverse effects of a high behavioral activity with no influence in motivation. The present experiment analyzed if methylphenidate could reduce motivational behavior but not salience incentive processing. Under methylphenidate effects, ST animals reduced lever press behavior, although they displayed the same phenotype. Thus, animals decreased motivational activity only regarding lever presses. Methylphenidate is commonly prescribed for impulse control and attention disorders. As ST/GT phenotype may be the outcome of different neural mechanisms involved in these executive functions, we explored whether this drug affected ST and GT rats differentially. Results suggests that methylphenidate could be acting on the expression of the conditioned response, but not on the coding of incentive salience of stimuli exclusively in ST rats.

This research was funded by PID2019-110739GB-I00/ AEI/10.13039/501100011033.

SESSION 2

AN ODOR TRANSMITTED THRTOUGH MATERNAL MILK CAN REDUCE THE AVERSIVE RESPONSES TOWARD SOUR AND BITTER TASTANS IN RATS

Celeste Ifran[1], Andrea Suárez[1], Matias Avellaneda[1] & Giselle Kamenetzky[1]

[1]*CONICET-Universidad Abierta Interamericana. Centro de Altos Estudios en Ciencias Humanas y de la Salud. Buenos Aires, Argentina*

Olfaction is highly important for mammals during early stages of life. This sense allows newborns to develop different behaviors they need in order to survive. Odors tend to be associated to contextual stimuli (e.g., warmth). This, in turn, enables the pups to recognize when to withdraw or approach. At the same time, olfaction modulates the acceptance of aversive flavors. The increase of approach responses toward a bitter substance during early life is enhanced by stimulation with familiar, pre-exposed odors. During early ontogeny, rats exhibited heightened grasp responses toward an artificial nipple containing quinine (i.e., bitter taste), and drank more of this solution, in the presence of a pre-exposed odor (lemon or the mother's odor). The present study assessed the replicability of previous results by pre-exposing the subjects (3-day-old Wistar rats) to the scent through maternal milk and using solutions with different aversive flavors. Half of the subjects were pre-exposed to lemon odor through the maternal milk (the mother had previously been administered the lemon essence via an intragastric injection); 4 hours later, all the rats were evaluated in the presence of the lemon odor with an artificial nipple containing quinine, citric acid, water or saline solution. The results showed enhanced seeking and intake behaviors of the bitter (quinine) and sour (citric acid) solutions. However, no differences were found when the nipple contained water or saline solution. This evidence suggests the following: 1. During the early stages of development, familiar odors regulate the acceptance of certain non-palatable, usually rejected, tastants; and 2.The route of transmission of the pre-exposed odor can be through air, or through food (amniotic fluid in previous studies and, in this escenario, breast milk), meaning, via the retronasal or orthonasal routes.

SESSION 2

EFFECT OF SOCIALIZATION AND SEX DIFFERENCES IN AN ABBREVIATED MODEL OF ACTIVITY-BASED ANOREXIA

Antonio Martínez-Herrada[1], Ana de Paz[1] & Ricardo Pellón[1]

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The activity-based anorexia (ABA) model has been used in the laboratory to study the role of excessive physical activity in the development of anorexia nervosa (AN) in humans. Factors of social context are crucial in human health and the development of psychological disorders, which also have been observed in studies using different mammal species, which, like human beings, develop their life in groups. In this study the animals' social condition was manipulated to observe the effect of socialization in ABA development, and the possible different influence of the variable sex in the phenomenon. Eighty Wistar Han rats were distributed into four male and four female groups (n = 10 each), manipulating social condition (group housing or social isolation) and physical activity (access or not to a running wheel). In the procedure, all groups had food restricted to 1 h/day during the light period. Furthermore, ABA experimental groups with access to the running wheel had two periods of access to the wheel of 2 h each, one before and the other after the food period. No significant social condition effect was found in the first days of the procedure, although isolation did seem to affect vulnerability in ABA development. Moreover, social enrichment was shown to be an enabling variable of the animals' recovery after their withdrawal from the procedure, being this effect more pronounced in females. Subsequent studies that focus on analysing the phenomenon in greater detail are needed, delving in the possible behavioural and neurobiological mechanisms of socialization in ABA as a key factor in the development and treatment of AN.

