Annual Conference  
University Of Waikato  
27-28 August 2016

CONFERENCE PROGRAMME
Programme at a Glance

Presentations - Saturday 27 August

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<td>Chair</td>
<td>Janine Haycock</td>
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<td>Anita Bowring</td>
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<td>09:20</td>
<td>Sarah Cowie</td>
<td>The midsession reversal task: An accurate indicator of behavioural flexibility in pigeons?</td>
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<td>Jessica Langley</td>
<td>Stimulus overselectivity and effect of reward history</td>
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<td>John Bai</td>
<td>The landscape of positive behaviour support in New Zealand: A case study using the Explore model</td>
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<td>10:45</td>
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<td>Tube feeding to oral feeding: Development of an antecedent-based assessment model</td>
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<td>Sarah Taylor</td>
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<td>11:45</td>
<td>Bourne, Broos,</td>
<td>Persistence of behaviour in the presence of disruptors</td>
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<td>Doublinszki, Frank,</td>
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<td>Houston, Moughal,</td>
<td>Alternatives to the yes/no procedure for signal-detection research</td>
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Lunch

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<th>Mary Foster</th>
<th>Machine learning in behavioural science</th>
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<td>Joshua Bensemann</td>
<td>Resurgence through a temporal lens: The effect of reinforcer rates on resurgence</td>
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<td>13:50</td>
<td>Josie Kim</td>
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<td>14:10</td>
<td>Karen Sluter</td>
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<td>Lorance Taylor</td>
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<td>14:50</td>
<td>Tim Edwards</td>
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Chair | Douglas Elliffe     | Assessing preference for response-contingent stimuli in a concurrent-chains procedure |

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<td>John Bai</td>
<td>Residual preference pulses may not reflect local reinforcement effects</td>
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<td>16:00</td>
<td>Stephanie Gomes-Ng</td>
<td>Extinction preference pulses</td>
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<td>16:20</td>
<td>Anthony McLean</td>
<td>Does manipulating overall reinforcement affect preference among four alternatives?</td>
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<td>16:40</td>
<td>Emma Beeby</td>
<td>Suboptimal choice behaviour as a function of differential delay to reinforcement in pigeons</td>
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<td>17:00</td>
<td>Chloe Brown</td>
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Posters during Lunch – Saturday 27 August

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<td>Toni Baker</td>
<td>Social and communication behaviour of companion dogs at off-leash dog parks</td>
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<td>Kelsey Brown</td>
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<td>Human body movements may function as conditioned reinforcement during dog training</td>
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<td>Rebecca Connor</td>
<td>Impact of ambient sound on the behaviour and welfare of selected animals housed at Auckland Zoo: Pilot study</td>
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<td>Janine Haycock</td>
<td>Influences of target stimulus probability and reinforcement probability on hens’ performance on a signal detection task</td>
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<td>Freyja Knewstubb</td>
<td>Description and analysis of dyadic initial interactions between domestic dogs</td>
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<td>Kaitlyn Lodge-Osborn</td>
<td>Responses of birds to a bird repellent by examining food consumption</td>
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<td>Jared Pickett</td>
<td>A human model of animal gambling</td>
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Conference Dinner 19:00 at Little India – Saturday 27 August
Presentations - Sunday 28 August

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<tr>
<td>08:40</td>
<td>Kristina Spasovski</td>
<td>Teaching activity transitions to school students with intellectual disabilities through video - self-modeling and picture schedules: A comparison of two procedures</td>
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<td>09:00</td>
<td>Brent Alsop</td>
<td>Evidence for increased behavioural control by punishment in children with attention-deficit hyperactivity disorder</td>
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<td>09:20</td>
<td>Samantha Denton</td>
<td>Increasing sharing and requesting behaviours in children with developmental disabilities using token reinforcement.</td>
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<tr>
<td>09:40</td>
<td>Dennis Moore</td>
<td>Demystifying video modeling</td>
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<td>10:00</td>
<td>Paula Hogg</td>
<td>Choice making in children: Signalling versus strengthening effects</td>
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<td>10:50</td>
<td>Katrina Phillips</td>
<td>Providing therapeutic environments for people with intellectual disabilities: Can ABA help?</td>
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<td>11:10</td>
<td>Stefan Lim</td>
<td>Implicit attitudes and materialism</td>
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<td>11:30</td>
<td>Tokiko Taylor</td>
<td>Investigating influences of incentives on implicit attitudes toward body size</td>
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<td>11:50</td>
<td>Rana Asgarova</td>
<td>Probability discounting of medical benefits and harms</td>
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<tr>
<td>12:10</td>
<td>Kris Descovich</td>
<td>What can facial behaviour reveal about animal welfare?</td>
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Lunch

