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Foto Selene Vicente

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**Neural bases of bilingual language control – what can we learn from simultaneous interpreting?**

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Bilingual, or multilingual, language control is an essential feature of the multilingual communicative experience. Multilingual communication scenarios are diverse, ranging from using only one language with a monolingual interlocutor, switching from one language to another when interacting with speakers of different languages or code-switching when communicating with an interlocutor with an overlapping language profile. The brain mechanisms of multilingual control implicate cortico-subcortical circuits that intersect with mechanisms of domain-general behavioural control, involved in task switching, self-monitoring, error-correction and behavioural inhibition. A further communicative scenario that entails extraordinary demands on language control is simultaneous interpreting, whereby the practitioner must attend to and comprehend a message in a source language, reformulate it for production in a target language, all the while attending to and buffering the incoming message and monitoring the self-produced output for errors. By examining the functional brain responses of multilingual individuals executing a simultaneous interpretation task, it is possible to gain insights into the cerebral basis of interpreting, and, with appropriate analyses, to elucidate which brain areas are likely to be implicated in the exceptional language manipulation demands of the task. I will present results of a series of fMRI studies examining unimodal oral interpreting and multimodal sign-oral interpreting. Results confirm a substantial role for the basal ganglia in language management, as well as casting light on the interaction between interpreting expertise and control mechanisms. Overall, the findings contribute to developing a theoretical framework for understanding the neural substrates of multilingual language control that accounts for the many different varieties of multilingual communicative scenario.

## On the syllable structure effect in European Portuguese: Evidence from ERPs

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Syllable effects during visual word recognition have been observed for CV but not for CVC syllables, a puzzling effect that is not explained either by the distributional frequencies of CV and CVC syllables, syllable complexity, or syllabic neighbourhood density. Furthermore, in European Portuguese (EP), syllable effects have not been found for pseudowords, suggesting that syllable activation might not precede lexical activation. Here, we combined a colour-congruency lexical decision task with the collection of electroencephalographic (EEG) data to investigate syllable effects in EP for CV and CVC words and pseudowords, with the latter presenting a match (CVCO+P+) or a mismatch (CVCO+P-) between their orthographic (O) and phonological (P) syllable structure to further ascertain the locus (i.e., orthographic and/or phonological) of syllable effects. Results showed syllable congruency effects in the N100, P200, and N400 ERP components for CV and CVC words suggesting the influence of different factors underlying the syllable structure effect.

Duarte Campos, A., Mendes Oliveira, H., Lopéz-Caneda, E., Javier Gutiérrez-Domínguez, F., & Paula Soares, A. (2022). On the syllable structure effect in European Portuguese: Evidence from ERPs. *Brain and Language*, 229, 105104. <https://doi.org/10.1016/j.bandl.2022.105104>

### **“Verde” ou “Azul”? Rótulos criam viés de atração na memória de estímulos visuais ambíguos**

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Estímulos visuais são frequentemente acompanhados de descrições verbais. Em estudos anteriores, demonstrámos que rótulos beneficiam a memória imediata para cor, forma, orientação e frequência espacial. No entanto, alguns estímulos são ambíguos. Por exemplo, um tom esverdeado-azulado pode ser referido como “azul” ou “verde”. O presente estudo avaliou as consequências de rótulos na retenção de cores ambíguas na memória de trabalho. Reanalísámos nove conjuntos de dados publicados (N = 346) nos quais participantes memorizaram cores para um teste de reprodução contínua, enquanto rotulavam as cores em voz alta ou realizavam supressão verbal dizendo “bababa”. A rotulação produziu melhor memória comparado com a supressão. As verbalizações foram utilizadas para definir cores ambíguas para as quais dois rótulos eram aplicados alternadamente (e.g., rosa-vermelho). Embora cores ambíguas tivessem menor precisão, o benefício da rotulação foi semelhante ao de cores não-ambíguas. Criticamente, a rotulação produziu viés de atração ao rótulo - o tom era reproduzido como mais verde quando nomeado como “verde”, e mais azul quando nomeado como “azul”. Em dois estudos subsequentes, manipulámos a apresentação de rótulos auditivos simultaneamente com as cores. No Estudo 1, cores ambíguas foram aleatoriamente emparelhadas com um dos rótulos possíveis. A memória da cor ambígua foi sistematicamente atraída para o rótulo. No Estudo 2, testámos se a incerteza na rotulação gera viés de atração para todas as cores. Rótulos incongruentes com a cor apresentada (“azul” com tom verde) foram completamente descartados, não gerando viés de atração. Em suma, rótulos são utilizados flexivelmente, influenciando a memória quando percebidos como informativos.

### **Generating Sentences and Mental Images: Causal Evidence for Elaboration Benefits in Verbal Working Memory and Long-Term Memory**

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To memorize new information, we can combine it with our prior knowledge, a strategy known as elaboration. Common elaboration strategies include sentence generation and visual imagery. Self-reported use of elaboration is correlated with better memory. To seek causal evidence for an elaboration benefit, researchers typically instruct the use of this strategy. Consistent benefits are found in long-term memory (LTM) but not working memory (WM). Critically, elaboration effects have been assessed differently in WM and LTM. Here, we tested the impact of elaboration on WM and LTM simultaneously. College students (N = 125) memorized word pairs in four blocks with different instructions: they were free to use any strategy, or were instructed to rehearse or elaborate the pairs by generating sentences or mental images. They memorized five word-pairs for a cued recall test in each WM trial, and reported their strategies. At the end, participants were retested on all word pairs (LTM test). Results were similar for WM and LTM. First, self-reported use of elaboration in the free condition was correlated with higher performance compared to other strategies. Second, in instruction blocks, sentence generation and visual imagery produced better performance than rehearsal. Third, only visual imagery improved recall compared to the free condition. These results show that elaboration is superior to rehearsal in WM and LTM. Instructing visual imagery can increase people’s performance above their own baseline level. This benefit could be explained by the addition of visual representations to verbal stimuli – which does not occur with sentence generation.

## Can AI induce false memories? Evaluating ChatGPT-generated DRM lists

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The Deese-Roediger-McDermott (DRM) paradigm is widely used in cognitive psychology to study false memories. It involves presenting participants with word lists semantically related to a critical word that is never actually shown. Despite this omission, participants frequently recall or recognize the critical word, demonstrating the susceptibility to false memories. While researchers can use established word lists from the literature, those seeking to create novel lists must invest significant time and effort in their construction and validation. Given this challenge, artificial intelligence (AI) tools such as ChatGPT may provide an alternative way to generate experimental materials while maintaining reliability. This study examined whether ChatGPT-generated DRM lists could induce false memories at rates comparable to classical DRM lists. Participants were exposed to both AI-generated and traditional DRM lists before completing a recognition/recall task assessing memory for studied and non-studied words. The key objective was to determine whether AI-generated lists could replicate the false memory effects observed with classical lists. Results revealed no significant differences in recognition/recall rates between the two list types, indicating that ChatGPT-generated lists were equally effective in eliciting false memories. These findings suggest that AI might serve as a valuable tool for cognitive research, offering a rapid and accessible method for generating experimental materials.

## How suggestive are we in a second language? Exploring memory distortions in L2

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Memory is highly susceptible to errors and distortions. Memory suggestibility refers to the tendency to accept misleading information communicated during formal questioning that will affect subsequent behavioral responses. This effect is amplified in closed social interactions, where group dynamics and language barriers may heighten vulnerability—particularly in critical situations such as job interviews, and interactions with social services, immigration offices, or police authorities. Non-native speakers (L2) may be more prone to memory distortions due to increased cognitive load and reduced confidence in recall. Two pre-registered experiments examined memory suggestibility in L2. In Experiment 1, Spanish native speakers (N = 202) read and recalled a robbery story in either their first (L1: Spanish) or second (L2: English) language before completing the Gudjonsson Suggestibility Scale. Experiment 2 replicated this procedure with English native speakers (N = 195) responding in either L1 (English) or L2 (Spanish). All participants completed a standardized L2 proficiency test. Results showed no significant differences in suggestibility between L1 and L2. However, suggestibility was negatively related to L2 proficiency. Moreover, participants with greater recall, reporting higher credibility in their responses, perceiving the task as cognitively easier, and reporting a more positive mood were less suggestible. These findings extend research on memory suggestibility to bilingual contexts and suggest practical implications. Enhancing L2 proficiency may improve memory accuracy in a second language and reduce susceptibility to suggestive information in high-stakes situations.

### **Investigating response fluency effects in cognitive control**

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Different forms of fluency are thought to influence cognitive control across various experimental settings. In two experiments, we investigated, for the first time, how response fluency affects conflict resolution in a Stroop-like task, where other types of have previously been observed. We manipulated response fluency (a key press) through specific trial repetitions and examined its effects on a transferred stimulus set. In Experiment 1, we compared response fluency within a mostly congruent versus a mostly incongruent context. When the frequent response was associated with congruent trials, participants made more errors on incongruent trials that required the same response. Conversely, when the frequent response was linked to incongruent trials, the effects emerged in response times: participants resolved incongruent trials more quickly when using the more fluent response. Experiment 2 aimed to isolate response fluency from fluency associated with stimulus congruence by inducing it without overlapping stimulus features (using neutral trials). No comparable effects were observed, suggesting that increasing response fluency alone is insufficient to activate cognitive control or influence conflict resolution. We interpret these findings within an information-processing framework, highlighting the role of processing fluency in cognitive control.

### **Ocular Signatures of Associative and Dissociative Creative Thinking**

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Creative cognition arises from the dynamic interplay of idea generation, concept structuring, and flexible cognitive control, enabling the production of novel ideas. By leveraging stored knowledge, both associative (i.e., generating semantically connected concepts) and dissociative (i.e., deliberately breaking conventional associations) processes facilitate creativity, yet each may recruit distinct neural correlates. Here, we employed eye-tracking measures to examine how these two creative processes differ in their cognitive demands relative to a free art-viewing task (control). Fifty-eight participants (49 female,  $M = 21.65$  years,  $SD = 7.48$ ) viewed a set of normalized paintings depicting people, places, and objects and generated three-word chains under each creativity-related condition (associative, dissociative, and control) while their ocular movements were recorded. Associative thinking produced longer dwell time and more fixations, suggesting localized processing for retrieving related concepts. Conversely, dissociative thinking exhibited higher run counts, reflecting broader scanning for remote associations. Pupil dilation remained comparable across these two structured tasks, indicating similar overall resource engagement. Overall, structured tasks (associative and dissociative) elicited longer response times and lower performance than free viewing, indicating heightened cognitive demands. They also yielded more run counts, greater pupil dilation, and fewer dwell time and fixation counts than the control. Individual difference variables assessed did not consistently correlate with behavioral or ocular measures. These findings provide insights into the distinct executive and attentional control involved in associative vs. dissociative creative thinking processes and offer valuable avenues to support evaluation and intervention on cognitive processes.

## **Psychological Foundations of Movie Preferences: Morality, Complexity, and Polarization**

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The increasing polarization of movie reviews reflects broader ideological and moral divisions in society. This study examines whether differences in expressed moral foundations underlie the divergence between critic and audience ratings and how these differences interact with other factors such as movie complexity and cast diversity. Using a dataset of 13,296 Hollywood movie scripts (1930–2018) and over four million audience and critic reviews from Rotten Tomatoes, we employed natural language processing (NLP) techniques to quantify the moral language expressed in movie scripts and reviews. Our analysis differentiates between liberal (Care, Fairness) and conservative (Loyalty, Authority, Sanctity) moral dimensions and explores their relationship with movie ratings. Results indicate that moral language in movie scripts significantly predicts discrepancies between critic and audience scores, with complexity acting as a moderating factor. Additionally, the moral foundation of reviews predicts individual ratings, suggesting that ideological alignment influences movie evaluation. We also explore how racial and gender diversity in movie casts contributes to review polarization. Beyond morality, we investigate broader psychological factors affecting movie preferences, including personality traits, socioeconomic status, stress, and the need for cognitive challenge. A survey (N=1300) validates links between individual psychological characteristics and preference for complex films, shedding light on why certain audiences favor intellectually demanding content while others prefer simpler narratives. These findings highlight the role of psychological and moral predispositions in cultural consumption and offer insights into the broader mechanisms of ideological polarization in entertainment media.

### **Fake news, fast or slow: Replicability of the impact of cognitive load on misinformation belief**

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Misinformation has come to the foreground since 2016 with the USA presidential elections and the Brexit referendum and yet to cease to be a hot topic. While research has repeatedly found a correlation between deliberation (measured, e.g., through the cognitive reflection test) and misinformation belief, causal evidence is scarcer. In a 2020 paper, Bago, Rand, and Pennycook (2020) demonstrated that belief in misinformation increases when deliberation is impaired by the use of time pressure and a concurrent working memory task. In the first study, we attempted a conceptual replication of Bago and collaborators by collecting a quota-matched sample of Portuguese individuals in an experimental lab, with block-wise time pressure and a digit memorization task (N = 135). In Study 2, we tried to follow the procedure of Bago and collaborators more closely, using the same working memory load task (dot memorization) and also applying time pressure item-wise instead of block-wise (N = 161) to online American participants. Finally, in Study 3 (N = 102), we repeated Study 2 but increased the time allotment to decrease the number of missing answers. We were never able to replicate the original finding and a mini-meta analysis with the three studies (N = 398) also failed to replicate the expected result. We discuss the remaining differences between our study and Bago and collaborators' work, as well as the importance of conceptual vs. strict replications, the relevance of reporting effect sizes, and the state of the causal evidence linking deliberation with misinformation belief and discernment.