SESSION 2

IN THE WINK OF AN EYE: ATTENTIONAL CAPTURE BY FOOD STIMULI AND BRAND LOGOS

Irene Ruiz[1], Ana González[1] & Isabel de Brugada[1]

[1]*University of Granada*

Current societies are characterized by the omnipresence of food-related stimuli such as sights, smells or particular contexts. These cues, through pavlovian learning, are able to signal the availability of food rewards and remind us to eat. Several studies have shown that food stimuli have a greater capacity for capturing attention in contrast to neutral stimuli. In the same way, this attentional bias has been also found for neutral stimuli that had been artificially paired with food in the laboratory. Furthermore, this effect has been shown to be modulated by the motivational state, finding a larger effect when participants are hungry. Consequently, in the present study we tested whether this attentional bias is also present in food cues that are naturally present in our environment and whether it can be altered by motivational state. To test this hypothesis a dot-probe task was used to measure attentional bias with pictures of food, brand logos and neutral objects as main stimuli. Results did not show any evidence of attentional bias for food stimuli, and an avoidance attentional pattern was found for the food cues. Contrary to our expectations, hungry participants had a better performance than satiated ones.

SESSION 2

COMPARING THE EFFECTS OF LEARNED PREDICTIVENESS AND SELECTION HISTORY ON ATTENTION

Paula Balea[1], David Luque[1,2], Sara Molinero[1,2] & Miguel A. Vadillo[1]

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[2]*Universidad de Málaga*

Stimuli that are good predictors of their consequences tend to receive more attention than poor predictors. Though it has been assumed that this attentional bias is driven by the predictive value of the stimuli, recent research on selection history has raised another possibility. This alternative account contends that attention at test simply reflects the attentional pattern that was developed during training to meet the task demands. Because solving a learned predictiveness design requires more attention towards the predictive stimuli, it is possible that the subsequent attentional bias is not driven by their predictive value, but by their greater history of being attended and responded to. Two experiments explored this issue in human participants. Training consisted of two tasks that used separate pairs of colored figures. In the categorization task, one of the colors in each pair was a good predictor of the correct response and the other was a poor predictor. In the selection task, participants were required to simply select one of the colors and ignore the other. While only the categorization task should produce differences in the predictive value of the stimuli, both should yield differences regarding their selection history. Attention was measured by presenting a small target over one of the stimuli of each compound. Participants had to indicate whether the target appeared over the left or right color (Exp 1), or simply press the spacebar as they detected the target (Exp 2). Frequentist and Bayesian analyses of RTs in Exp 1 showed that the effects of both types of training on attention did not differ, questioning the role of predictiveness in the attentional bias commonly observed in learned predictiveness designs. In Exp 2 only the categorization task seemed to affect attention, though Bayesian analyses placed important doubts on this effect too. Implications of these results for learning and attentional theory will be discussed.

SESSION 2

PERSONALITY AND BEHAVIOR IN CHIMPANZEES: A NEW APPROACH BASED ON EYSENCK'S MODEL

Maria Padrell[1], David Riba[2], Yulán Úbeda[1], Federica Amici[3] & Miquel Llorente[1]

[1]*Grup de Recerca "Llenguatge i Cognició", Departament de Psicologia, Universitat de Girona*

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[3]*Research Group "Primate Behavioural Ecology", Department of Human Behaviour, Ecology and Culture, Max-Planck Institute for Evolutionary Anthropology*

Eysenck's Psychoticism-Extraversion-Neuroticism (PEN) theory has been previously adapted to evaluate chimpanzee personality through questionnaires completed by human raters. However, this tool has never been validated by comparing it to chimpanzees' behavior. Therefore, in this study we aimed to assess the correspondence between the personality traits from the PEN model and spontaneous behavior in 14 sanctuary chimpanzees (Pan troglodytes) housed at Fundació Mona (Spain). Personality was assessed with a 12-item questionnaire based on Eysenck's PEN model (previously adapted by Úbeda & Llorente, 2015) completed by familiar keepers and researchers. Behavioral data was collected over an 11-year period, using 2-minutes instantaneous scan sampling, including both solitary and social behaviors. As predicted, we obtained significant correlations between Eysenck's personality traits and observed behaviors; Extraversion positively correlated with affiliative behaviors, Neuropsychoticism with agonistic interactions and Dominance with dominant behavior. These correlations indicated some evidence for convergent validity. Nevertheless, contrary to our predictions, Neuropsychoticism was not related to behavioral indicators of anxiety, such as self-directed behaviors or abnormal behaviors. Furthermore, some behaviors correlated with more than one trait, thus revealing limited discriminant validity. We conclude that, despite its limitations, the use of the PEN model in non-human primates provides some theoretical and practical advantages. On the one hand, it allows a direct comparison with human personality dimensions, thus facilitating the understanding of non-human primates' personality from an evolutionary perspective. On the other hand, and in contrast with other rating models, it uses a shorter and therefore less time-consuming questionnaire, which is highly preferred for keepers at zoos and sanctuaries.