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<tr>
<td>13:30</td>
<td>Stuart McGill</td>
<td>Divided attention: The matching law and lateralised ERP</td>
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<td>13:50</td>
<td>Soh Zhen</td>
<td>Matching and undermatching in a rapidly-changing environment</td>
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<tr>
<td>14:10</td>
<td>Georgina Carvell</td>
<td>How long must I wait? - Delay variability and the terminal link effect</td>
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<tr>
<td>14:30</td>
<td>Braden Campbell</td>
<td>Interaction of reinforcer magnitude and probability in concurrent chains</td>
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<tr>
<td>14:50</td>
<td>Vikki Bland</td>
<td>Does an inhibitory stimulus function as a punishing consequence?</td>
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<td>15:10</td>
<td>Rebecca Olsen</td>
<td>Academic discounting: Magnitude effects and correlations with other tasks</td>
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15:50 Javier Virues-Ortega | BACB Update
16:05 Prizes, & Business Meeting

Posters during Lunch – Sunday 28 August

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<tr>
<td>Jasmine Chung</td>
<td>Systematic review of self-management apps for chronic illness</td>
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<td>Derek English</td>
<td>Flower power and the autistic gardener</td>
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<td>Shuja ul Islam</td>
<td>Rethinking entrepreneurial intention: Goal needs implementation intention</td>
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<td>Surrey Jackson</td>
<td>The effect of bodyweight as an MO on state dependent valuation learning in hens</td>
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<td>Jessica McCormack</td>
<td>The emergence of derived relations using the differential-outcomes procedure</td>
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<td>Kylie Sutcliffe</td>
<td>Relationships among procrastination, psychological flexibility, and delay discounting</td>
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<tr>
<td>Kendra Thompson-Davies</td>
<td>The relationships among hypothetical waiting, hypothetical postponing, and experiential waiting in delay discounting</td>
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Registration
Everyone attending or presenting at NZABA 2016 will need to register. The registration fee is $150 waged individuals (working 30+ hours per week) and $30 for those who are unwaged. The registration desk will be operating briefly at Friday’s Welcome Function, as well as on Saturday from 7.30am and during morning tea. Payment can be by cash (exact change will be appreciated), bank transfer in advance*, or for those with NZ bank accounts, by cheque. We cannot handle payment by credit card.

*Account: Foster & Edwards 12-3249-0030911-00 (put surname and initials in reference field)

Meet & Greet
On Friday 26 August, NZABA invites you to a meet and greet at The Cook Bar & Restaurant on Cook Street, just off Grey Street where the recommended accommodation is situated. Conference attendees are invited to join us from 6pm (18.00) onward as your travel plans allow. Food and drink may be purchased at the venue.

Conference Dinner
The conference dinner will be at 7pm on Saturday 27th August at Little India, Alexandra Street, corner of Alexandra and Hood Streets. The dinner is on a pre-paid, pre-registered basis, and you will need to pay this ($38/person) no later than the morning tea break on Saturday.

Little India is BYO (but not beer) with a corkage fee. Vegetarian and gluten free options will be available for those who request this on booking. For more details, see their website: littleindia.co.nz/Hamilton-city/

Catering
During registration on Saturday morning, there will be a light breakfast available on a first come first served basis.

Lunches, morning teas, and afternoon teas will be provided at the conference. There will be some vegetarian options at the lunches, as well as gluten free options for those who have requested these.

Internet Access
Delegates who already have an eduroam account with their own university should be able to log on to eduroam WiFi using their standard username and password. For the duration of the conference other attendees can use the username “confuser” and the password will be announced at the start of the conference.
Conference Venue

NZABA 2016 will be held at the University of Waikato main campus.

The conference talks will be held in SG.03 and meals will be served alongside the poster displays in the downstairs S Block foyer.

Below is a wider campus map which shows S Block, as well as Gate 1 which is the best access to the campus’ free weekend parking, however we ask that you do not park in the numbered (black on yellow) reserved car parks. There is also a disability access way and car parking indicated if required. An interactive campus map can also be accessed online at this address: waikato.ac.nz/contacts/map/

1. No parking in numbered spaces
Saturday 27 August - Presentations

Session 1 (8:40 – 10:20, Janine Haycock - Chair)

**Remembering and Timing** (peer reviewed)

*Michael Davison*¹ & *Sarah Cowie*²

¹Unemployed, ²University of Auckland

Using published data from Cowie et al. (2011, 2013), we investigated an alternative timing model in which time was well-discriminated, but what happens over time is that the meaning of the marker or informer is forgotten according to an exponential function. While this model fitted data from conditions in which the marker was differential with respect to the contingency (2011), it was sunk by data in which the marker was non-differential with respect to the contingency (2013). These results provide indirect support for Cowie et al.’s timing model, but they also suggest that memory decrement may be an additional factor in some experimental situations.