### **Combatendo o Efeito de Espectador Face ao Discurso de Ódio Online através da Tomada de Perspetiva e da Saliência de Normas Prescritivas - Uma Experiência Laboratorial**

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O discurso de ódio online é um fenómeno multifacetado que tem gerado preocupação devido à sua gravidade, crescente prevalência, dificuldade de deteção e impacto negativo nas vítimas e na sociedade. Um aspeto preocupante é a falha das testemunhas em denunciar, obscurecendo a verdadeira magnitude destes crimes e, inadvertidamente, perpetuando a sua ocorrência. Num estudo laboratorial, os participantes acreditaram competir em equipas de quatro elementos num suposto torneio europeu, com o objetivo de examinar a eficácia da tomada de perspetiva (controlo vs. estímulo) e normas prescritivas (controlo vs. saliência) na redução da apatia das testemunhas (i.e., efeito de espectador) perante o discurso de ódio online. Durante a competição, foram expostos, num falso chat de equipa, a uma mensagem de ódio dirigida por um membro identificado como imigrante. O chat incluía um botão para denunciar comportamentos inadequados (e.g., discurso de ódio). Como esperado, os participantes (N=226) usaram mais o botão de denúncia na condição Estímulo de Tomada de Perspetiva/Saliência de Normas Prescritivas (38) do que na condição Controlo/Controlo (21), demonstrando que estes determinantes aumentam o comportamento de denúncia em relação ao discurso de ódio online. Os resultados também mostram que foi nesta condição experimental que os participantes menos recorreram a respostas potencialmente não normativas (e.g., confrontar o ofensor), quando comparado com a condição Controlo/Controlo. Os resultados são discutidos, destacando a importância de considerar ambos os determinantes como estratégias eficazes para combater o efeito de espectador no contexto do discurso de ódio online, contribuindo assim para um ambiente online mais seguro e inclusivo.

## **Correcting misinformation: The role of perceived truth in sharing contradictions**

Margarida V. Garrido<sup>1</sup>, Sara B. Félix<sup>2</sup>, Rita R. Silva<sup>3</sup>, & Magda Saraiva<sup>2</sup>

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The current spread of misinformation has serious consequences and requires urgent action to develop effective prevention, detection, and correction strategies. In two pre-registered experiments, we examined how people judge and share information that repeats or contradicts true and false information they previously saw. Participants were exposed to a first set of 30 (true and false) trivia statements. Then, they were presented with a second set of 30 statements. In Experiment 1 (n = 141), half of the second set of statements were repetitions from the initial list, and half were new. In Experiment 2 (n = 122), half of this set were contradictions to the statements of the initial list, and half were new. Participants were asked to judge the veracity of each statement and whether they wanted to share it on a hypothetical social media account. In Experiment 1, repeated statements were considered truer than new ones, replicating the repetition-based truth effect. In Experiment 2, contradictions were rated false than new statements, replicating the falseness effect associated with contradictory information. Notably, repetitions (vs. new) were more likely to be shared (Experiment 1), while contradictions yielded fewer sharing intentions (Experiment 2). Mediation analyses showed that truth judgments fully mediated the effect of repetition on sharing intentions, while for contradictions, the mediation was partial. The effect of sharing in boosting perceived truth was also observed. The findings shed light on the psychological processes driving online information spread by pinpointing the role of repetitions and contradictions' perceived truth in sharing intentions.

## **Efeito da falta de compromisso de líderes com justiça distributiva no estado emocional e comportamentos de protesto dos membros**

Isabel R. Pinto, Carina Dias, Fernando Barbosa e Tiago Paiva

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Participantes (N = 119) jogaram o "Jogo do Ditador" com dois jogadores simulados por computador. Um deles, o Ditador, distribuiu dinheiro ao longo de dez ensaios, de forma extremamente injusta (Ditador Inflexível) ou cada vez menos injusta (Ditador Flexível). Um outro jogador protestou contra (condição de Protesto) ou não reagiu (condição de Apatia) à decisão do ditador após cada ensaio. Medimos a raiva (auto-relato) dos participantes, a condutância da pele (SCL), o ritmo cardíaco (HR) e o número e tipo de comentários direcionados ao Ditador por parte do participante. A raiva e o número de comentários foram menores na condição de Apatia do que na de Protesto. A SCL e o HR aumentaram na condição de Inflexível/Apatia. O protesto assumiu um tom mais punitivo na condição de Ditador Inflexível do que na de Ditador Flexível. Discutimos as implicações destes resultados para compreender a motivação dos indivíduos em se envolverem em ações de protesto e apatia face a injustiça, e o papel das emoções nesse processo.

## Starlings in the Midsession Reversal Task: In search of lost temporal control

Armando Machado, Alejandra Salinas, & Marco Vasconcelos

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When an animal exposed to simple reinforcement contingencies misbehaves, its failure may be more informative than many of its successes. A case in point occurs when pigeons and starlings, two focal species in the study of learning, are exposed to the MidSession Reversal Task. The bird chooses between two options, S1 and S2, across 80-trial sessions. Choices of S1 but not of S2 are rewarded from trials 1 to 40, and choices of S2 but not of S1 are rewarded from trials 41 to 80. An intertrial interval separates consecutive trials. Pigeons and starling learn the task but, unlike rats and primates, they do not adopt the optimal win-stay/lose-shift strategy ("If a choice was rewarded, stay on the same option on the next trial, otherwise switch to the other option"). Instead they seem to rely on time-into-the-session to anticipate the moment the reward rule changes. Because temporal discrimination follows Weber's law, they make errors close to midsession, choosing S2 before trial 41 and S1 after trial 40, and losing available rewards. Why pigeons and starlings time a distant, uncertainty-ridden event instead of discriminating local, and less error-prone cues, is the main question guiding our research project. In this talk, we will summarize the results of a variety of experiments with pigeons and starlings in which we trained the birds with one trial density and then tested them with a different trial density. By manipulating trial density we aimed to unravel the temporal and non-temporal cues pigeons and starlings could be using to reverse their preference. More generally, we aimed to reconcile oddity with theory.

## Pigeons' learning strategies in the Midsession Reversal task

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We investigated the mechanisms underlying numerosity discrimination in pigeons using the number-left task (Brannon et al., 2001). After producing  $x$  light flashes by pecking a key (the sample), pigeons could receive reinforcement by choosing between two comparisons, a standard option that required a fixed number  $S$  of additional flashes, and a number-left option that required a variable number  $L$  of additional flashes that varied negatively with  $x$ , i.e.,  $L=8-x$ . In the original experiment, pigeons were first trained with forced and choice trials for all values of  $x$  (1 to 7) and, during testing, the number of choice trials was simply increased. Pigeons' performance was well described for a psychometric function with the proportion of number-left choices increasing with numerosity. Brannon and colleagues (2001) argued that a computational mechanism was underlying pigeons' performance. In Experiment 1, we replicated Brannon's experiment. To contrast a computational-based- and an association-based mechanisms of numerosity discrimination, in Experiment 2 pigeons were trained only with the anchor numerosities ( $x = 1$  and  $x = 7$ ) and then, during testing, they experienced unreinforced probe trials with the intermediate numerosities ( $x = 2$  to 6). In the third experiment, we tested whether performance was affected by the generalization gradients of the two trained numerosities when these were much further apart ( $x = 5$  and  $x = 50$ ). Overall, pigeons' performance did not change substantially across experiments. The conditions of training did not affect performance significantly, which seems more consistent with computation-based models.

## **Pigeons' Performance in a Numerosity Discrimination Task: Investigating the Underlying Mechanisms**

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*Centro de Investigação em Psicologia, Universidade do Minho*

The ability to translate environmental regularities into response rules is paramount for adaptive behavior. A task that has proved useful to explore this ability in animals is the Midsession Reversal task. In this task, animals have to choose between two stimuli (S1 and S2): Choices of S1 are reinforced in the first half of a session, and choices of S2 are reinforced in the second half. To maximize reinforcement, pigeons must identify when to switch from choosing S1 to S2. This switching point may be identified via global cues, by estimating either the time into the session or the number of trials until the contingency reverses. Alternatively, a local strategy would be to choose S1 until it is no longer reinforced, and switch to S2 from then on. Tests where the switching moment is changed reveal that pigeons appear to favor a timing strategy, although timing fails to account for the full set of results. We present a series of studies where we aimed to clarify the strategy pigeons employ to learn the task. To that end, we manipulated extinction and reinforcement contingencies in testing, as well as attempted to reduce generalization decrement from training to testing by employing variable inter-trial intervals. Most choice patterns were consistent with control by temporal cues, but we found cases of control by trial number or by the events of the previous trial.

## **Failure to Learn or Failure to Represent? Reassessing The Ephemeral Reward Task**

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The ephemeral reward task was designed to replicate real-world foraging decisions, where cleaner wrasse (*Labroides dimidiatus*) must prioritize visitor fish over residents of the reef to avoid losing feeding opportunities. In the task, subjects choose between two options, A and B, each offering an identical food reward. Selecting A removes access to B, while choosing B allows access to both rewards. Cleaner wrasse outperforms primates but still struggle under certain conditions—when they are juveniles, when they come from simpler social environments, or when the task structure is modified to better reflect natural conditions. A review of field observations suggests the task may not fully capture how cleaner wrasse make decisions in the wild. In nature, interactions are continuous and variable, rather than discrete simultaneous choices. Visitors tend to be larger and have higher parasite density, strengthening reinforcement learning. Cleaners engage in ~41 interactions per hour, but only 15% require a choice. In contrast, lab studies present only 100 trials, each requiring a choice, which may not accurately reflect the natural learning conditions. Crucially, real-world decisions involve whether to continue cleaning or switch clients, rather than choosing between two fixed options. To address these discrepancies, we propose modifying reinforcement magnitude, replacing discrete trials with a concurrent variable interval schedule, and adjusting visitor and resident arrival rates. While the task remains valuable for exposing failures in learning, refining its design may provide deeper insight into when and why these failures occur.

## When Information Trumps Food: Rethinking Information-Seeking in Suboptimal Choice

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Recent research has shown that certain species, such as starlings and pigeons, sometimes exhibit suboptimal behavior by prioritizing information over food. When given a choice between Informative and Non-informative options, they consistently prefer the Informative option, even though it offers a lower overall probability of delayed food rewards (20% vs. 50%). The Informative option presents a stimulus (S+) in 20% of trials, always followed by food, and a different stimulus (S-) in 80% of trials, which never leads to food. In contrast, the Non-informative option delivers food in 50% of trials, regardless of whether stimulus S1 or S2 is presented. To examine the role of these stimuli (S+, S-, S1, and S2) in suboptimal choice, two experiments were conducted. In the first experiment, starlings had to perform an observing response to access the stimuli, demonstrating their willingness to see them. In the second experiment, however, only S- and S2 were observable. In the first experiment, both suboptimal preference and observing responses on both options were high. In contrast, when access to information was restricted in the second experiment, both preference and the observing responses shifted significantly toward the Non-informative option. These findings suggest that the information-seeking hypothesis alone might not fully explain suboptimal choice, as the S- stimulus in the second experiment was informative yet actively avoided. This study provides a more nuanced understanding of the trade-offs between acquiring information and obtaining nutritional benefits in decision-making.

### **Maternal Touch in Early Development: Behavioral patterns and Neural Responses in Infancy**

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Maternal touch is a constitutive aspect of early infant development with plenty of evidence showing its association with developmental outcomes. The importance of touch stands in contrast with the sparsity of studies that observed mothers' use of touch in more naturalistic tasks. This work presents findings from two studies – using the same longitudinal dataset – measuring maternal touch during play and its association with infants' brain responses to tactile stimuli. Mother-infant dyads were tested at 7 and 12 months. In a first study we segmented and categorized, using a microanalytic coding system, all maternal touch events during a structured social interaction procedure. Maternal touch was most frequent during dyadic play, with affectionate, static, and playful touch predominating. In contrast, object-mediated touch was more common during triadic object play. Touch frequency declined with age, mainly due to a large reduction in static and object-mediated touch, suggesting that maternal touch adapts to the infant's evolving needs and the demands of different play tasks. The second study investigated the association between maternal touch frequency in dyadic play and infants' brain responses to touch. The infant was tested in a touch task where an experimenter applied two types of touch: affective (gentle brushing) and discriminative (light tapping with a wooden block). Using fNIRS, changes in oxyhemoglobin in the left somatosensory cortex and right superior temporal sulcus (STS) were measured. At 7 months, greater maternal touch was linked to reduced somatosensory activation during affective touch but increased STS activation for both stimuli. By 12 months, maternal touch was associated with enhanced STS activation for affective touch and reduced STS activation for discriminative touch. These findings underscore the importance of maternal touch in shaping early brain development and its influence on infants' neural responses to tactile stimuli. **Keywords:** fNIRS; Mother-infant interactions; Observational measures; Social touch; Touch processing

### **Language abilities in infants with Down Syndrome: An experimental study on early perception of intonation**

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Although language difficulties have been highlighted as a cornerstone of the developmental profile in Down Syndrome (DS), few studies have examined early language abilities in children with DS to determine initial strengths and weaknesses that might inform early language interventions to support language development in this population. The present study focused on early perception of intonation and examined whether it differed in infants with DS and typically developing (TD) peers. We used the visual habituation paradigm from Frota et al. (2014), who studied TD infants' ability to distinguish the intonation patterns of statements and yes-no questions in European Portuguese. Infants with DS (N=21, Mage=7;18, age range 5;03 to 13;08) were found to look longer to switch trials when compared to same trials. A RM ANOVA revealed an effect of trial type ( $p=.03$ ), indicating successful discrimination, similarly to TD infants. To explore potential age effects, looking times for same and switch trials for TD and DS younger (below 7mos) and older (above 7mos) infants were compared through a GLMM analysis. An interaction trial type\*group type\*age group was found ( $p=.039$ ). Unlike both groups of TD infants and younger infants with DS, older infants with DS were unable to discriminate the intonation contrast. Our findings highlight the importance of prosody in early development also in infants with DS. Moreover, the decrease in early sensitivity to intonation in older infants with DS pinpoints a crucial developmental window – the first semester of life – for early interventions using intonation to support language learning in these infants.