SESSION 2

RESISTANT EMOTIONAL MEMORY AND BLUNTED NEUROENDOCRINE RESPONSE OF HPA AXIS IN A COMPULSIVE PHENOTYPE OF RATS

Manuela Olmedo[1], Elena Martín-González[1], Ángeles Prados-Pardo[1], Daniel J. Cruz-Garzón[1], Pilar Flores[1], Santiago Mora[1] & Margarita Moreno[1]

[1]*University of Almería*

Introduction: Clinical researches indicate a close relationship between compulsive patterns and avoidance behaviors. Furthermore, both appear to be related to the alteration of the hypothalamic-pituitary-adrenal (HPA) axis. Aims: The present work has studied the relationship between compulsivity and avoidance behaviors in a preclinical model of compulsivity, as well as the possible differences in the temporal regulation of the neuroendocrine response of the HPA axis. Method: Male Wistar rats were selected as either high (HD) or low (LD) drinkers according to their behavior in Schedule-Induced Polydipsia (SIP). Subsequently, we assessed emotional memory by Passive Avoidance (PA). Finally, plasma corticosterone (CORT) levels were measured immediately after SIP, at 45 and at 90 minutes. Results: HD rats were more resistant to extinction on PA, showed by a sustained higher latency of avoidance on day 10 after receiving electric shock compared to LD rats. Finally, hormone analysis exhibited HD rats revealed blunted response in the increase of CORT levels at 45 and 90 min after SIP compared to LD rats. Conclusions: The data of the present study demonstrated that HD animals exhibit more resistance to extinction and differences in the regulation of the HPA axis.

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SESSION 2

PAVLOVIAN INSIGHT: A NEURAL NETWORK APPROACH

Verónica Rodríguez Rico[1], Aida Longán[1], Jonathan Buriticá[1] & José E. Burgos[1]

[1]*Universidad de Guadalajara*

Insight has been broadly defined in psychology as the emergence of behavioral repertoires to solve a problem. In this study, we use an extant neural network model of conditioning to predict a novel form of insight thus defined that qualifies as Pavlovian in that it emerges from response-independent reinforcement and involves responding unelicited by the primary reinforcer. In a simulated autoshaping procedure, a group of networks received Pavlovian contingencies with two randomly interspersed reinforced cues in a certain context. Two other groups were trained in only either one of the cues. Then both groups received a test of both cues in compound and a different context. The results suggest that novel problem-solving behavior can emerge under such conditions from purely Pavlovian contingencies. These results have theoretical, conceptual, and methodological implications for the study of insight.

SESSION 2

LOOKING FOR AN IMPLICIT INTERMIXED-BLOCKED EFFECT IN THE HUMAN VISUAL DOMAIN

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The intermixed-blocked effect consists of the demonstration that alternating exposure to a pair of similar stimuli (e.g., AX, BX, AX, BX…), enhance their discrimination relative to schedules in which the same stimuli are presented equally often but in separate blocks of trials (e.g., AX, AX,… BX, BX,…). Previous studies in the human visual domain have linked this effect with attentional top-down mechanisms which would be activated by explicitly instructing to the participants to look for differences between the stimuli. In the present study, we validated a videogame task able to generate the effect in the absence of this sort of instructions. We designed the task under the appearance of an arcade 8-bits classic videogame, contextualized in the medieval era. The player controls the movements of a female warrior that is invited to visit a castle and finding a room called the room of the spells. The target stimuli (AX and BX; two potions of the same colour but different intensity) are preexposed as elements of the background in the successive screens that the character visits, according to intermixed (INT) or blocked (BLK) schedules. A control condition without preexposure to the targets was also added. When the character arrives to a room called the room of the spells, the discrimination task begins. On each of 16 trials, a potion is offered to the player, being AX and BX offered on 8 trials each. Accepting one potion has a negative effect (it reduces the health of the character) and accepting the other has a positive effect (it increases her health). We found that all the participants showed an increasing in the number of right answers across the task (i.e., accepting the good potion and refusing the bad potion). The rate of acquisition was higher in group INT relative to groups BLK and Ctrl, suggesting that incidental intermixed exposure to the stimuli automatically and involuntarily enhanced the ability of the participants to distinguish AX and BX.

SESSION 2

AN EVALUATION METHOD OF ANIMAL BEHAVIOR TRAINING PROGRAMS IN ZOOS

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Positive reinforcement operant conditioning training techniques have become popular practice in zoos and aquariums in the last years and it is a fundamental part of their physical and psychological well-being (e.g. veterinary examination). The goal of this research was to propose an objective evaluation form of zoo animal training programs to improve their effectiveness. The method consisted of analyzing multiple correlation between three variables: 1) correspondence index, 2) duration of training sessions, and 3) variability of the behavioral repertoire of the species being trained. The correspondence index was calculated following the parameters of the Skinnerian three-term contingency (S-R-Er): the commands emitted by the trainers (S), the behaviors performed by the animals (R) and the number of reinforcers delivered (Er). An example of this method application is presented in diverse species of the Zacango Ecological Park (Mexico). Contrasting results were obtained depending on the species trained and trainers; and different maintenance and improvement measures were suggested to be implemented. It is concluded that this method can help to improve animal behavior training programs in zoos in a systematic way. However, multiple evaluations over time and in multiple contexts are needed to explore its implementation over the species and obtain a more exhaustive measure of its effectiveness.