**Discriminating Change after a Discrete Number of Responses since the Previous Reinforcer** (peer reviewed)

*Anita Bowring*, *Sarah Cowie*, *Michael Davison*, & *Douglas Elliffe*

University of Auckland

Regular changes in contingency often occur in conjunction with a change in environmental conditions. We aimed to investigate whether there is a tendency to use discrete or continuous stimuli to predict the likely occurrence of a predictable change in contingency when changes in both stimulus types correlate with a change in contingency. Six pigeons responded on concurrent variable-interval 45-s schedules in which reinforcers were nine times more likely to be obtained for one response than the other, but the location of the response more likely to produce a reinforcer reversed after a fixed number of responses since the previous reinforcer. The point of ratio reversal was varied from 5 to 40 responses. Choice appeared to be controlled by the likely availability of food in time, rather than across the number of responses, suggesting a tendency to use continuous stimuli instead of discrete, serially presented stimuli to predict the likely occurrence of a predictable change in contingency.

**Prospection, Prediction, and Reinforcement** (peer reviewed)

*Sarah Cowie*, *Michael Davison*, & *Douglas Elliffe*

University of Auckland

The idea that the organism is controlled by the likely future, as extrapolated from the recent past, is neither novel nor controversial (e.g., see Seligman et al., 2013). Neurons, cells, (see Clark, 2013), and indeed, outcomes (e.g., self-fulfilling prophecies; Merton, 1949; Rosenthal & Jacobson, 1968), all appear to function in accordance with what past experience may allow organisms to predict about the immediate future. In contrast, a behaviour-analytic approach to psychology explains much of what the organism does as the result of retrospective control by the process of reinforcement. Yet this approach is not entirely trapped in the past; stimulus control requires extrapolation about what is likely to occur in the immediate future from events that have occurred in the past. Further, recent research suggests that reinforcer and stimulus control may both be prospective. I review evidence that suggests that environmental control of behaviour is entirely prospective, and discuss ways in which organisms predictions about the future may be modeled.

**The Midsession Reversal Task: An Accurate Indicator of Behavioural Flexibility in Pigeons?** (peer reviewed)

*Jessica Langley*, *Sarah Cowie*, & *Douglas Elliffe*

University of Auckland

Behavioural flexibility refers to an organism’s ability to adapt rapidly to changes in its environment. A procedure used to measure flexibility is the midsession reversal task, where an organism is presented with two stimuli, and one is initially correct while the other is initially incorrect. Midsession, the contingencies reverse so that the initially correct stimulus no longer produces the reinforcer and the initially incorrect stimulus now produces a reinforcer. Rats and humans make few errors in this task, whereas pigeons make anticipatory errors before the reversal and perseverative errors after the reversal, suggesting the former make better use of relevant cues. However, pigeon’s inability to use reliable cues may be due to a difference in memory or phylogenetic bias, rather than flexibility. We ran a midsession reversal task in which the last response made was signalled in some conditions, and not in others. Our results indicate that increased exposure to the task decreased the amount of errors overall and that signalling the last response had little effect. This suggests that pigeons require additional information such as outcome of the last response in order to improve performance, or that poor performance may be due to failing to discriminate the contingencies.

**Stimulus Overselectivity and Effect of Reward History**

*Luca Blumhardt* & *Brent Alsop*

University of Otago


Previous research suggests that stimulus overselectivity – exclusive stimulus control by one or only a few elements of a compound stimulus – occurs because elements of higher salience overshadow elements of lower salience. The present experiment evaluated why some elements are more salient than others in the absence of a differential on any obvious dimension. First, a preliminary procedure associated differential rewards with different colours to induce overselectivity for those elements containing colours previously associated with higher magnitudes of reward when presented as part of a compound training stimulus. Second, participants discriminated between two compound stimuli, and then selected between elements of both stimuli during a test phase. Then, the element expected to be most overselected was put in extinction; any emergence for other elements in a subsequent test phase would indicate that overselectivity for an element would be attributable to reward enhancing the salience of the element rather than enhancing attention towards it. Contrary to predictions, there was no effect of reward history; a range of elements were overselected irrespective of the reward previously associated with their colours. As a result, relatively underselected elements were sometimes put in extinction during that phase. In most instances, emergence was observed for the element put in extinction. Furthermore, emergence for elements was often not accompanied by decreases in selectivity of other elements. These findings suggest that the emergence seen in previous studies may be attributable to an artefact of their procedures rather than evidence of an overshadowing account.

Session 2 (10:45 – 12:30, John Bai - Chair)

The Landscape of Positive Behaviour Support in New Zealand: A Case Study Using the Explore Model
Micaela Goldsmith, Surrey Jackson, & Emma Baker
Explore Specialist Advice
It has been over forty years since Applied Behaviour Analysis (ABA) came to New Zealand. Since then, there have been only a small number service providers that use ABA in New Zealand. ABA is an effective and evidenced-based approach to working with individuals with challenging behaviour and intellectual disability. Explore Specialist Advice is the national provider of behaviour support services for disabled people of all ages who present with challenging behaviour and is the third biggest employer of Psychologist’s in New Zealand. The company works under a Positive Behaviour Support (PBS) framework. Central to PBS is ABA. Employed by Explore are a number of staff trained, or training, in the field of behavior analysis, amongst other professions. This presentation will introduce Explore’s assessment and implementation process and describe how it relates to ABA. The needs surrounding challenging behaviour and ID in the New Zealand population will also be covered and several case studies from the work of some Explore’s Specialists will be presented.