## **Can Early Foreign Language Exposure Promote Executive Functioning Capabilities? Insights From the B-Minds Project**

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Integrating Foreign Language Exposure (FLE) programs into early childhood education is an increasingly common practice worldwide. Research suggests that children exposed to a second language from birth reveal enhanced development of higher-order cognitive functions. However, most FLE programs overlook infancy and toddlerhood, missing crucial brain developmental and maturational periods. In the B-Minds project, children attending a Portuguese private daycare center were immersed in an environment where caregivers used English (L2) and Portuguese (L1) interchangeably in daily interactions. At preschool, children who were exposed to such environment from the first months (04-12 months), the first year (12-24 months) or the second year (25-36 months) of life were assessed in their linguistic, as well as their executive functioning capabilities. Here, we present data collected using the Fish and Sharks task from the Early Years Toolbox, which evaluates children's inhibitory control abilities. This task requires children to inhibit a prepotent motor response (i.e., tap on an iPad screen) when a specific stimulus appears. Accuracy and reaction times were analyzed for three types of trials: non-switch trials, inhibitory switch trials requiring response inhibition, and prepotent switch trials requiring cognitive shifting. This study aimed to contribute to the growing body of evidence on the cognitive benefits of FLE exposure in early childhood.

## **The neural organization of visual information in the auditory cortex of the congenitally deaf**

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Neuroplasticity is the brain's ability to reorganize its structural and functional architecture throughout life. In congenital deafness, the sensory-deprived auditory cortex can be recruited to represent sensory information belonging to other modalities, a process known as cross-modal plasticity. Previous studies have indicated that the auditory cortex of congenitally deaf, but not that of hearing individuals, is recruited during visual tasks. However, it remains unclear whether and to what extent these cross-modal responses represent low-level visual spatial information or map the visual field. Here, we addressed this question using two complementary fMRI experiments focusing on cross-modal processing in the auditory cortex of both deaf and hearing individuals during passive viewing of simple visual stimuli. Notably, converging results from both block-design and retinotopic population receptive field (pRF) experiments revealed that, unlike in hearing individuals, the auditory cortex of deaf individuals predominantly exhibited negative BOLD signals in early and associative auditory areas—a surprising finding given the prevailing focus on activations in prior work. These negative BOLD signals—commonly interpreted as deactivation responses—suggest that visual information may be represented via cross-modal deactivation mechanisms. Complementary pRF modeling further demonstrated that these responses are spatially tuned, displaying contralateral bias and large receptive fields. Together, our findings indicate that in congenitally deaf individuals, cross-modal visual processing in the auditory cortex may be mediated by deactivation signals, offering new insights into the neural basis of sensory reorganization.

## **Same Same, but Different! Exploring predictors of reading and reading-related skills in Portuguese adults with dyslexia**

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Dyslexia is a reading disorder that has been extensively studied in the past decades because of its multifaceted manifestations. Regardless of age, phonological awareness (PA) and rapid automatized naming (RAN) are the two core predictors of reading proficiency, and their impact can be further moderated by orthographic consistency. This study uses Structural Equation Modelling (SEM) multigroup analysis to examine the differential weight of reading predictors comparing adult typical readers and adults with dyslexia, in a semi-transparent orthography (European Portuguese). A battery of tests was administered to typical readers (TR;  $n = 214$ ) and adults with dyslexia (DYS;  $n = 61$ ), matched in age, formal education and non-verbal IQ. Model predictors included PA, vocabulary knowledge and RAN. Reading outcomes included reading fluency, sentence and text reading accuracy, reading comprehension and spelling. Results show that, in both groups, PA is the strongest predictor of all reading outcomes, although its contribution is always significantly smaller for TR group. When reading comprehension is involved, vocabulary knowledge also emerges as a significant predictor alongside PA, in both groups. RAN was also a significant predictor of reading outcomes (except for spelling and reading comprehension), but only for TR. This suggests that for Portuguese adult DYS, reading proficiency might still depend on phonological decoding skills rather than automatized lexical access. The implications of these findings are discussed.

## **Effects of Transcranial Direct Current Stimulation on the Dorsolateral vs. Ventromedial Prefrontal Cortex in Risky Decision-Making**

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Decision-making is a complex cognitive process involving risk assessment, particularly in situations requiring choices under varying levels of risk. Emotions play a key role in shaping decisions, highlighting the need for effective modulation strategies. While the dorsolateral (dlPFC) and ventromedial prefrontal cortices (vmPFC) are known to be involved in decision-making, the effects of neuromodulation on these regions remain unclear. Transcranial direct current stimulation (tDCS) offers a promising approach for investigating their influence, yet its impact on risky decision-making is poorly understood. This study examined the effects of anodal tDCS over the vmPFC and dlPFC on risky decision-making using the Balloon Analogue Risk Task (BART) in automatic and manual modes. Thirty-two healthy volunteers (18–25 years old) participated in a within-subject design. We hypothesized that participants would favor lower-risk decisions during the active tDCS session compared to the sham condition. A mixed-design ANOVA and paired-sample *t*-tests (or Wilcoxon tests) were conducted for both BART metrics. However, no statistically significant differences were found between conditions. These preliminary findings suggest that a single session of anodal tDCS over the vmPFC and dlPFC may not significantly modulate risky decision-making. Given the limited sample size, results should be interpreted cautiously. Future research with larger samples is needed to explore the potential effects of tDCS further, considering individual variability, alternative stimulation parameters, and the influence of repetitive sessions to enhance efficacy.

## **Fake Or Real? Associations Between News Credibility, Familiarity, Importance, Emotions and Manipulation Strategies**

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The prevalence of online fake news calls for measures to enhance news literacy. To study strategies to counter misinformation, a culturally relevant set of fake and real news headlines with known properties is required. This first study aimed to pilot a set of 48 fake and 48 real Portuguese news headlines on their perceived credibility, familiarity, and news-induced emotions (anger, anxiety, and excitement). Additionally, we explored whether participants (N = 130) could distinguish fake from real news and how credibility was associated with the other tested variables and with the type of manipulative strategy used in the fake news. A mixed-effects model was used to predict credibility as a function of news veracity, familiarity, perceived importance, and induced emotions, having participants and news items as random effects. Credibility ratings were significantly higher for real news than for fake news, which did not differ from each other in perceived importance and familiarity. Besides veracity, higher familiarity, importance, anxiety, and excitement were associated with higher credibility ratings. Anger, conversely, was negatively associated with credibility. We also evaluated whether different types of manipulative strategies impacted credibility ratings for the fake news: conspiracy and deceptive marketing strategies were associated with the lowest credibility ratings, whereas impersonation produced the highest credibility ratings. These findings provide pointers to variables that affect perceived credibility, as well as the type of strategies that can facilitate the spread of misinformation. This database will serve to select matched fake and real news headlines for future studies.

## **The role of prime duration in bilingual morphological processing: a masked priming study**

*Ana Isabel Fernandes, Juan Haro, Cristina Izura, Pilar Ferré, & Montserrat Comesaña*

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The way non-native speakers process suffixed derived words is a hotly debated issue. While some authors defend that native and non-native speakers employ similar morphological mechanisms (Comesaña et al., 2018; Diependaele et al., 2011), others state that mechanisms are different (Clahsen & Felser, 2006; Ullman, 2005). Most studies in the literature have employed a masked priming lexical decision task to test the above proposals, but results are inconsistent. This may be due, at least partially, to methodological (e.g., stimuli cognateness, suffix frequency, prime duration) and/or individual variables (e.g., second language proficiency [L2]) that have not been properly controlled. The aim of the present masked priming English lexical decision task was to examine this issue by manipulating prime duration (50 vs. 150 ms), and prime-TARGET relationship: i) Transparent, when the relation is semantic, morphological, and orthographic (e.g., farmer-FARM); ii) pseudo-derived, when the relation is morphologically apparent and orthographic (e.g., artery-ART); iii) orthographic, when the relation is merely orthographic (e.g., ashore-ASH); iv) unrelated, when there is no relation (e.g., slowly-FARM). Several psycholinguistic variables such as word cognateness, lexical and sublexical frequency values, and word length (among others) were controlled. One hundred and four European Portuguese-English non-native speakers with different degrees of L2 proficiency (and a control group of English native speakers) were asked to do the task in two different moments (one prime duration per moment) separated for at least three weeks. Participants' L2 acquisition background and proficiency were also evaluated. Results will be discussed in light of the theoretical proposals above-mentioned.

## **The Rhythm of Speech Sounds: Investigating the Role of Pitch Contours in Statistical Learning**

*Ana Cláudia Rodrigues, Alberto Lema, Diana R. Pereira, Helena M. Oliveira, Margarida Vasconcelos, & Ana Paula Soares*

*Universidade do Minho*

Statistical learning (SL), the ability to implicitly detect regularities in the sensory environment, has been assumed to play a central role in cognition, particularly in the learning of the rule-governed aspects of language. The first evidence of this comes from a seminal study by Saffran et al. (1996), who showed that infants were able to extract word-like units from a continuous speech stream made of repeated three-syllable nonsense words based exclusively on the computation of syllable co-occurrences—a statistic known as transition probability (TP). Although extensive evidence supports the use of TPs in word segmentation, these findings were obtained from studies using artificial languages stripped of other essential cues, such as the temporal patterns and variations in speech sounds, which are known to contribute to word segmentation in natural languages. Here, we examined the role of pitch contour in SL by exposing participants to speech streams in three conditions: a flat condition where only TPs were available for word segmentation, and two rhythmic conditions where the pitch of the middle (fixed condition) and the pitch of the middle and the last syllable (variable condition) of the three-syllable nonsense words embedded in each stream was enhanced. Neural (EEG) and behavioral (2-AFC) data were collected during the exposure and test phases of each SL task. This work provides insights into how TPs and the ability to exploit the rhythmic cues presented in the language might scaffold the extraction of word-like units from complex auditory streams, mimicking closely what occurs in natural languages.

## **How Bilingual are Early English Learners? Perception of Native and Non-Native Phonetic Contrasts by Portuguese Children Exposed to English as a Foreign Language at Daycare**

*Ana Paula Soares, Diana R. Pereira, Natália Guerra, Maria Veiga de Araújo, Helena M. Oliveira, & Fernando Ferreira-Santos*

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It is widely accepted that the earlier in life a second language is introduced, the better, particularly for the discrimination of non-native phonetic contrasts due to the perceptual narrowing that occurs early in life. However, most evidence supporting this claim comes from children raised in bilingual families, leaving open the question of whether similar effects occur in children exposed to a foreign language in early educational settings whose learning conditions differ significantly from those observed in family environments. In this study, investigated for the first time whether Portuguese children, who spent approximately 50% of their time at a private Portuguese daycare center exposed to English as a foreign language, were able to discriminate English phonetic contrasts, as a signature of the development of a bilingual phonetic mind. To that purpose, we recorded event-related potentials (ERPs), while children listened to consonant-vowel (CV) auditory syllables presenting phonetic contrasts in both Portuguese (/ta-da/) and English (/ta-tha/) languages using a double oddball paradigm. The task comprised 600 stimuli: 80% corresponding to the standard syllable /ta/ (common to both languages), and 10% for each of the deviant syllables (/da/ and /tha/), representing the native and the non-native phonetic contrast, respectively. Neural sensitivity to speech discrimination was analyzed by comparing the mismatch response (MMR) elicited by native vs. non-native phonetic contrasts. The findings provide insights into how early foreign language exposure in early educational childhood settings enhances neural sensitivity to non-native phonetic contrasts, mimicking the speech discrimination patterns typically observed in children raised in bilingual families.

## Shared memory representations for the Eurovision Song Contest

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When recalling a significant public event, community members retrieve similar details in their narratives. Yet, the extent to which individuals share identical memory representations remains unclear. This study examined if the recollected details of a public event (Portugal victory in the Eurovision Song Contest) are the same among the community and if there is a pattern in the recall order of details. Participants (N=46; 18-30yo) reported freely what they remembered about the event. Representational similarity analysis revealed that participants shared 42% of details in their narratives. Also, analysis of the sequential recall order of details showed that the most frequently mentioned details were the artist's name (98%) and the song's title (78%). The most common recall pattern was the combination of these two details, with 76% of participants recalling the song title immediately after mentioning the artist's name. If participants did not mention the song title after the artist, they frequently mentioned either the authorship of the song (30%) or the characteristics of the singer (30%). Our study shows that people share similar details in their narratives, suggesting the existence of a collective memory. This shared recall appears to follow a structured pattern, with details acting as mnemonic cues that prompt the retrieval of related information, guiding the participant's recollection of the event. The consistency in recalling these core details across different individuals highlights the role of shared cultural knowledge and common experiences in shaping how memories are constructed and retrieved.