SESSION 2

IMPULSIVE DECISION MAKING, PSYCHOLOGICAL STATE, AND RESTING-STATE FUNCTIONAL CONNECTIVITY IN PREFRONTAL STROKE PATIENTS

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Stroke is characterized by a non-traumatic brain lesion, being currently the second cause of cognitive alterations in the world. Nevertheless, cognitive consequences literature is scarce, in comparison to motor and language impairments. Frequently, a stroke involves frontal circuits, which are related to inhibitory control and decision-making processes. For this reason, daily life functioning and emotional state are often affected in Prefrontal Stroke Patients (PSP). Although previous studies have found inhibitory control impairment in PSP, impulsive decision making has, to date, not been addressed in this population. Hence, the objective of the present work was to assess the impulsive decision making of PSP, adopting a transdiagnostic approach, using neurobehavioural and neurobiological indicators. For this purpose, n=10 (age range: 21-50) PSP (n=6 left hemisphere damage, n=2 right hemisphere damage, n=2 both) and n=14 healthy controls (age range: 18-50) performed the Delay Discounting Task (DDT) to measure impulsive decision making and self-reported questionnaires to assess psychological state [Adult Self-Report (ASR/18-59), Obsessive-Compulsive Inventory Revised (OCI-R), and World Health Organization Quality of Life Instrument (WHOQOL-BREF)]. Moreover, it was used Functional Near-Infrared Spectroscopy (fNIRS) (16x16) to compare prefrontal and motor cortical Resting-State Functional Connectivity (RS-FC) between both groups. The results showed a greater temporal discount in PSP, in comparison to the control group. In addition, PSP scored higher in Anxiety Problems (ASR/18-59), Checking obsessions (MOCI), and lower in Physical Health (WHOQOL-BREF). Furthermore, neuroimaging results indicated less RS-FC in PSP in the left prefrontal cortex and left motor cortex. This study aimed to contribute to the existing knowledge of the neurobehavioural, emotional and neurofunctional state of PSP to develop more precise evaluation methods and rehabilitation treatments.

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SESSION 2

DEVELOPMENTAL EXPOSURE TO LOW DOSES OF CHLORPYRIFOS INDUCES LOCOMOTOR ALTERATIONS DURING LATE ADULTHOOD IN RATS

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The molecular and behavioral effects of the developmental exposure to low doses of Chlorpyrifos (CPF) have been intensively studied in young (neonates and adolescents), and adult animals. However, no study examined influences of developmental CPF exposure in older adult or geriatric rats. This is relevant as such ages are generally linked to cognitive decline and the onset of specific neurodegenerative disorders, some of them previously associated with CPF exposure in both preclinical and human studies. 1mg/kg/mL of CPF was orally administered to both male and female Wistar rats from Postnatal day 10 to 15. Animals' spatial memory, learning, compulsivity, motricity, and anxiety were analyzed with Morris Water Maze (15-16 months of age) and the Plus-maze (at 18 months of age). Results showed that postnatal CPF exposure did not alter either spatial memory, compulsive like behaviors, or anxiety levels in late-adult rats. However, CPF exposed rats were hyposensitive to brief disruptions (Probe stage) following the learning phase and showed a general decrease in locomotor activity in both paradigms. These data are relevant as it is the first time that developmental exposure to CPF has been studied at such a late age, observing important effects in locomotor activity that could be linked to specific pathologies previously associated with CPF effects in people. Future studies should extend these findings to other behaviors and molecular outcomes. The present research was published in NeuroToxicology https://doi.org/10.1016/j.neuro.2021.07.002

SESSION 2

WHAT ROLE DOES PREEXPOSURE TO CONTEXT PLAY IN THE HABITUATION RESPONSE? A STUDY IN EARTHWORMS (EISENIA FOETIDA)

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Habituation has been classically defined as the simplest form of non-associative learning. In recent years, several studies have obtained associations between stimulus and context, demonstrating that habituation has a component of contextual specificity. However, the effect that a preexposure to context can cause on the formation of associations between stimulus and context is unknown. Therefore, two experiments were carried out in order to measure the effect of pre-exposure to the context on the habituation response in worms. In the first experiment, the worms were pre-exposed to two contexts clearly differentiated by texture to later be habituated to a light stimulus. In the second experiment, the worms were pre-exposed to a context differentiated by texture and smell. The results obtained in both experiments confirm the basic effect of habituation and a higher response rate in worms that were pre-exposed for a longer time.

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