Tube Feeding to Oral Feeding: Development of an Antecedent-based Assessment Model (peer reviewed)
Sarah Taylor & Javier Virues-Ortega
University of Auckland
There is increasing use of antecedent-based treatments in the treatment of pediatric feeding disorders, but limited reporting of systematic assessment of antecedent manipulations. In the current study, we developed an experimental assessment method to evaluate the effects of varied antecedent manipulations (e.g., changes to liquid or food properties) on acceptance or mealtime problem behaviour for children dependent on tube feeding. Conditions showing the most improvement are matched to an individualized treatment protocol for each child. Results from eight participants have shown that this assessment may identify effective treatment protocols to increase oral nutrition in the absence of escape extinction. This study is conducted in family homes across Auckland, and involves close collaboration with multiple disciplines.

A Systematic Review of Interventions for Tube Dependency in Children (peer reviewed)
Rachel Anderson, Javier Virues-Ortega, & Sarah Leadley
University of Auckland
There is a growing interest in treatments to transition children from tube feeding (e.g. nasogastric or gastrostomy tubes) to oral feeding. A number of literature reviews identify applied behaviour analysis as having the strongest evidence for the treatment of paediatric feeding disorders. However, few studies have reviewed the nutritional outcomes for tube fed children. These outcomes primarily include increases in oral intake or reduction in tube feedings, and weight gain. In addition, the reviews currently available do not allow comparison of the effects of behaviour-analytic interventions with other multidisciplinary treatment studies, such as ‘tube weaning’ or ‘hunger provocation’ programs. In the current study we conducted a meta-analysis synthesized all the of treatment literatures for children dependent on tube feeding, in order to establish which treatments might be the most promising to transition these children to oral feeding. Both applied behaviour analysis and combined treatments showed significant gains in oral intake and weight, and reductions in tube feedings, and a gain in weight. Interestingly, the higher tube weaning intensity of hunger provocation type treatments did not increase oral intake, and had a negative impact on weight. This presentation will cover our meta-analysis methods, results, and implications for future research and clinical practice. Clinical recommendations informed by our findings will be discussed.
Decreasing Behaviour within a Scientist Practitioner Framework; Increasing Behaviour within a Scientist Practitioner Framework; Increasing On-task Behaviour in a Class using Independent Group Contingency

Connolly Bourne, Nicole Broos, Zsofia Doublinszki, Tennile Frank, Aimee Houston, Sehar Moughal, Juliana Savory, & Joanne Wong
University of Auckland

Applied Behaviour Analytic research is characterised by the presence of 7 key characteristics: applied, behavioural, analytic, conceptually systematic, technological, generality, and effective. This presentation will discuss these characteristics and then provide examples of how interns can produce programmes that demonstrate these characteristics during their BACB/psychologist board internship. Programmes designed to decrease behavioural deficits and behavioural excesses will be discussed.

Session 3 (13:30 – 15:10, Mary Foster - Chair)

**Machine Learning in Behavioural Science**
Joshua Bensemann
University of Auckland

Machine learning algorithms are used to train computers to perform a task without explicitly programming the rules of that task. These algorithms are commonly used in pattern recognition, where the computer classifies data based on overall trends that it has identified. For example, a computer might learn to predict whether an organism is a cat or a dog based on the organism’s height, weight, fur colour, and/or any additional variables that it has been exposed to. These techniques can be advantageous to researchers as they can assist in identifying important features using raw data and remove some of the issues that arise after processing data. This presentation will demonstrate how machine learning techniques can be used to create a model that predicts antecedent experimental events based on the subject’s behaviour.

**Resurgence through a Temporal Lens: The Effect of Reinforcer Rates on Resurgence** (peer reviewed)
Josie Kim¹, Sarah Cowie¹, John Y.H. Bai¹, & Christopher A. Podlesnik¹,²

¹University of Auckland, ²Florida Institute of Technology and the Scott Center for Autism Treatment

Resurgence is a relapse phenomenon wherein a formerly reinforced, and then extinguished, behaviour returns upon extinction of a more recently reinforced response. The typical laboratory resurgence procedure faces limitations as each phase of resurgence is separated by extended periods of time, making the local-level changes of magnitude, immediacy, or the ongoing progression of resurgence across time difficult to examine. To address this, Bai, Cowie, and Podlesnik (in press) introduced a modified free-operant psychophysical (FOPP) procedure with extended probe trials which enabled investigation into the dynamic and continuous mechanisms underlying resurgence. We arranged a similar procedure to examine how overall reinforcer rates affected resurgence of responding. There were three components, each arranging either Rich, Intermediate, or Lean reinforcer rates. Discrimination of the time-based contingency was generally improved in components arranging higher overall reinforcer rates. In extended probe trials, response rates were highest in the Rich component, and lowest in the Lean component. These findings ultimately highlight the importance of time-based contingencies in the process of resurgence.