## Effects of Reinforcement Probability in Serial Reversal Learning: Testing the Timing Hypothesis

Alejandra Salinas, Armando Machado, & Marco Vasconcelos

*Universidade de Aveiro*

Serial reversal learning tasks are effective for studying how animals adapt to environmental changes. In these tasks, animals choose between two options, S1 and S2. During the first half of the session, selecting S1 is rewarded, but in the second half, rewards are given for choosing S2. Studies with birds show that choices shift from S1 to S2 around midsession, suggesting they use time as a cue. Anticipatory errors occur when selecting S2 too early, and perseverative errors when continuing to choose S1 after reversal. According to the timing hypothesis, increasing the number of trials per unit of time shifts the choice function to the right, doubling the indifference point, whereas decreasing trial density shifts it to the left, reducing the indifference point by half. We tested this by reducing reinforcement probability from 1 to 1/3 and using variable trial spacings. Twelve starlings first learned the task with trial spacings averaging T seconds, then were tested with spacings of either 1.5T or T/2. The choice function shifted in the expected direction, but the magnitude was inconsistent with predictions. To investigate further, we conducted a second experiment with the same subjects, equalizing reinforcement probability across test conditions (0.16 for T/2 and 0.666 for 2T). We found that this manipulation led to a stronger temporal effect in the 2T test but not in the T/2 test, which appeared to have a weaker effect compared to the first experiment. These findings suggest that while time-based expectations influence reversal learning, local reinforcement contingencies play a stronger role than previously assumed.

## **Proposta de Nova Modalidade de Prática de Recuperação: Testagem com Recordação por Categorias**

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A testagem é considerada mais eficaz que outras estratégias de estudo (e.g., leitura repetida), pois praticar a recuperação mnésica produz maior retenção a longo-prazo. Contudo, há alguma inconsistência sobre que tipo de teste a otimiza. Enquanto alguns estudos sugerem vantagem da recordação livre em relação ao teste de escolha-múltipla, uma metanálise (Adesope et al., 2017) sugere não haver diferenças, tornando-se relevante aprimorar a extensão deste efeito. Hipotetizamos que conjugar a testagem com a recordação por categorias potencia a memória. Quando os participantes veem aleatoriamente uma lista de palavras pertencentes a diferentes categorias (e.g., frutas, animais), durante a recordação livre, tendem a evocar as palavras semanticamente relacionadas de forma agrupada, melhorando a recordação. Esta melhoria está de acordo com teoria da propagação da ativação, pois recordar informações relacionadas com uma categoria desencadeia a memória para outras informações dessa categoria. O agrupamento semântico já foi observado durante a testagem e no presente estudo foi adaptado para uma estratégia de recordação explicitamente fornecida aos participantes: a Recordação por Categorias. Esta estratégia já foi aplicada no âmbito da memória do testemunho, mostrando-se superior ao Relato Livre. Neste contexto também se investigou o efeito de utilizar categorias autogeradas (pelos participantes) ou fornecidas (pelo entrevistador), variável igualmente considerada neste estudo. Este estudo segue um plano interparticipante bifatorial 5 (tipo de testagem: Recordação Livre, Recordação por Categorias autogeradas, Recordação por Categorias fornecidas, Leitura repetida, Sem Testagem) x 2 (tipo de lista: palavras categorizadas, palavras não-categorizadas). A recolha de dados está quase concluída, permitindo apresentar os resultados preliminares.

## **No ITI, no single-code/default? Testing coding strategies in pigeons**

*Sara A. Ramos & Carlos Pinto*

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To study what strategy pigeons use to respond to a temporal discrimination task, three stimuli were presented (2s, 8s, 32s) and they had to choose between two colours. One colour was correct after 2s or 32s. The other was correct after 8s. The pigeon may adopt one of two learning strategies: a multiple-code strategy or a single-code/default strategy. In a multiple-code strategy, the animal creates a specific rule for each stimulus (“If 2s, choose green.”; “If 8s, choose red.”; “If 32s, choose green.”). In a single-code/default strategy, the animal creates only two rules - a specific rule for the sample that has a unique match to the comparison (single-code rule) and a rule that can be applied after any of the remaining samples are presented (default rule) (“If 8s, choose red.”; “If no 8s, chose green.”). A retention test may allow us to disambiguate between the two strategies: if a pigeon forgets the initial stimulus, and is following a multiple-coding strategy, he should be indifferent between the two colour options. By contrast, a pigeon following a single-code/default strategy should prefer the “default” option. In previous studies (with ITI), results are consistent with single-code/default. However, they are also consistent with choose-short effect. Similar tasks, without ITI, don’t show choose-short effect. Therefore, the present study was conducted without ITI to avoid a choose-short effect. Thus, if evidence of single-code/default remains, we have more confidence that it is indeed due to the adoption of this strategy. The results suggest no evidence of single-code/default.

## Neural Adaptation in Object Recognition

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How the brain performs object recognition is a major question of the modern day neuroscience. The repetition suppression technique is a study tool that uses the neural adaptation phenomenon to infer neuronal processes. Recently, it was been demonstrated that the organization in the visual processing pathways, seems to follow a logic of similarity between the encoded objects as it happens in sensorimotor cortices. However, a comprehensive understanding of adaptation dynamics for complex stimuli, such as manipulable objects, across diverse brain regions remains elusive. This project aimed to study these dynamics and how the behavior of adaptation curves is altered, taking into account different brain areas related to object processing. The study involved 81 volunteers who underwent an fMRI experiment of passive object visualisation. We estimated the BOLD response voxel by voxel for the whole brain and applied a k-means algorithm to group together voxels with similar adaptation curves, revealing two distinct adaptation patterns. Then, using a gamma distribution function to estimate the data beyond the temporal structure of the fMRI data, we found a gradual increase in adaptation latencies, starting from medial ventro-temporal regions where peak activity was reached more quickly, to lateral and dorsal regions where the longest latencies were observed. These findings support the facilitation model, given that differences in temporal dynamics involve a shift in peak neural activity. Furthermore, this pattern seems to demonstrate that cortices more tuned to the visualization of manipulable objects are adapting faster, as predicted by that model.

## Sensory loss and brain reorganization: individual paths in deafness

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Neural plasticity enables the brain to adapt to sensory deprivation, such as hearing loss. While extensive research has demonstrated universal plasticity patterns in deafness, these investigations have often overlooked individual variations in brain reorganization. Individual differences play a crucial role in shaping neural patterns, with environmental factors and personal experiences significantly contributing to observed variability. This study examines individual differences in the functional connectivity (FC) of the auditory cortex (AC) in congenitally deaf individuals compared to hearing controls. Using functional magnetic resonance imaging (fMRI), we analyzed the AC's FC in 39 deaf participants and 33 hearing individuals. Our findings demonstrate that the absence of shared auditory experience leads to greater interindividual variability in the AC's FC among deaf individuals, in contrast to the more consistent patterns observed in the hearing group. This variability was particularly evident in connections with language-related regions, such as the superior temporal gyrus and the inferior frontal gyrus (e.g., Broca's area). Notably, this variability was not attributed to language deprivation, as it was also present in a subgroup of native sign language users. However, comparisons between native signers and late sign language learners indicated that language exposure also influences FC variability, although to a more moderate extent. These results highlight the complex interplay between brain plasticity and individual differences, underscoring the need for personalized approaches in sensory rehabilitation.

## **Are choice biases in memory tests a task-related confound or a memory-related effect?**

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A task commonly used to study memory is the matching-to-sample task, where pigeons learn to choose a specific option as a function of an initial stimulus. For instance, if the stimulus lasts for 3 s they should choose a red key; if it lasts for 9 s they should choose a green key. After successfully learning this discrimination, a delay is introduced between stimulus and choice. Trials are traditionally separated by an inter-trial interval. Manipulations of delay and inter-trial interval (e.g., illumination and duration) have shown, in some cases, a bias for choosing the option associated with the shorter stimulus, known as the choose-short effect. The choose-short effect appears on only some variations of this task, so it is unclear if it is a procedural or memory-related effect. Thus, to clarify the effect of delay and inter-trial interval on choice bias, we conducted two experiments featuring a matching-to-sample task without inter-trial intervals. In one experiment, delays were present from the start; in the other, delays were introduced only in testing. In both experiments, after training, the animals underwent a memory test with new delay durations, which were illuminated or spent in darkness. In both experiments, we found a choose-short effect when delays were illuminated. However, when delays were spent in darkness, general accuracy decreased towards indifference as the delay increased. The finding that a choose-short effect did not appear in all test conditions suggests that this choice bias is likely due to a task-related confound rather than a memory-related effect.

## **Analysis of Learning Strategies in Pigeons**

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To understand what learning strategies pigeons use, we constructed a discrimination task where, following the presentation of a light for 2, 6 or 18 seconds, pigeons had to choose between two response keys, one red and the other green. To obtain reinforcement, the pigeon had to choose the red key when the light lasted for 2s and the green key when the light lasted 6 or 18s. To learn these associations, the animals could use two strategies: a multiple-coding or a single-code/default. In the former, the animal creates a code for each duration (e.g., “If 2s, then red; If 6s, then green”; If 18s, then green.). In the latter, the animal creates two codes, one specific to one duration (single-code) and another that applies to all other durations, as a default rule (e.g., “If 2s, then red; If  $\neq$  2s, then green”). Results from previous studies suggest that the animals use the single-code/default strategy. However, there are procedural confounds in those studies (such as the mapping of the duration, or the use of inter-trial intervals) that could lead to results consistent with what is expected when a single-code/default strategy is followed, while stemming from a multiple-coding strategy or from a choice bias (such as the choose-short effect). To clarify what strategy the pigeons use, we removed the inter-trial intervals and used a mapping that differentiates between a choose-short effect and a single-code/default strategy. The results showed that the animal continues to manifest patterns of responses expected from a single-code/default strategy.

## **Psychophysiological Effects of Cognitive Reappraisal Combined with tDCS in the Prefrontal Cortex during Negative Emotional Activation**

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Emotions naturally elicit behavioral and physiological responses, and the ability to regulate them effectively is essential for mental health and well-being. The prefrontal cortex is central to cognitive control, particularly emotion regulation (ER). Transcranial direct current stimulation (tDCS) has been shown to modulate key regions, such as the dorsolateral PFC (dlPFC) and ventromedial PFC (vmPFC), enhancing ER processes. This study investigated the combined effects of cognitive reappraisal (CR) and tDCS on psychophysiological responses — heart rate (HR), skin conductance (SC), and respiratory rate (RR) — during negative emotion induction. Eighty-five healthy volunteers were randomly assigned to either the dlPFC (n = 46; 34 females) or vmPFC (n = 39; 35 females) stimulation group. Each participant completed three sessions: one CR training session and two tDCS sessions (active and sham). During the experimental sessions, CR strategies were applied alongside tDCS while participants watched negative or neutral film clips from the Emotional Movie Database. Physiological responses were continuously recorded. Results showed that active tDCS over the dlPFC combined with CR significantly reduced HR compared to sham, whereas no such effect was observed in the vmPFC group. Given that HR reduction is associated with improved autonomic regulation and emotional resilience, these findings suggest that tDCS-enhanced CR may facilitate more adaptive physiological responses to negative emotions. No significant changes were found in SC or RR in either condition. These results highlight the potential of tDCS as a complementary tool for ER interventions to improve emotional and physiological regulation.

## **Correção de Desinformação em Contextos de Saúde**

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A propagação da desinformação tem aumentado numa sociedade cada vez mais dependente das tecnologias de informação e comunicação. Embora facilitem o acesso ao conhecimento, estas tecnologias também promovem a disseminação de informação falsa, com graves consequências individuais e sociais, nomeadamente na saúde. Assim, torna-se crucial desenvolver estratégias de correção que atenuem os seus efeitos, protejam contra a consolidação de crenças irracionais e promovam decisões informadas baseadas em evidências científicas. Em dois estudos experimentais, capitalizando nos erros de atribuição da fonte, adaptámos o paradigma clássico da desinformação para investigar o seu potencial na correção de desinformação previamente codificada. O procedimento dos dois estudos foi semelhante: apresentação inicial de afirmações sobre saúde ambíguas quanto à sua veracidade (verdadeiras no Estudo 1 e falsas no Estudo 2), uma tarefa de evocação livre, um questionário (de resposta verdadeiro/falso) incluindo repetições, contradições e frases novas, e uma tarefa final de evocação livre. No Estudo 1 (N=119), replicámos o efeito da desinformação: os participantes atribuíram parte da informação falsa introduzida no questionário à lista inicial, integrando-a na memória, tal como observado na segunda tarefa de evocação. No Estudo 2 (N=119), os participantes aceitaram parte da informação verdadeira introduzida pelo questionário, corrigindo assim parte da informação falsa inicialmente aceite, tal como observado na evocação final. Estes resultados reforçam o potencial deste paradigma como estratégia de correção de desinformação e particularmente em contextos de saúde.

