ier than the larger one, even when the objects have equal mass (the size-weight illusion). One potential explanation for this robust finding is a cognitive, expectancy account. This account proposes that the illusion is driven by a violation of the expectation, acquired over a lifetime, that larger objects are typically heavier. The current study tested the expectancy account using judgement of liquid volume, which should produce a similar, expectation-based illusion. Specifically, we hypothesised that a lesser liquid volume would be perceived as heavier than a greater liquid volume of equal mass (the milk bottle illusion).

Methods

In Experiment 1, stimuli were two 500ml bottles, containing either 500ml or 250ml milk. A lead weight was added to the 250ml liquid such that the bottles had equal mass. Participants lifted each bottle 20 times using a string, and provided absolute magnitude estimates following each lift. Grip and load forces were also obtained for every trial. Experiment 2 was a traditional size-weight paradigm, in which participants lifted differently sized, but equally weighted bottles. Procedures were identical to Experiment 1.

Results

Experiment 1 showed whether expectations of relative volume weight resulted in a new weight illusion. For both experiments, grip and load force data demonstrated how sensorimotor processes adapt as the stimuli were experienced across trials. These data were compared to subjective weight judgements, indicating how the perceptual and motor systems each experience weight. Effect sizes were compared across experiments to determine whether the milk bottle illusion is of comparable strength to the size-weight illusion.

Discussion

This study has investigated the expectancy account of weight illusions and weight perception more generally by testing a novel weight illusion. Comparing Experiments 1 and 2 demonstrates whether or not a cognitive expectancy mechanism entirely explains the traditional size-weight illusion.

Email: 17708192@students.latrobe.edu.au

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The negotiation between the ventro-dorsal and dorso-dorsal streams when facing unusual versions of familiar objects: the mismatch between structural and semantic features. IRENE SCIULLI, GIOVANNI OTTOBONI & ALESSIA TESSARI; *University of Bologna, Italy*

Object interaction requires the complementary computation by two anatomo-functional mechanisms constituting the dorsal systems for action: the ventro-dorsal pathway (VDP) processes object functional and stable characteristics according to their experience-based long-term representations; the dorso-dorsal pathway (DDP) processes object structural and variable features.

Several studies investigated the cooperation between the two pathways when people face with traditional objects; none, however, has studied responses' mechanisms in condition of ambiguity rising from perceptual and semantic mismatches. Investigating such ambiguity would help in understanding the process of tool generalization, e.g. clarifying the role of different objects' properties and the involvement of the two pathways.

To this aim we measured time-related variables while reacting to the vision of objects, presented both in their usual and unusual – i.e., structurally modified, but still functionally recognizable- version.

74 participants judged if an object presented on a computer screen was related to eating/drinking by releasing one of two lateralized keys to grasp a power or a precision device. Releasing and grasping times were recorded.

A significant 3-way interaction evidenced slower times when the keys were released to grip the power device to the appearance of power objects.

A 2-way interaction showed a spatial affordance effect (faster grasping time when object's handle was oriented toward the responding hand and slower time for the opposite configuration) for unusual objects.

Results help understanding how the two pathways solve objects ambiguity. During the object's coding phase, i.e. before the key release, the VDP takes control: the releasing times increase when the correspondence between object and device occurs and functional stable representations are recalled by the slow VDP. In the second (motor) grasping phase, a spatial affordance effect emerges for uncomfortable objects only, suggesting the involvement of the DDP (elaborating variable affordances such as orientation) in conditions of structural novelty.