**Persistence of Behaviour in the Presence of Disruptors** (peer reviewed)
Karen L. Sluter, Mary T. Foster, James S. McEwan, & Timothy L. Edwards
University of Waikato

Training alternative behaviours in the same context as the target behaviour increases the persistence of target behaviours. Such effects are seen during differential reinforcement of alternative (DRA) procedures, often used to reduce a problem or ‘target’ behaviour. Many studies have examined response persistence using extinction, yet it is often unfeasible to implement extinction completely in applied contexts. In these experiments, ‘target’ key pecking was examined following same- and different-context ‘alternative’ key pecking. Persistence was examined in the presence of other disruptors, rather than under extinction conditions. Across all experiments, results have shown that responding is more persistent when the target and alternative behaviours are trained in the same context, regardless of the disruptor used. Findings suggest that increased persistence in target behaviour following same-context alternative behaviour training can be seen in the absence of extinction.

**Behavioural Momentum in Slot Machine Gambling** (peer reviewed)
Lorance Taylor, Anne Macaskill, & Maree Hunt
Victoria University of Wellington

The structural characteristics of gambling activities are an important factor in determining gambling behaviour. One structural characteristic of slot machines is the rate of wins, the effects of which are still poorly understood. The current study used a within-subjects experimental design with slot-machine simulations to investigate whether the rate of wins influences persistence in slot-machine gambling. Sixteen participants gambled for several baseline sessions on both a simulation with frequent wins, and a simulation with infrequent wins. Gambling behaviour was then disrupted by embedding a video into the
corner of the simulation. Responding to a ‘show video’ button was reinforced with one second of video during these disruption sessions. Persistence was measured as response rate in disruption sessions divided by response rate in baseline sessions, with lower values indicating less persistence. It was expected that gambling would be more persistent on the richer schedule a consistent finding in behavioural momentum literature. Responding was generally disrupted during the disruption sessions; however, participants were not more persistent on the richer machine. Potential explanations and follow-up experiments will be discussed.

**Alternatives to the Yes/no Procedure for Signal-detection Research** (peer reviewed)

Timothy L. Edwards, Janine Haycock, Anna Tashkoff, & David Hollands

University of Waikato

The yes/no procedure is a common approach to studying signal detection performance. With this procedure, the animal observes a stimulus then makes a ‘yes’ or a ‘no’ response (e.g., a right or left key peck). Either response can be reinforced. This procedure is representative of some common ‘real-world’ signal detection activities, but it is not an accurate analogue of many others, particularly those in which correct ‘no’ responses are not reinforced and those in which a ‘no’ response is impractical. For example, in prey detection, only correct ‘yes’ responses (e.g., moving toward and attacking cryptic prey) are reinforced. In many scent detection applications, such as landmine detection, there is no discrete unit for analysis, so reinforcement of ‘no’ responses is not feasible. In other scent detection procedures, trainers cannot be sure that the target is not present and therefore cannot arrange reinforcement for correct ‘no’ responses. I discuss some alternative means of assessing signal detection performance and present preliminary data from one such procedure that is being used to study the influences of several key factors on visual signal detection performance in our laboratory.

**Session 4 (15:40 – 17:20, Mary Foster - Chair)**

**Assessing Preference for Response-contingent Stimuli in a Concurrent-chains Procedure** (peer reviewed)

John Y.H. Bai1, Douglas Elliffe1, Sarah Cowie1, & Christopher A. Podlenik12

1University of Auckland; 2Florida Institute of Technology and the Scott Center for Autism Treatment

Reinforcers are stimuli that increase the rate and resistance to change of the responses that produce them. However, published data suggests that brief stimulus presentations (e.g., tones, keylight colour changes) can also enhance response rate and resistance to change, despite being uncorrelated with food. Behavioral momentum theory suggests that resistance to change and preference are independent but converging measures of the same underlying response strength. Therefore, after failing to find evidence that brief stimulus presentations increase resistance to change, the current experiment used a concurrent-chains procedure to assess whether pigeons would prefer a component with added brief stimulus presentations. Food reinforcers were arranged on equal VI 60-s schedules in both components, and the rate, location, and duration of brief keylight colour changes were manipulated across conditions. Stimulus presentations had no consistent effect on preference, supporting previous failures to replicate effects on resistance to change. Furthermore, in positive control conditions, where food presentations replaced keylight colour changes, choice strongly favoured the component with added food. Therefore, the present dataset provides further support that brief stimulus presentations do not have reinforcement-like effects, contrary to published data.