## **When Cheers and Tears Fill the Same Glass: How Motives and Social Context Shape Alcohol Approach Tendencies**

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People consume alcohol for various reasons, each associated with distinct behavioral patterns, and outcomes of alcohol use. Previous studies have differentiated between alcohol consumption driven by the need to manage negative emotions and consumption motivated by the desire to enhance positive emotions. However, the differential effects of negative and positive emotional contexts on implicit approach and motivational tendencies toward alcohol in coping versus enhancement drinkers have not been explored yet. Participants were 417 young adults randomly assigned to one experimental condition—social exclusion or inclusion—during a computerized “Cyberball” ball-tossing game. Next, participants completed the Alcohol Approach-Avoidance Task to measure implicit motivational tendencies toward alcohol and a self-report questionnaire to assess coping and enhancement motives. Results indicated a significant interaction between enhancement motives and condition on implicit motivational tendencies toward alcohol ( $p < 0.05$ ). Specifically, enhancement motives more strongly predicted implicit motivational tendencies toward alcohol in the social inclusion condition compared to the exclusion condition. Coping motives exhibited a significant main effect on implicit motivational tendencies toward alcohol ( $p < 0.05$ ), but no interaction with condition was observed ( $p > 0.05$ ). Notably, the main effect of coping motives was primarily driven by their influence on implicit motivational tendencies toward alcohol in the social exclusion condition. These findings did not vary as a function of participants' beliefs about whether they had played or not with other real players during the Cyberball game. These findings suggest that emotional contexts elicit implicit motivational tendencies for alcohol differently, depending on alcohol-related motivations. This provides valuable insights into how contextual factors may influence drinking behaviors.

## **“I know it’s true!”: the effect of familiarity in different input modalities of repetition-based corrections of false statements**

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The illusion-of-truth effect shows that people accept information as more likely to be true, based on its repetition. Notably, remembering repeated statements influences our ability to judge its veracity, through familiarity by repetition (Silva, Garcia-Marques, & Reber, 2017). However, this memory influence seems to depend on the type of repetition. Unlike exact verbatim repetition of a sentence that improves recollective processes, semantic-based repetition (i.e., repetitions by category) did not favor recollective memories but improved familiarity recognition – correct and false-positives (Dewhurst & Anderson, 1999). This evidence points to the potential influence of confidence in memory as a driver of the familiarity effect. Critically, a systematic exploration of the repetition effect for correcting false information is missing, as well as a detailed examination of repetition input modalities and the different memory processes involved. In this study, participants ( $N = 300$ ) read false trivia statements ( $N = 180$ ) and assessed its pairs of repetition/contradiction according to the input modality – conceptual vs. sensory-perceptual – on their veracity and similarity with the initial statements. Subsequently, they answered a recognition task (old-new) with familiarity and confidence ratings. Our findings explored the selectivity of the modality effects in familiarity-based vs recollective memories. This innovative approach contributes to experimental and computational models, and to understanding the role of retrieval processes and input modalities in the illusion-of-truth effect.

## **Reduzindo o viés-da-mesma-etnia numa tarefa de reconhecimento de rostos: Efeito do uso de aviso prévio**

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Num contexto global de crescente migração, o contato com pessoas de diversas etnias pode ser uma oportunidade valiosa para reduzir o viés-da-mesma-etnia. Este viés traduz-se na tendência de maior capacidade de reconhecimento de rostos de uma etnia idêntica à do respondente ou testemunha, e pode influenciar a precisão de testemunhos oculares. Este estudo, que contou com uma amostra de 178 jovens adultos caucasianos, investigou os efeitos da apresentação de um aviso prévio no reconhecimento de rostos de diferentes etnias (asiática, latina, afro-americana e caucasiana). Utilizando um plano experimental intersujeito para manipular a presença ou ausência de aviso sobre a ocorrência do viés-da-mesma-etnia e um plano intrassujeito para as etnias apresentadas, os participantes foram expostos a uma série de rostos, seguindo-se uma tarefa distratora e, posteriormente, uma tarefa de reconhecimento, que envolvia rostos anteriormente apresentados ou não. Os resultados indicaram que a presença do aviso melhorou o reconhecimento de rostos, com destaque para as etnias latina e afro-americana. Mostraram também que o aviso eliminou o viés-da-mesma-etnia, mas apenas no caso dos rostos afro-americanos. Estes resultados sugerem que a introdução de avisos pode ser uma estratégia eficaz para mitigar o viés-da-mesma-etnia em tarefas de reconhecimento, com importantes implicações para a precisão de testemunhos oculares no contexto judicial.

## **The Face of Mind-Wandering: Inferring off-task thought through non-verbal behaviors in children**

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Mind-wandering (the occurrence of thoughts that are unrelated to a current task) is often measured through self-report, with participants being asked to describe their current mental state, relying therefore on metacognition. In children, however, this subjective assessment of mind-wandering is hampered by the fact that metacognition is still developing. In this type of population, more objective measures should be considered, and off-task thoughts can be inferred through indirect indicators such as eye-movements, event-related potentials, heart rate, and facial expressions. In the present study, we attempted to measure mind-wandering in children through facial expressions and body movement. Forty-eight school-aged children were video recorded while watching a film, where an adult told a story. Children were probed 6 times, to report if they were thinking about the story or mind-wandering. A set of 10-second clips of the children's facial expressions and movements that preceded the probes was extracted. Afterwards, 15 judges independently viewed the recordings and determined whether the children were mind-wandering, as well as which non-verbal behaviours informed their judgment. Judges' decisions were congruent with children's reports in 57% of the clips, demonstrating moderate discrimination between mind-wandering and on-task reports ( $d\text{-prime} = 0.41$ ). The most frequently identified mind-wandering indicators, were looking away from the screen and excessive hand or body movements. These results suggest that mind-wandering can be detected through non-verbal indicators, carrying important implications for the online detection of mind-wandering in educational contexts, where off-task thinking is frequent and can hinder performance.

## Queixas Subjetivas de Memória: Avaliação Objetiva e Impacto de Variáveis Individuais

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A investigação sobre as queixas subjetivas de memória (QSM) tem apresentado resultados inconsistentes quanto à sua relação com o desempenho objetivo, possivelmente devido à influência de variáveis ainda pouco exploradas. Este estudo experimental analisou a associação entre QSM e memória episódica, considerando o impacto da metamemória, da personalidade e da escolaridade em jovens adultos e idosos. A amostra incluiu 102 participantes (51 jovens adultos e 51 idosos). O protocolo de investigação envolveu a avaliação subjetiva de memória através do Questionário da Memória do Dia-a-Dia e do Questionário de Metamemória para Adultos. O desempenho objetivo foi medido pelas subprovas Faces I, Memória Lógica I e Sequências de Letras e Dígitos da escala WMS-III, e a personalidade foi avaliada com o NEO-FFI-20. Os participantes preencheram ainda um questionário sociodemográfico e o MoCA. A aplicação dos instrumentos foi realizada individualmente e de forma contrabalanceada. Os resultados indicaram que os jovens adultos reportaram mais QSM do que os idosos. Contudo, objetivamente, os idosos apresentaram um melhor desempenho em determinadas tarefas de memória episódica. Além disso, a escolaridade revelou-se um fator protetor do declínio mnésico. Estes resultados sublinham a importância de considerar fatores individuais na compreensão da relação entre QSM e desempenho mnésico, bem como a necessidade de se refletir sobre as metodologias utilizadas na investigação sobre a memória humana.

## Rapid Detection of Evolutionarily Threatening Stimuli Using a Novel Picture Morphing Paradigm: Evidence from Frequentist and Bayesian Analyses

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Previous research supports the snake detection hypothesis, showing that snakes, as phylogenetically fear-relevant stimuli, are detected and identified faster than non-threatening or neutral stimuli. This effect is amplified in individuals with high snake fear, leading to quicker detection and heightened emotional responses. However, few studies have used picture morphing techniques to explore this phenomenon. This study investigated behavioral responses using a novel picture morphing paradigm with 69 participants, who also completed the Pichot's Fatigue Scale and the Snake Anxiety Questionnaire (SNAQ). Forty morphs were created using IAPS pictures, categorized as snakes, other threatening animals, positive animals, and neutral stimuli. Each morph had a maximum duration of 5 seconds. Participants were instructed to press the spacebar as quickly as possible to identify the content of the morphs. After pressing the space bar, the participants had to write in a single word the content seen in each morph. Our frequentist analysis Based on correct identifications revealed that snakes were identified faster (smaller RTs) than all other categories, even after controlling for fatigue. However, fear of snakes did not significantly moderate this effect. Bayesian analysis also confirmed strong evidence for faster snake identification and weak evidence for a moderating role of snake fear. These findings support the snake detection hypothesis but suggest that the moderating effect of snake fear remains inconclusive in non-clinical samples, warranting further investigation in clinical populations. The picture morphing paradigm proves to be a promising tool for studying perceptual biases in anxiety disorders.

## **Contributions of low-level auditory processing to musical expertise and vocal emotion recognition**

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Musical expertise is associated with enhanced emotion recognition in voices, yet the cognitive and perceptual mechanisms supporting this link remain unclear. One possibility is that both abilities rely on shared low-level auditory processing skills. Individuals vary in their ability to encode basic acoustic cues (e.g., frequency, intensity, duration), which are fundamental to both music and speech perception. Robust psychoacoustic processing has been linked to musical expertise and enhanced prosody perception, while poor encoding of acoustic cues is associated with deficits in both domains. Thus, links between musical expertise and vocal emotion recognition may stem from a common auditory foundation. Here, we examined whether basic auditory abilities predict both musical expertise and vocal emotion recognition and whether these skills account for associations between domains. We tested 150 adults with varied musical backgrounds using psychoacoustic tests assessing thresholds for gap detection, backward masking, and discrimination of pitch, relative pitch, duration, loudness, and timbre. Emotion recognition was measured with two forced-choice tasks: one assessing recognition in spoken sentences and another in facial expressions. Musical ability was evaluated with melody and rhythm discrimination tests, while a self-report questionnaire captured musical experiences and behaviors. General cognitive abilities and personality traits were also assessed. Results revealed a positive association between musical expertise and vocal emotion recognition. General auditory skills, particularly pitch perception, predicted musicality and prosodic skills. Crucially, when psychoacoustic processing was held constant, the link between musical expertise and vocal emotion recognition disappeared. These findings highlight the building blocks of musicality and emotional prosody recognition.

## **I did not know that about you! Memory updating in person memory**

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It has long been known that repeated retrieval enhances learning compared to restudy (the testing effect, Roediger & Karpicke, 2006), but what happens to new information learnt after retrieval? Some findings suggest retrieval seems to impair learning of new unrelated information compared to restudy. It is possible that when people engage in retrieval mode (Tulving, 1983), they focus on reconstructing the past and refrain from processing information deemed irrelevant for retrieval (Finn, 2017). So, we raised the question: Is it possible to prevent people from engaging in retrieval mode and improve memory updating? Research on social cognition has consistently shown that people's processing goals impact how they process information. Seeking to form an impression about a person seems to enhance organisational processing and improve recall compared to seeking to memorise the same information (Hamilton, Katz, & Leirer, 1980). Perhaps it also promotes the integration of new information, thus improving memory updating. Across two studies, we manipulated participants' processing goals by asking them to either memorise or form impressions about a target that they were later asked to retrieve. Immediately after retrieval, they were presented with new information to memorise / about the target, and memory updating was assessed at a final recall test. Data suggests that processing goals differently affect learning and memory-updating processes. By enhancing organisational processing, impression formation goals seem to enhance the learning of new information compared to memory goals and protect against the detrimental impact usually observed after retrieval.

## **Longitudinal Assessment of Cognitive and Emotional Factors in Children with Behavioral Inhibition**

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Behavioral inhibition (BI), a temperament trait identified in early childhood, is associated with social reticence in childhood and an increased risk for anxiety problems in adolescence and adulthood. However, not all behaviourally inhibited children remain reticent or develop an anxiety disorder. One possible mechanism that may explain the differing outcomes is a child's ability to manage their emotional responses through cognitive processes. Our three-year longitudinal study aimed to explore how attentional biases (measured with eye tracking) and inhibitory control (measured through a behavioral task) influence the behavioural inhibition developmental trajectory (measured by parental report) in a sample of one hundred children aged 3 to 9 years. Our findings indicated that children with pronounced BI showed enhanced inhibitory control, while those with lower BI levels exhibited better emotional regulation. Additionally, we observed a shift in attentional bias as the children grew. Initially, those with higher BI tended to avoid threatening faces, favouring happy ones; over time, increased attention to threatening stimuli like angry faces is observed, suggesting a growing awareness of social threats that could heighten their anxiety. These findings suggest that different cognitive and emotional processes may influence relative levels of risk upon a child's anxiety outcomes.

## **The Face of Mental Illness: The Interplay of Bottom and Top-Down Processes**

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*Ispa*

Face processing has been shown to involve trait inferences influenced by both facial features and pre-existing beliefs. We investigate the dynamics between bottom-up and top-down face processing in the context of perceiving the faces of individuals expected to suffer from mental illness (MI). In a set of studies, participants evaluated neutral faces associated with labels indicating either a healthy mental state or a mental illness (general or specific, such as depression or schizophrenia). Our findings highlight the importance of the perceived fit between expected and perceived facial features in guiding trait stereotype judgments. We also explore differences in the mental representations of targets perceived to have mental health issues, general MI, or specific MI (such as depression or schizophrenia) using the reverse correlation technique. This allows us to better understand the role of top-down mechanisms in our initial set of studies, particularly focusing on the differences found between how depression and schizophrenia were perceived. The implications of our findings are discussed in the context of the interplay between stereotype-driven and perceptual-driven processes in shaping impressions of individuals from faces and in the context of MI perceptions, considering factors like typicality, continuum beliefs, and mental health literacy.