Email: irene.sciulli2@unibo.it

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Motor experience and its impact on cognitive flexibility. LOUISE MARY O'REGAN[1], MICHIEL SPAPÉ[2] & DEBORAH SERRIEN[1]; [1]*University of Nottingham, United Kingdom;* [2]*Liverpool Hope University, United Kingdom*

Everyday behaviour such as clapping to the beat of a song demonstrates the automaticity of timed responses to stimuli. Common experimental setups to study the synchronisation of actions to external signals such as tones are finger-tapping tasks. Typically taps precede tones when the pacing signal

is predictable, resulting in an anticipatory asynchrony. However, individual differences markedly influence the ability to time events. The current experiment investigated motor timing abilities in left- and right-handers during regular and irregular pacing sequences. Participants were required to tap in synchrony with regular and irregular (subliminal or supraliminal) presented tones. The main measurement included the synchronisation error. The results showed that taps preceded tones during regular and irregular pacing with subliminal time perturbations whereas irregular pacing with supraliminal time perturbations generated positive tap-tone asynchronies. Furthermore, left- and right-handers did not differ for the regular and irregular subliminal conditions whereas the left-handers showed a smaller tap-tone asynchrony than the right-handers for the irregular supraliminal conditions. Our data show that handedness guides motor timing abilities in situations when cognitive flexibility is required. Overall, the findings highlight that individual factors play a steering role in how one experiences time, which accordingly impacts on cognition and behaviour.

Email: lpxlo3@nottingham.ac.uk

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The influence of action-outcome contingency on motivation to act. TEGAN PENTON[1], CAROLINE CATMUR[1] & GEOFF BIRD[1,2]; [1]*king's college london, United Kingdom;* [2]*University of Oxford, United Kingdom*

The sense of agency is defined as one's sense of control over one's actions and their consequences (Jeannerod, 2003). A number of cues can increase the sense of agency, with contingency of an outcome on action (i.e. the objective relationship between action and outcome) often being considered one of the most accurate. In addition to this, recent evidence has suggested that increased agency over an event can lead to greater motivation to cause an event to reoccur by repeating the action (motivation from control). This was established in a study manipulating the probability of an outcome occurring following an action (Karsh & Eitam, 2015), however the contribution of contingency was not manipulated. The current study aimed to investigate the influence of action-outcome contingency on motivation from control. Participants were asked to press 1 of 4 buttons as randomly as possible. Each of the 4 buttons was assigned a probability of causing a dot to flash (either 0%, 30%, 60% or 90% chance of flash following button press) as in the original paradigm (Karsh & Eitam, 2015). Additionally, a contingency manipulation was employed where the likelihood of a dot flash occurring in the absence of a button press was manipulated (either 0%, 30%, 60% or 90% chance of flash without button press) and varied in blocks throughout the experiment. A significant interaction between probabilities of internally and externally caused flashes was found. This was due to reactions times being fastest when participants had objectively more control (higher action-outcome contingency) over the dot flash. Additionally, individual differences in Alexithymic and Autistic traits predicted the relationship between reaction times and contingency. Altogether, the current findings replicate and extend prior work by highlighting the importance of action-outcome contingency and individual differences in motivation from control.

Email: tegan.penton@kcl.ac.uk

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New evidence for a saccadic range effect. ANDRÉ KRÜGEL; *University of Potsdam, Germany*

Human motor behavior depends on the combination of noisy sensory information and learned prior knowledge about fundamental task statistics such as the range and the likelihood of response alternatives (Wolpert & Landy, 2012). Depending on these task statistics, prior knowledge often generates range effects such as a motor central-tendency bias (Körding & Wolpert, 2004; Vilarez et al., 2012). However, when it comes to eye movements there is a recent controversy about the general existence of a range effect in the saccadic system (Gillen, Weiler, & Heath, 2013; Nuthmann et al., 2016). Here I argue that these studies draw their conclusions from experimental paradigms with uninformative priors and highly precise saccade targets, which contradict the presence of a range effect in saccades. Based on prosaccade experiments with informative prior distributions and reduced precision of the sensory likelihood I demonstrate that there is a range effect in the saccadic system. Furthermore, I show that the range effect varies in size depending on the nature of the prior and the sensory likelihood as predicted by a recent framework of Bayesian saccade planning (Engbert & Krügel, 2010).

Email: kruegel@uni-potsdam.de

Poster Session IV
S16, Wednesday, 10:40 – 12:00

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How the speed of auditory stimuli influences their perceived duration: music vs. speech. MIRIA PLASTIRA & MARIOS AVRAAMIDES; *University of Cyprus, Cyprus*