**Residual Preference Pulses may not Reflect Local Reinforcement Effects** (peer reviewed)

Stephanie Gomes-Ng, Douglas Elliffe, & Sarah Cowie

University of Auckland

In concurrent schedules, reinforcers are often followed by a brief period of heightened preference for the just-reinforced alternative (preference pulses). Such pulses may arise because of local reinforcement effects. However, similar pulses can be obtained after non-reinforced responses, suggesting that a component of post-reinforcer preference pulses may be attributed to the overall changeover probability, rather than to reinforcement (McLean et al., 2014). McLean et al. recommended removing this artefactual component from post-reinforcer pulses by subtracting preference pulses after responses from preference pulses after reinforcers. The resulting residual pulses should reflect the actual effects of reinforcers on choice. We conducted this analysis on data from a steady-state concurrent-choice procedure in which response-contingent events were either reinforcer deliveries or stimulus changes (Boutros et al., 2009). We found that the effects of stimuli on choice were misrepresented by residual preference pulses, but were evident in obtained pulses. This suggests that residual preference pulses may not reflect the actual effects of experimental events on choice, and that the artefactual component represented by post-response pulses may not be present in preference pulses after real experimental events.

**Extinction Preference Pulses**

Anthony McLean

University of Canterbury
Extinction preference pulses have been reported in a procedure where a cue light indicates which one of two responses is currently supported by a reinforcement schedule. After reinforcement, the cue light “moves”, indicating that the just-productive response is now in extinction and the next reinforcer will now be earned by making the alternative response. Subjects do not follow the light immediately, instead making the just-productive response a few more times before switching. It is this reluctance to switch that produces an extinction preference pulse. Such pulses have been interpreted in terms of induction; continuation of the just-productive response is thus a local effect of the reinforcer. There are several problems. One is that the necessity of reinforcement prior to cue-shift has not been established. Just as regular preference pulses impress the viewer by comparison with a flat curve, wrongly assumed to follow nonreinforcement, extinction preference pulses impress by comparison with an assumed immediate changeover (given cue-shift without reinforcement). Is this assumption justified? We present and compare extinction preference pulses that followed reinforcement + cue shift versus nonreinforcement + cue shift.

**Does Manipulating Overall Reinforcement Affect Preference among Four Alternatives?** *(peer reviewed)*

**Emma Beeby**

University of Otago

The present experiment investigated choice among four alternatives, as well as the effect of the overall reinforcer rate on choice behaviour in such procedures. Past research has found that manipulating the overall reinforcement rate can affect preference for the richer alternative (e.g., Logue & Chavarro, 1987, Alsop & Elliffe, 1988, and Elliffe & Alsop, 1996), and that the presence of a fourth alternative may be important (as indicated by a reanalysis of Hunter & Davison, 1978). Four concurrently-scheduled keys were presented to pigeons; each key was assigned to different VI schedules of reinforcement in ratios of 8:4:2:1. Reinforcement was arranged probabilistically using a reinforcer interval and was varied between conditions. Following this, two of the alternatives “2” and “4”, were put into extinction while the RI value was changed from 60-s to 5-s. The birds’ behaviour was independent of RI length across all conditions. However, in the two-alternative conditions, the birds’ log response ratios for the 8:1 pair were less extreme compared to the four-alternative conditions, the birds were responding less to the “8” alternative when there were fewer alternatives. This occurred for two birds in the RI 60 two-alternative conditions and three birds in the RI 5 two-alternative condition.

**Suboptimal Choice Behaviour as a Function of Differential Delay to Reinforcement in Pigeons** *(peer reviewed)*

**Chloe Browne**

1University of Auckland, 2Auckland University of Technology

All choice behaviour involves uncertainty and probabilistic consequences. Contradicting the law of effect, suboptimal behaviours are choices that do not procure the greatest overall payoff. Pigeons exhibit suboptimal choice behaviour by responding more to a low probability alternative that delivers overall reinforcement 50% of the time than a high probability alternative that delivers overall reinforcement 75% of the time. Suboptimal choice is also affected by differential delay to primary reinforcement in the terminal links of a concurrent-chains procedure. Pigeons respond almost exclusively to a suboptimal alternative when the initial link is arranged on a FR 1 schedule. However, as time spent in the initial link increases (across VI 20-s and VI 60-s schedules) suboptimal choice is maintained, but decreases. Suboptimal choice behaviour seen in non-human subjects could be analogous to human gambling-type behaviours; in both contexts organisms are engaging more in behaviours that payoff less.
Dogs require exercise in order to fulfil their needs under the five freedoms of animal welfare. Dogs often come into contact with and socialise with other dogs at dog parks. The purpose of this study is to investigate initiator and recipient greetings, in order to identify common behaviours and patterns seen when there is contact made between unfamiliar dogs. There will be 100 interactions recorded using 200 dogs, using a video recorder. Recorded interactions will be analysed using an ethogram. It is expected that as the number of initiator behaviours increase, the number of recipient behaviours will also increase. It is also expected there will be more initiator behaviours than recipient behaviours. This information can predict recipient behaviours based on initiator behaviours, and will allow for prediction of aggressive interactions may be based on the observed greeting behaviours. This can decrease the development of problem behaviours such as aggression, but also protect dogs from being hurt in negative interactions. It is also important for behaviour modification in aggressive dogs with reinforcement using counter-conditioning because behaviours to be reinforced can be identified based on predicted sequences of behaviour.