## **Time and movement perception: Differences between biological and non-biological movement**

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The perception of time is crucial for regulating various cognitive and biological processes. However, how external factors influence time perception remains unclear due to inconsistencies in literature, particularly regarding the relationship between movement and temporal duration estimation. This study examines how different types of movement—biological (walking and running) and non-biological (scrambled) affect perceived duration, considering variations in speed and duration. We hypothesize that (1) perceived stimulus duration depends significantly on movement speed, with slower stimuli are perceived as lasting longer than faster ones, and (2) time perception differs between biological and non-biological movement, with biological movement being associated with more accurate duration estimates. Participants watched videos of Point-Light Walkers (PLWs) at three speeds (0.5x, 1x, and 1.5x) and with durations between 2 and 25 seconds. PLWs consisted of points representing the major joints of the human body. For the non-biological condition, these points were placed randomly on the screen. After each video, participants estimated its duration. This study is still in the data collection phase. We anticipate that our findings will enhance understanding of how movement influences time perception, offering insights into its role in cognitive models of time estimation.

## **Sexual Arousal in the Unconscious Mind: Testing Theoretical Assumptions on Sexual Stimuli Saliency Effect**

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**Introduction:** The psychological foundations of human sexual response remain unclear. Existing information-processing models propose that sexual response occurs before conscious awareness, as indicated by reactions to unconsciously presented sexual stimuli. However, findings supporting this assumption are mixed with a publication bias toward positive results. **Aim:** The current study contributed to the understanding of information-processing mechanisms underpinning sexual response in heterosexual cis men and women, focusing on how sexual features reach awareness. **Methods:** In a breaking continuous flash suppression task (b-CFS), 81 participants (43 women) were exposed to three stimuli categories: sexually explicit (male and female nudes), non-sexual (dressed male and female in non-sexual postures), and neutral stimuli (objects). For each stimulus, its upside-down version allowed for disentangling the effect of low-level features. For each trial, participants were presented with a b-CFS sequence with Mondrian masks varying at 10 fps; the stimulus presented to the dominant eye was randomly positioned to the left or right of the centre of the screen. Participants were asked to report when a stimulus was detected and its position (on a keyboard: 'F', for left; 'J' for right). The response time was collected. **Results:** A two-level linear mixed model (LMM) revealed that both sexual and non-sexual stimuli reached awareness faster in women, but no differences emerged between sexual and non-sexual pictures. No significant effects were found in men. Findings do not support previous theoretical assumptions, suggesting that sexual response is a highly complex phenomenon, not completely captured by current laboratory paradigms.

### **Seguir o que o coração diz ou o que a cabeça pensa? Os efeitos da fluência cognitiva na avaliação de encontros e o papel do sexo**

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A teoria da fluência cognitiva propõe que a informação mais positiva e preferida, é aquela que se processa ou recupera mais facilmente. Dessa forma, existe dois processos: o ease of processing (facilidade de processamento); e o ease of retrieval (facilidade de recuperação). Já o speed date consiste num evento no qual os participantes têm encontros breves, geralmente entre 3 a 10 minutos, com vários parceiros. Dessa forma, hipotetizamos que na condição em que os participantes têm mais dificuldade a recuperar informação, a avaliação dos encontros será pior. Participaram 20 estudantes (10 mulheres e 10 homens) da Universidade do Minho, com idades entre os 18 e 24 anos. O trabalho dividiu-se em 2 partes: preenchimento do formulário de inscrição; e a sessão que demorou cerca de 1 hora e meia. Os participantes dividiram-se em 2 grupos: controlo e experimental, que se subdividiu em 2 grupos: condição “fluente” e “não fluente”. Os resultados mostraram-se significativos e na sua maioria de encontro com a hipótese lançada. Para o sexo masculino a exigência da tarefa levou a uma pior avaliação do encontro, mas não para o sexo feminino o que poderá ser explicado pela teoria evolutiva. Limitações e implicações práticas também foram discutidas.

### **Beyond artistic experience: The role of visuospatial abilities in drawing skill**

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Previous research has studied the relationship between visuospatial ability and artistic experience by comparing artists and non-artists, yielding inconsistent findings. While some studies suggest that greater artistic experience correlates with enhanced visuospatial abilities, others do not. A common limitation of these studies is the assumption that individuals in artistic careers inherently possess advanced drawing skills, which is not always accurate. The lack of direct assessment of participants' drawing performance may explain these discrepancies. To address this issue, we directly measured drawing skill using the Hand Drawing task (McManus et al., 2010) and used it as an independent variable. Eighty undergraduate students from diverse academic backgrounds (Fine Arts, Art History, and Psychology) were classified into high-ability and low-ability groups based on their drawing performance. Visuospatial abilities were assessed using the Paper Folding Test for spatial visualization (Ekstrom et al., 1976) and the Mental Rotation Task (Ganis & Kievit, 2015). It was hypothesized that the high-ability group would score higher than the low-ability group on both visuospatial tasks. The results supported this hypothesis, with the high-ability group scoring significantly higher on both spatial visualization and mental rotation tasks. Moreover, they demonstrated faster mental rotation processing than the low-ability group. In conclusion, participants with superior drawing skills outperformed those with poor drawing skills on both visuospatial tasks, regardless of academic background. These findings provide robust evidence for a positive relationship between drawing skill and visuospatial abilities, emphasizing the importance of objective skill measurement in clarifying the relationship between artistic expertise and cognitive abilities.

## **How much do psychology students know about human intelligence? A study on the prevalence of myths**

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There has been longstanding academic interest in psychological myths and misconceptions, with particular attention devoted to those surrounding human intelligence. This focus is significant, as beliefs about intelligence have influenced educational policies and contributed to the use, misuse, or disregard of intelligence tests. Recently, Furnham and Horne (2021) examined the prevalence of 35 myths about intelligence in the British population, as presented in Warne's 2020 book *In the Know: Debunking 35 Myths About Human Intelligence*. Building on this work, the present study explores whether Spanish final-year psychology students endorse these myths and examines the influence of individual differences on their acceptance. Sixty-six participants completed a questionnaire assessing the perceived truth of 35 statements about intelligence, alongside a personality trait scale and demographic questions. Results showed that 19 myths were mostly rated as true (three definitely and 16 probably true), while 16 were mostly rated as false (three definitely and 13 probably false). These findings were generally consistent with those of Furnham and Horne (2021), with the notable exception that our psychology students rejected seven myths previously endorsed by the British sample. Interestingly, these myths were related to the brain's functioning, test assessment methods and awareness of individual differences, topics addressed in the discipline of psychology. Additionally, higher levels of agreeableness and emotional stability were associated with a lower likelihood of endorsing myths, while greater conscientiousness correlated with fewer myths being rejected as false. The results are discussed in relation to prior research and a proposal for innovative education approaches is offered.

## **Resolução de anáforas e correferências em falantes bilíngues dialectais: um estudo de leitura automonitorada**

*Fabiola Natalina Garuzzi, Montserrat Comensaña, Cristina Flores, & Juliana Novo Gomes*

*Universidade do Minho*

A resolução de anáforas pronominais durante a leitura de frases em primeiras (L1) e segundas línguas (L2) tem atraído o interesse de (psico)linguistas nas últimas décadas, particularmente no que diz respeito ao processamento de sujeitos pronominais plenos quando as línguas diferem na distribuição de sujeitos nulos, como é o caso do português europeu (PE) e do português brasileiro (PB). As relações correferenciais, isto é, a forma como é estabelecida a relação entre uma expressão anafórica, por exemplo, um sujeito pronominal nulo ("Elas viram as crianças quando Ø entraram na biblioteca") ou pleno ("Elas viram as crianças quando Ø entraram na biblioteca") e o seu antecedente, têm sido amplamente estudadas em primeiras línguas tanto da perspectiva da linguística teórica como da psicolinguística, devido as diferenças sintáticas e pragmáticas entre as duas variantes da língua. Embora ambas as variantes permitam sujeito nulo (pro-drop), o comportamento e as preferências de correferência diferem significativamente, uma vez que o PB parece estar a evitar a ambiguidade estrutural. O presente trabalho pretende examinar a retomada anafórica em bilíngues dialectais de PB e PE com diferentes anos de exposição, faixa etária e uso do PE, utilizando-se de uma tarefa on-line de leitura automonitorada, com frases neutras, como "A professora aponta para o aluno Ø fala com a colega mais velha", introduzidas de conector 'quando' e 'enquanto', seguidas de uma pergunta, "Quem fala com a colega?". Serão analisadas o tempo de resposta e o percentual de correferência ao sujeito vs. objeto.

## **Indução de falsas memórias através de listas geradas por inteligência artificial**

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O paradigma DRM marcou o início de uma vaga de investigação das memórias falsas (Roediger e Mc Dermott, 1996). As listas DRM permitem a criação de memórias falsas de modo robusto sendo a sua eficácia amplamente replicada. Uma das principais limitações do paradigma DRM é a laboriosidade da criação das listas. Cientes deste facto alguns autores criaram coleções de listas com as percentagens de evocações e reconhecimentos de palavras corretas e de itens críticos (Albuquerque, 2005). O presente estudo visa explorar se listas criadas com recurso a inteligência artificial (IA) podem induzir memórias falsas e avaliar a sua eficácia comparativamente a listas criadas segundo o paradigma DRM. Este estudo piloto, testou 32 participantes durante um workshop sobre memórias falsas. Foram testadas quatro listas de 12 palavras. Metade foram criadas com base nos primeiros associados a uma palavra não pertencente à lista (DRM) e as restantes foram criadas com recurso à IA. Tanto as listas DRM como as listas IA tinham como item crítico ‘agulha’ e ‘cadeira’. Foram medidos os acertos, os falsos alarmes e o caso específico de recordação da palavra não apresentada (item crítico). Os resultados mostraram que as listas geradas por IA induziram falsas memórias. A discussão incluirá as limitações deste estudo e a potencialidade da IA em termos de geração de listas capazes de induzir memórias falsas. Em termos práticos parece ser possível gerar rapidamente, usando a AI, listas de associados a qualquer palavra, o que pode ser um avanço importante para o estudo das memórias falsas.

## **Attention Matters: Predicting Anxiety and Depression Through Attentional Control**

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In recent years, there has been a remarkable increase in severe mental health issues among younger populations. In response, research has sought to identify protective factors that may help mitigate the risk of developing psychopathological problems. One such factor is attentional control - the ability to regulate attention when confronted with positive and negative stimuli. Attentional control consists of two key components: attentional focusing, which involves maintaining attention on a task, and attentional shifting, the ability to redirect attention flexibly when necessary. These components seem to play different roles in anxiety and depression symptoms. However, while attentional control as a whole has been widely studied, the specific predictive contribution of its components remains unclear. To address this gap, the present study examines how attentional focusing and shifting predict anxiety and depression symptoms over two and four months. Two independent samples were assessed: 257 children (11–12 years old) and 171 children (9–10 years old). Results indicated that weaker attentional focusing abilities predicted increased anxiety symptoms over time, while weaker attentional shifting abilities predicted higher depressive symptoms. These findings highlight the distinct roles of attentional focusing and shifting in childhood mental health. Future research should investigate whether interventions targeting attentional focusing and shifting can improve children's mental health by reducing anxiety and depression symptoms.

## **The Effect of Body Attractiveness on Statistical Learning**

*Ana Cláudia Marinho, Sara da Silva Costa, & Joana Arantes*

*Universidade do Minho*

Statistical learning, a fundamental mechanism enabling humans to detect regularities in sensory input, has been extensively studied in various domains. However, the relationship between statistical learning and physical attractiveness has remained unexplored. This study aimed to investigate how body attractiveness influences statistical learning. Using images of bodies without faces to control for confounding social cues, participants completed a two-phase task involving familiarization and recognition of triplets. The study examined differences in performance across conditions of attractive, unattractive, and neutral body stimuli. Results revealed that attractive bodies facilitated statistical learning, particularly for female stimuli, while unattractive bodies had varying effects depending on the gender of the bodies presented. Male participants demonstrated improved performance with unattractive male bodies, suggesting heightened attention driven by evolutionary factors like threat perception. Across all conditions, bodily stimuli consistently outperformed neutral stimuli, likely due to the emotional salience of the former. The findings highlight the complex interplay between social perceptions and fundamental learning mechanisms, offering insights into how human cognition processes attractiveness cues. Limitations regarding sample size, participant diversity, and methodological factors underscore the need for further research. This study provides a foundation for future work exploring the role of attractiveness in cognitive processes, contributing to broader perspectives on social cognition and human learning.

## **Conspiratorial thinking under uncertainty: The interplay of uncertainty and deliberation in conspiracy beliefs**

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Conspiracy theories have detrimental social consequences. They are alternative explanations entailing secret actions made by groups perceived as powerful and malevolent. Conspiracy beliefs are encouraged by existential threats, such as uncertainty, which drive individuals to rationalise their surroundings. According to uncertainty reduction theory, people attempt to reduce uncertainty and information seeking behaviours are a vehicle to do so. Since conspiracies may help address human needs, conspiracy beliefs are alluring strategies for reducing uncertainty. In parallel, dual-process theories posit that individuals reason using intuition and deliberation. While intuition is autonomous, deliberation involves cognitive resources and has been associated with decreased conspiracy beliefs – although its role is rather complex. Hence, an experimental study was designed to decipher the role of uncertainty and deliberation in fostering conspiracy beliefs. Participants (N = 180) judged distinct explanations' accuracy (Moderate vs. Conspiratorial) under different conditions of salience of uncertainty (High salience vs. Control) and reasoning (Intuition vs. Deliberation) which employed the Two-response paradigm. It was expected that increased perceived uncertainty would promote conspiracy beliefs and that deliberation would decrease them – particularly when uncertainty was not salient. Although salience of uncertainty was successfully manipulated, no effect of it influencing conspiracy beliefs was found. Additionally, results suggest that deliberation promoted conspiracy beliefs, albeit this effect may be explained by carryover (i.e., anchoring) effects. Further evidence revealed that deliberation (vs. intuition) performed no differential role in impacting conspiracy beliefs. These findings are discussed in light of uncertainty reduction theory and dual-process approaches.