**Effectiveness of Repellent on Common House Sparrows (Passer domesticus)**

Kelsey Brown

Unitec Institute of Technology

The common house sparrow (Passer domesticus) can be classed as a pest due to their large numbers in urban areas and their ability to pass diseases, such as salmonella, onto humans through their faecal deposits at cafes, parks, waterways and agricultural sites where they are often seen roosting and feeding. The aim was to measure the efficacy of a bird repellent in an aviary environment, by manipulating the distance between food and repellent. This was done by measuring food consumption over a twenty-five day sampling period. Six sparrows (two males and four females) were caught and housed in an aviary with food and water available at all times. Food dishes were located at one end of the aviary. The test repellent and controls were moved to different locations daily either 0cm, 10cm, 20cm or 30cm from the food with a control container, the same colour as the repellent, in the other locations. It is expected that we will see the same amount of food consumption and spillage in both of the lines and that more food will be eaten and spilled when the food and repellent are further apart. The repellent may be used in urban areas to reduce the numbers of birds seen and decrease the transmission of pathogens.

**Human Body Movements may Function as Conditioned Reinforcement During Dog Training**

Clare Browne, Nicola Starkey, Mary Foster, & James McEwan

University of Waikato

Positive reinforcement is often delayed during everyday dog training. Such delays are detrimental to learning, and yet most dog training is successful. This study aimed to investigate factors that might aid dogs’ learning, despite delayed reinforcement. Twenty-one owners were filmed training their dogs. This footage was analysed for the timing and the order of events following dogs’ responses. Results showed that people made body movements immediately after a dog’s response and prior to intentional feedback (e.g., verbal praise) in 75% of trials. Hand movements were the most frequent (82%) postural change. In the most common order of events, a body movement followed a dog’s response with an average delay of 0.32 s; conditioned reinforcement (verbal praise) was then provided with an average delay of 0.24 s; and finally unconditioned reinforcement (food) was provided, an average of 0.83 s later. Owners displayed body movements consistently and rapidly following dogs’ responses; this likely enabled these movements to function as signals. In circumstances with poor temporal contiguity these signals may function as conditioned reinforcers for dogs, and thus may facilitate dogs’ learning despite delayed reinforcement.

**Impact of Ambient Sound on the Behaviour and Welfare of Selected Animals Housed at Auckland Zoo: Pilot Study**

Rebecca Connor1, Richard Jakob-Hoff2, Michael Kingan3, Hannah Mason1, & Kris Descovich1

1Unitec Institute of Technology, 2Auckland Zoo, 3University of Auckland

Animals in zoos are exposed to a diverse range of sounds, however little is known about whether this has a negative effect on the animal’s experience or well-being. This pilot study aimed to trial methodologies to assess the impact of the sound environment on the behaviour of selected animals at Auckland Zoo by measuring the volume and frequency range of ambient sounds during normal zoo operations and evaluating the behavioural responses. One adult male emu (Dromaius novaehollandiae) and two adult male blue and gold macaws (Ara ararauna) were observed over a 12 week period using focal sampling with continuous recording. To facilitate live coding observers used the Animal Behaviour Pro ipad application. Sound level (dB) and frequency were recorded simultaneously using a 1/2" Bruel and Kjaer type 4189 microphone. Preliminary results indicate that the sound environment impacts several behavioural variables, but affects differ between species and even individuals. The implications for welfare and development of a larger study will be discussed. The results are specific to individuals at Auckland Zoo, but findings from the long term study could be of value to the wider zoo industry.
Description and Analysis of Dyadic Initial Interactions between Domestic Dogs

Freyja Knewstub
Unitec Institute of Technology

Dog owners meet the exercise and social needs of their dog by visiting dog parks, where they are likely to come into contact with other dogs. Greeting behaviours, such as olfactory inspection of another dog, are a commonly observed social interaction that is familiar to most people. This study aims to describe the initial interactions of pairs of dogs, assess if there are discernable patterns of behaviour, and if there is a relationship between a dog’s size, breed category, tail length, sex and the behaviours displayed during an initial greeting as either an initiator or recipient. 100 interactions containing 200 individuals were recorded at two off-leash dog parks. These clips will be coded against an ethogram, and the data analysed. It is predicted that there will be patterns of behaviour that signal that an interaction was positive or negative, and that physical differences such as body size and tail length will correlate with differences in behaviour. If predictable behavioural sequences are identified then they could be used as signals of reinforcement to counter-condition a dog-dog aggressive dog to use positive behaviour patterns, or to identify potentially problematic greeting behaviours in puppies and modify them before an issue arises.