## **Implicit Association Tests for All: Using *iatgen* for Non-English and Offline Samples**

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The Implicit Association Test (IAT) is an invaluable experimental tool for researchers in many fields. The IAT is a sorting task that measures the strength of automatic associations between targets (e.g., flowers / insects) and attributes (e.g., pleasant / unpleasant). Several programs exist to create and run IATs, and each has unique advantages and disadvantages. Yet most share the same limitations: being general-purpose tools that require time to master, extra steps to run online (e.g., deploying a web server), and no IAT-data analysis features. This leads researchers to rely on pre-made templates that are typically available only in English and are difficult to translate. *iatgen* addresses some of these issues by allowing researchers to design and analyze IATs through a simple web-interface, to easily combine IATs with experimental manipulations or other measures in Qualtrics, and to analyze data using the same web-interface. However, until recently, the problem of monolingual, English-only capability remained. We introduce a new translation functionality, which allows users to create non-English IATs using the web-based *iatgen* Shiny app and *tr.iatgen* R package. Researchers are invited to contribute to the translation repository in GitHub by submitting and reviewing IAT translations. The poster will also explain how to deploy Qualtrics-based IATs in offline environments. We hope these new features will facilitate research in Portuguese and other languages, reducing the reliance on WEIRD (Western, educated, industrialized, rich, and Democratic) samples, and making this experimental procedure more approachable.

## **Vídeos Curtos e Funções Cognitivas: Um estudo experimental sobre consequências cognitivas e emocionais**

*Beatriz Pessôa Nascimento dos Santos & José Keating*

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Esta investigação tem como objetivo analisar os efeitos do consumo de vídeos curtos (short vídeos) no desempenho cognitivo em tarefas posteriores que exigem atenção e controlo inibitório, além de avaliar seu impacto nos níveis de ansiedade e stresse em jovens adultos. No que diz respeito à metodologia, espera-se um total de 128 participantes, homens e mulheres, entre 18 e 30 anos, que sejam estudantes da Universidade do Minho. Os participantes responderão a um questionário sociodemográfico e, posteriormente, ao Inventário de Ansiedade de Beck (BAI) e à Escala de Percepção de Stresse (PSS). Após esta fase, os participantes serão divididos em dois grupos: o grupo experimental assistirá a vídeos curtos por até 20 minutos, similares aos das plataformas digitais atuais. O grupo de controlo não realizará nenhuma atividade neste momento. Posteriormente, ambos os grupos completarão uma tarefa cognitiva Go/No Go e o Teste de Reflexão Cognitiva (Cognitive Reflection Test – CRT). Por fim, responderão a um questionário sobre a utilização das redes sociais, saúde e bem-estar.

## Plataforma sobre literacia financeira - Zé Finanças

Gabriel Augusto Lopes & José Keating

Universidade do Minho

Este estudo procura investigar o impacto do consumo de vídeos curtos na cognição, e espera-se que o grupo experimental apresente um desempenho inferior nas tarefas cognitivas devido à sobrecarga mental provocada pelos vídeos, além de níveis mais altos de ansiedade e stresse. Relativamente ao grupo de controlo, espera-se que demonstre melhor desempenho cognitivo e menores níveis de ansiedade e stresse. A presente investigação contribuirá para a compreensão dos efeitos dos estímulos digitais contemporâneos na cognição e no bem-estar dos jovens. A tomada de decisão é um processo fundamental na cognição humana, sendo frequentemente influenciada por viéses cognitivos que comprometem a racionalidade das escolhas. A heurística da ancoragem e o desconto temporal são dois exemplos de viéses sistemáticos que impactam a forma como os indivíduos avaliam e selecionam opções, especialmente em contextos de incerteza. No domínio financeiro, estes efeitos tornam-se particularmente relevantes, uma vez que a capacidade de projetar ganhos e perdas futuras pode ser distorcida por mecanismos automáticos e intuitivos. Diante este panorama, este projeto propõe o desenvolvimento da plataforma digital “Zé Finanças”, baseada em princípios da psicologia cognitiva. A plataforma avalia o perfil cognitivo dos utilizadores a partir de tarefas objetivas e dilemas estruturados, evitando as limitações dos questionários de autorrelato, que frequentemente refletem percepções enviesadas. O objetivo é fornecer feedback personalizado sobre os vieses que afetam a tomada de decisão, promovendo maior consciência metacognitiva e autorregulação no processo de decisão. Além de contribuir para a compreensão das heurísticas e viéses na cognição financeira, a plataforma servirá como uma ferramenta para recolher dados sobre padrões de decisão, permitindo investigações futuras sobre a influência de fatores cognitivos na literacia e comportamento financeiro.

## Examining the animacy effect in prospective memory: A direct comparison of focal and non-focal tasks

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Evolutionary Psychology posits that human memory evolved to solve adaptive challenges, prioritizing fitness-relevant information. One example is the finding of better memory for animates/living beings (e.g., predators, prey) over inanimates/objects: the “animacy effect”. Although well-established in retrospective memory (i.e., for past events), we recently extended this effect to prospective memory (PM; i.e., memory for future events/intentions), another key adaptive ability. In event-based PM tasks, participants perform an ongoing task (e.g., lexical decision task; LDT) while providing alternative responses to PM targets. Our prior findings showed that animate targets enhance PM performance, but only in non-focal tasks, which require effortful monitoring for the targets identification, leading to response-time (RT) costs (Félix et al., 2024). Conversely, focal tasks, which allow spontaneous target identification, show no animacy benefit. Interestingly, attention-prioritization for animates is a proposed mechanism for the animacy effect in retrospective memory, but its role in PM remains unclear. In a pre-registered experiment participants (N=228) performed an LDT, half in a no-PM control condition, and half to a focal or non-focal PM task. Stimuli were identical across conditions, but focal participants were instructed to provide the PM response to specific target-words (e.g., “kitten”, “elephant”), while non-focal participants monitored for target-words starting with “E” and “K”. As expected, the non-focal condition led to RT slowing. However, unexpectedly, no Animacy X Focality interaction was found for PM performance. These findings are discussed in relation to the proximate mechanisms of the animacy effect and should caution researchers’ interchangeable use of animate/inanimate stimuli in cognitive research.

## **The influence of gender stereotypes on the processing of complex sentences in European Portuguese: a self paced reading study**

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Gender stereotypes play a crucial role in sentence processing, shaping how prior knowledge and social biases influence linguistic interpretation. Comprehension extends beyond grammatical decoding, requiring the integration of cultural and stereotypical knowledge. The Constructionist Theory (Graesser, Singer & Trabasso, 1994) suggests that meaning is constructed based on expectations and prior experiences, making it a valuable framework for understanding how gender stereotypes affect sentence comprehension. The aim of the present self-paced reading experiment was to analyze how gender stereotypes influence sentence processing of 90 European Portuguese native speakers, and whether the influence was modulated by the participants' sex. To do that, the stereotype (masculine, feminine, neutral) and the gender of the anaphoric pronoun (masculine, feminine) were manipulated, creating conditions of (in)congruency between the stereotype and the pronoun. The online platform PCIbex was used to program the task and enable us to assess cognitive load when encountering stereotypical incongruence. Results revealed a significant effect of gender stereotypes on processing speed, with masculine-stereotyped sentences read faster than feminine or neutral ones. Interestingly, feminine pronouns were retrieved more quickly than masculine ones, contradicting previous findings that suggest a masculine default advantage. Participants' sex also played a role, as women exhibited lower RTs and higher accuracy across conditions. These outcomes support the Constructionist Theory, highlighting the impact of sociocultural factors on sentence comprehension. By shedding light on the interplay between linguistic structures, social cognition, and individual differences, these findings deepen the understanding of how stereotypes, in particular gender stereotypes, shade cognitive and linguistic processes.

## **Bridging laboratory and reality: Immersive 360-degree videos for enhanced experimental validity**

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Traditional research has long struggled to balance experimental control with the multisensory complexity of real-world experiences. This is partly due to the lack of stimuli that captures such complexity and the limitations of traditional presentation methods. This work introduces a new set of 360-degree videos which can be presented through Virtual Reality (VR), enabling more immersive and lifelike experiences. They were specifically designed to investigate the mnemonic tunings for potentially contaminated items but are potentially useful to other research topics. Our videos depict actors placing objects on a table while performing either disease-related (sneezing, coughing) or non-disease actions (yawning, whistling). Recording conditions were previously optimized through pilot studies to ensure the naturalness of the depicted scenes to participants using VR glasses and sitting in front of a table. We then conducted a study that characterized the final set of videos on several relevant dimensions. Using a VR headset, participants were immersed in these scenarios and evaluated their experiences across six dimensions: arousal, valence, disgust, comfort level with proximity to the actor, perceived health condition of the actor, and likelihood of disease transmission. Results indicate that the different actions elicit different responses on these dimensions (e.g., participants felt more comfortable near actors producing non-disease-related vs. disease-related cues). This dataset will soon be openly available, offering new research opportunities with increased ecological and external validity while maintaining rigorous experimental control. By creating controlled yet realistic environments to investigate human behavior, we enhance real-world applicability of research findings.

## **A novel task for the implicit measurement of Intentional Binding**

*Nuno De Sá Teixeira, Asbjørn Kvist, Sónia Pimenta, Vânia Moreira, Beatriz Miranda, João Lopes, Eduarda Rodrigues, & Tiago Taliscas*

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The perceived duration between a voluntary action and a subsequent sensory consequence of it has been found to be subjectively contracted, a phenomenon known as ‘Intentional Binding’ (IB). Despite attracting a wealth of scientific research, available methods and indexes of IB have also raised concerns on methodological grounds, for they rely on overt judgements sensitive to demand characteristics. Classically, participants are required to press a button which triggers a specific effect (e.g., an auditory tone) some short time after – while doing so, participants are also required to notice and overtly report the moment in time when their action was performed or when the effect happened, by referring to a Libet clock. The present work aims to overcome those methodological issues by proposing a novel task designed to implicitly measure IB. Observers were shown a sequence of three consecutive visual stimuli – A, B, and C – defining two temporal intervals (A-B and B-C). In counterbalanced blocks, observers had control over when either stimulus A (A-Control) or stimulus B (B-Control) appeared, by pressing a button (the corresponding stimulus appeared 250ms later). After each sequence, observers indicated which temporal interval was longer, A-B or B-C. In accordance with IB, the duration of the interval A-B was significantly underestimated for the B-Control but not for the A-Control condition. These outcomes, showcasing a robust measurement of IB, are discussed in relation to the broader literature on the Sense of Agency (SoA), that is, the experience that one’s intentions have an effect on the external world.

## **Time perception of attractive male faces and voices: The role of women’s menstrual cycle**

*Nuno Fernandes, Sandra Soares, Mavilde Arantes, & Joana Arantes*

*Universidade do Minho*

Accurate time measurement is essential for organisms to synchronize their internal biological cycles with the external environment, crucial for reproductive success and survival. This study examines fluctuations in time perception across different phases of the menstrual cycle in response to visual and vocal attractiveness, building on previous research showing that women estimate longer viewing times for attractive male photos compared to unattractive ones. Forty-eight females participated in the experiment during both the menstruation and ovulation phases of their menstrual cycles, completing visual and auditory oddball tasks. Participants viewed a series of five stimuli and reproduced the duration of the last stimulus by pressing a mouse button. The final stimulus could be identical to the previous four (control trials), an attractive or unattractive male photo (visual attractiveness block), a masculinized or feminized male face (visual sexually dimorphic block), or a masculinized or feminized male voice (auditory sexually dimorphic block). Results indicated that duration estimates for masculinized male voices were significantly longer compared to feminized voices, while no differences were found for the menstruation phase. However, no differences were observed between the phases of the menstrual cycle in the visual conditions. Nevertheless, we replicate the temporal dilation effect associated with viewing attractive stimuli, suggesting an acceleration of the internal clock related to attractiveness perception. Our findings align with the literature on this phenomenon and provide initial evidence for an adaptive time perception mechanism influenced by the menstrual cycle, contributing to the understanding of the complex interactions between biological cycles and perceptual processes.

## **Entre Alarmes e Agendamentos: Efeito das Descargas Cognitivas na Memória Prospetiva e Retrospectiva**

*Joana B. Silva & Pedro B. Albuquerque*

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A memória prospetiva (memória de eventos futuros) e a retrospectiva (memória de eventos passados) são fundamentais ao funcionamento mnésico diário adequado. Contudo, estas memórias enfrentam várias limitações. Para mitigar estas limitações, pode recorrer-se a descargas cognitivas, que são ações físicas ou ferramentas externas que atuam na redução do esforço cognitivo de recuperação. Por exemplo, perante uma tarefa importante que não queremos esquecer, é possível recorrer a alarmes como apoio externo à recordação de realização de tal tarefa. Este estudo visa investigar o impacto das descargas cognitivas na memória prospetiva e retrospectiva, analisando também, como diferentes tipos de estratégias de descarga podem influenciar estas memórias. O procedimento envolveu duas fases. Na primeira, os participantes foram instruídos a enviarem um e-mail a uma hora específica (às 19 horas), 48 horas após uma primeira reunião com a investigadora. A cada participante foi atribuída aleatoriamente uma de três condições geradoras do envio do e-mail no dia e hora combinados: utilização de um lembrete (e.g., alarme); programação do e-mail para envio diferido; e utilização da memória (sem recurso a descarga cognitiva). Na primeira fase, os participantes visualizaram também uma reportagem sobre formas de identificar e prevenir a disseminação de notícias falsas. Na segunda fase, 48 horas depois da primeira, os participantes enviaram um e-mail (memória prospetiva), fizeram um relato livre sobre o vídeo apresentado (memória retrospectiva), e responderam a algumas perguntas de controlo relacionadas com o que fizeram entre as duas sessões (e.g., uso de repetições). Os dados estão em fase de conclusão de recolha.

## **Efeito da Frequência de Produção na Evocação de Palavras Categorizadas**

*Pedro B. Albuquerque, Bárbara M. Pinto, Filipa Cunha, & Ana Cláudia Marinho*

*Escola de Psicologia da Universidade do Minho*

Os estudos realizados com tarefas de evocação livre permitiram perceber que os participantes apresentam um melhor desempenho na recordação de palavras quando estas estão relacionadas entre si. Este efeito ficou conhecido como “evocação agrupada por categorias” uma vez que os participantes tendem a recordar contiguamente palavras (e.g., maçã, banana) pertencentes à mesma categoria (e.g., frutas). O presente estudo teve como principal objetivo compreender o efeito da frequência de produção na evocação agrupada por categorias. Com recurso a uma versão portuguesa atualizada das normas de categorias, foram selecionados 12 exemplares semânticos (e.g., amarelo) de 12 categorias (e.g., cores). Este conjunto de palavras foram caracterizados e subdivididos em 3 listas: com frequência de produção alta (entre .595 e .814); com frequência de produção média (entre .251 e .367); com frequência de produção baixa (entre .007 e .012). Cada participante viu, de forma contrabalanceada, três listas de 16 palavras (4 exemplares de 4 categorias): uma com palavras de frequência de produção alta; outra com palavras de frequência de produção média; e uma com frequência de produção baixa. Após visualizarem cada lista, os participantes foram instruídos a recordar livremente as palavras dessa lista. Hipotetizou-se que palavras das listas de frequência de produção alta fossem mais recordadas e apresentassem maior grau de agrupamento por categorias do que as listas de palavras de média e baixa frequência de produção. Os resultados são apresentados tendo em conta o número médio de palavras evocadas por lista, bem como uma medida do agrupamento por categorias: Adjust Ratio Clustering (ARC).

## Thinking About Life Experiences (TALE): Tradução e Adaptação para o Português-Europeu

Raquel Pinto, Pedro B. Albuquerque, Inês Fonseca, & Filipa Cunha

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A escala Thinking About Life Experiences (TALE), em Português-Europeu designada como Refletir sobre as Experiências de Vida (REVi), é um instrumento utilizado para descrever a função das recordações autobiográficas no dia-a-dia. Trata-se de uma escala breve, constituída por 15 itens, que se organizam em torno das funções da memória autobiográfica: coerência do self, social e diretiva. Este estudo teve como objetivo traduzir e adaptar a TALE/REV para a população portuguesa, analisando as suas propriedades psicométricas. A adaptação envolveu um processo de tradução-retroversão, seguido por uma avaliação comentada para assegurar a clareza e equivalência semântica dos itens. A versão final foi aplicada a uma amostra de jovens adultos (N = 200), com aplicação repetida em um subgrupo (N = 58) para análise de teste-reteste. A análise fatorial confirmatória revelou uma estrutura com bom ajuste aos dados ( $\chi^2/gf = 3.161$ , CFI = .982, TLI = .979, RMSEA = .104), replicando a organização fatorial original. A escala apresentou excelente consistência interna ( $\alpha$  de Cronbach = .892) e elevada estabilidade temporal ( $r$  teste-reteste = .585). Os resultados sugerem que a versão portuguesa da TALE mantém a validade estrutural e a fiabilidade da escala original, sendo uma ferramenta útil para investigações sobre a memória autobiográfica.

## Acho que já te tinha visto! Etnias e reconhecimento facial de pessoas

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O “cross-race-effect”, também conhecido como “other-race-bias”, descreve o fenómeno no qual faces de etnia distinta à do observador são reconhecidas com menor precisão do que faces da sua etnia (Meissner & Brigham, 2001). Contudo, e considerando que existe cada vez mais contacto com pessoas de etnias diversas no nosso dia-a-dia, o objetivo desta investigação consistiu em perceber se o “cross-race-effect” ocorre com igual preponderância para diferentes etnias. Para tal, e de modo a permitir comparações entre faces de etnias diferentes, cada participante viu faces de duas de quatro etnias estudadas: Latina (L), Caucasiana (C), Afro-Americana (Af), Asiática (As), sendo cada participante atribuído aleatoriamente a uma das 6 condições de comparação possíveis de pares de etnia (L-C; L-Af; L-As; C-Af; C-As; Af-As). Na fase de codificação, foi pedido aos participantes que observassem com atenção as 48 faces apresentadas (24 de cada etnia), pois teriam de reconhecê-las mais tarde. Já na fase de teste, após a apresentação de cada face, o participante teria de indicar se a face tinha sido antes apresentada ou se se tratava de uma face não apresentada anteriormente. Foi ainda perguntado aos participantes, através de uma escala de Likert, a frequência de contacto com cada uma das etnias, sendo esperado que o “cross-race-effect” esteja ausente ou não seja tão forte para faces de etnias com as quais os participantes têm muito contacto no seu quotidiano.

## The Effect of Scents on Cognitive Processes

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Estudos demonstram que aromas congruentes com um determinado conceito, como a limpeza, podem facilitar o reconhecimento de palavras associadas a esse conceito (Holland et al., 2005; Gaillet et al., 2021). No entanto, ainda não foi explorado se os aromas podem também inibir o acesso a conceitos opostos, dificultando o processamento lexical de palavras incongruentes. A literatura sobre priming semântico indica que palavras opostas a um conceito ativado tendem a apresentar tempos de reação mais longos, devido ao conflito com a informação previamente ativada (Neely, 1977; Hutchison, 2003). A questão central deste estudo é: esse efeito de inibição também ocorre no priming olfativo? Para testar essa hipótese, os participantes serão divididos em três grupos: um exposto a um aroma congruente com limpeza (Lemongrass), outro a um aroma agradável sem associação direta com limpeza (Canela) e um grupo sem aroma (controlo). A influência dos odores será avaliada numa tarefa de decisão lexical, que inclui palavras congruentes (relacionadas à limpeza), incongruentes (relacionadas à sujidade) e neutras. Caso os participantes expostos ao aroma associado à limpeza apresentem tempos de reação mais longos para palavras incongruentes e mais curtos para palavras congruentes, isso sugerirá que os odores podem não apenas facilitar a ativação de conceitos relacionados, mas também inibir conceitos opostos. Estes resultados contribuirão para uma melhor compreensão da influência do olfato na cognição, esclarecendo se o priming olfativo modula diretamente a ativação semântica ou se seus efeitos estão mais ligados à valência emocional dos estímulos (Smeets & Dijksterhuis, 2014).

## O Efeito de Sincronia/Assincronia no Desempenho de uma Tarefa OSPAN com Valência Emocional: Um Projeto com Estudantes Universitários

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A tipologia circadiana de um indivíduo (matutina, intermédia e vespertina) e os períodos de sincronia/assincronia em que realiza uma tarefa cognitiva podem impactar o seu desempenho ao nível da memória de trabalho (MT). Esta corresponde a um sistema de manutenção e manipulação temporária de informação, influenciado por diversos fatores, nomeadamente estes ritmos circadianos. Contudo, existe uma lacuna na literatura sobre a influência do cronótipo e destes períodos de sincronia/assincronia em tarefas de MT, envolvendo estímulos com conteúdo emocional. A literatura indica que a indução emocional, antecedente à realização de uma tarefa cognitiva, bem como a utilização de estímulos com valência emocional podem influenciar a MT de forma diferente, consoante o teor emocional envolvido. Este estudo tem como principal objetivo analisar a interação entre cronótipo, sincronia/assincronia, e regulação emocional no desempenho mnésico de estudantes universitários, utilizando uma tarefa OSPAN construída com palavras de valência emocional (negativa e positiva) e neutra. Para tal, os participantes passam por três etapas: (1) preenchimento de um formulário online composto por questionários, designadamente o Questionário de H&O e Questionários de (Des)regulação Emocional; (2) realização contrabalanceada da tarefa OSPAN em momento síncrono e (3) assíncrono. A recolha de dados ainda decorre, mas antecipa-se um melhor desempenho na tarefa de OSPAN em momento síncrono, particularmente nas condições com valência emocional. Antecipa-se ainda que um maior número de palavras recordadas se relacione negativamente com os níveis de desregulação emocional e uso de estratégias de regulação emocional desadaptativas.

## Minor neuropsychological deficits in subjective cognitive decline

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The primary aim of this cross-sectional study was to examine whether there are significant differences in cognitive domains between older adults with subjective cognitive decline (SCD) and cognitively healthy controls. A total of 132 older individuals underwent a comprehensive neuropsychological assessment, which included evaluations of memory, executive functions, and language, and were classified based on diagnostic criteria. Two groups—controls and SCD—were created using a pre-established case-matching procedure based on various factors: age, biological sex, years of education, cognitive reserve, and MMSE scores. The mean age and standard deviation for the control group were  $70.39 \pm 4.31$ , while for the SCD group, they were  $70.30 \pm 4.33$ . The number of males and females was balanced in both groups, and the average years of education were also quite similar. Participants with SCD exhibited significantly lower mood levels compared to the controls, although no depression. Notable differences between the groups were found in delayed recall, inhibitory control, and the comprehension of sentences that did not conform to canonical word order in Spanish. Logistic regression analysis indicated that a lower score on Stroop's interference condition was associated with a higher likelihood of having SCD. Additionally, ROC analysis demonstrated a model that performed better than random chance, suggesting a cut-off score of 49 on Stroop's interference condition for clinically distinguishing between the two groups. In conclusion, older adults with SCD exhibit subtle yet significant neuropsychological differences when compared to a matched control group.

## The Effect of Attractiveness on Temporal Perception

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Attractiveness plays a crucial role in interpersonal interactions, influencing attentional and emotional processes. This study aims to understand the impact of attractiveness on temporal perception through the temporal bisection task. To this end, participants are divided into two groups: one exposed to facial stimuli and the other to body stimuli, previously classified as less and more attractive. In the temporal bisection task, participants assess the duration of the stimuli, categorizing them as short or long. Based on an evolutionary perspective, it is hypothesized that more attractive stimuli will be perceived as having a longer duration than less attractive stimuli. The results of this study will be crucial to fill existing gaps in the literature, as previous studies focus on facial attractiveness and present inconclusive results. In summary, this study provides a more comprehensive understanding of the impact of attractiveness on temporal perception.

## Perception of Biological Motion and Socio-emotional development in 7 months old infants: An fNIRS study

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Social and emotional interactions are crucial for our relation to the world around us, and understanding others, is one of the most fundamental skills an infant learns about the world. One of the means by which infants interact and perceive others is by perceiving and interpreting their motions or, more generally, their biological motion. The right Superior Temporal Sulcus (rSTS) is the main area responsible for biological motion perception; and the perception of point-light walkers activates the right STS in infants as young as 7 months (Lisboa et al., 2020). This brain area is also implicated in the processing of human voice and language, placing the STS at the basis of

human social cognition (Deen et al., 2015). In this study, we propose that infants' socio-emotional abilities are linked to their capacity to perceive and process biological motion. Specifically, that infants' right STS responses to point-light walkers (PLWs) are associated to their social-emotional development. Thus, in our study, 7 months old infants passively watched two PLWs – an intact coherent PLW, and a scrambled version of this display – while their brain activity was recorded using fNIRS. We used 24 channels placed on the temporal-parietal region to capture right and left STS activations. Infants' social emotional development was assessed using the “Caregiver Reported Early Development Instruments” (CREDI). We hypothesize that infants with higher socio-emotional abilities will exhibit stronger right STS activations in response to the coherent PLW; this association will not be found with the scrambled PLW.

## **Dynamic events as a natural cause for the Onset Repulsion Effect**

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The Onset Repulsion Effect (ORE) describes the systematic backward displacement of a moving target's perceived onset position, opposite to its motion direction. This effect is particularly pronounced for upward-moving targets, suggesting a vertical anisotropy in spatial localization. Recent findings propose that ORE may reflect a cognitive tendency to attribute a "natural history" to dynamic events, similar to the preparatory windup before throwing an object, leading to backward overcompensation of onset location. This study aimed at further exploring this interpretation of ORE. Participants performed first a mass discrimination task for two coloured balls involved in an elastic collision. For the experimental group the relative mass of both balls correlated with their colours (e.g., the heavier ball was always red or blue, for different observers), while for the control group there was no correlation between the balls' masses and their depicted colours (in each trial the heavier ball could either be the blue one or the red one). Afterwards, all participants performed a standard ORE task involving balls in all respects similar to the ones showed in the mass discrimination task. Results revealed that for the experimental group ORE was significantly increased for the ball colour-coded as “heavier”, while no difference between the coloured balls was found for the control group. This finding, besides suggesting that ORE is cognitively penetrable, aligns neatly with the expectation that heavier objects require greater force when launched upwards, in accordance with implicit models of gravity, and that expectation modulates motion perception phenomena.