Influences of Target Stimulus Probability and Reinforcement Probability on Hens Performance on a Signal Detection Task

Janine Haycock, Timothy L. Edwards, & Mary Foster
University of Waikato

The current study uses signal detection theory to examine hens’ performance on a detection task when probability of signal-present trials and reinforcement probability are manipulated. The study uses natural contingencies where hits are reinforced, but all other responses have no scheduled consequences. These variables have been examined previously with the yes/no procedure, but have not been systematically evaluated using the go/no-go procedure. The hens were required to discriminate between a signal-present (bright light) and signal-absent trial (dimmer light) by responding on the stimulus key or bypassing the trial by responding on a second key. The hens were exposed to reinforcement rates of 100%, 75% and 50% and signal probabilities of 50% and 12.5%. Manipulation of reinforcement rate across the range examined thus far did not influence performance at a stimulus probability of 50%. Reduction in stimulus probability from 50% to 12.5% reduced accuracy, primarily because of a reduction in specificity, meaning the hens became more likely to indicate on signal-absent trials. The influence of additional signal probability and reinforcement rate values are currently being investigated.

Responses of Birds to a Bird Repellent by Examining Food Consumption

Kaitlyn Lodge-Osborn
Unitec Institute of Technology

Sparrows transmit and carry diseases, and as they can be found around food producing establishments there is a high chance that they can contaminate food and pass on zoonotic diseases. In the current study, the efficacy of a bird repellent was tested by comparing the amount of food consumed when the presence and proximity of the repellent to a food source was varied. Six sparrows were kept in an aviary, where food was present in two bowls at one side of the cage. The repellent was located at varied distances away from the food bowl and a placebo was placed the same distance away from the second food bowl - Line A. Halfway through the placebo and repellent were switched to the other bowl - Line B. The amount of food eaten and spilled was measured and replaced each day. The results show that more food was eaten from Line B and more food was spilled from Line A irrespective of whether repellent or a placebo was present. This suggests that the repellent and placebo was effective at disrupting the birds eating.

A Human Model of Animal Gambling (peer reviewed)

Jared Pickett, Anne Macaskill, & Maree Hunt
Victoria University of Wellington

Animal models provide a useful way of helping us to understand what drives gambling behavior. However, many of the current animal models lack some of the main features of human gambling. Such as risking something of value and gambling being worse off than not gambling. A recently developed model could overcome some of the limitations of current models by including these main features of human gambling. In this task pigeons earn tokens. They can either exchange the tokens for a reward or choose to gamble the tokens for a chance to win more. The probability of winning the gamble is varied over trials. The current experiment used the same task but used human participants instead of pigeons. If humans perform similarly to animals by continuing to gamble even when gamble presents an overall loss, then it supports the idea that this new model is a potentially useful animal model of gambling.
Sunday 28 August - Presentations

Session 5 (08:40 – 10:00, Tim Edwards - Chair)

Teaching Activity Transitions to School Students with Intellectual Disabilities through Video - Self-Modeling and Picture Schedules: A Comparison of Two Procedures

Kristina Spasovski & Angela Arnold-Saritepe
University of Auckland

Having the skill to transition independently is particularly important within the classroom. Successfully completing transitions allows children to spend more of their time engaging in learning opportunities as opposed to transitioning between them. This study aims to teach children with developmental disabilities, who often have difficulty transitioning, how to transition independently within the classroom. Two participants, aged 6 and 8 years, took part in the study. The study also aims to compare the efficacy of teaching transitions by video self-modeling and picture schedules using an alternating treatment design. The participant’s teachers implemented generalisation probes during the intervention to see if the skill generalised across people as well as across transitions.

Evidence for Increased Behavioural Control by Punishment in Children with Attention-deficit Hyperactivity Disorder

Brent Alsop1, Emi Furukawa2, Paula Sowerby3, Stephanie Jensen1, & Gail Tripp2

1University of Otago, 2Okinawa Institute of Science and Technology, 3Wairau Hospital

Children with ADHD (145 children) and a control group (65 children) chose between two concurrently-available computer games. Interdependent random-interval schedules arranged equal numbers of wins across the two games. One game, however, arranged four times more losses than the other. Both groups preferred the game with the lower rate of punishment, but this effect was significantly greater for the ADHD group. Compared to controls, the ADHD group also switched less often between the games, and showed longer response times following instances of reward and punishment. Implications for the management of ADHD are discussed.

Increasing Sharing and Requesting Behaviours in Children with Developmental Disabilities using Token Reinforcement

Samantha Denton
University of Auckland

Being able to ask for something that you want from a peer and being able to share an item that a peer asks for, are core skills for positive social interaction and play. If there is a deficit in either of these two skills, unwanted or inappropriate behaviours such as snatching or tantrums may occur, or the individual may become isolated or excluded. The aim of the current study was to increase requests made for moderately or highly preferred items and to share the items when peers asked for them. A token economy was introduced in to the classroom setting to increase these behaviours for 3 children (aged 7-10 years old) with developmental disabilities. Independent target (the behaviour being reinforced using the token system), prompted target and independent non-target (the behaviour not currently being reinforced using the token system) were recorded. Sharing or requesting were reinforced using the tokens for each participant, until that target behaviour reached mastery, at which point the token system was introduced for the other behaviour. Generalisation was assessed with the participant’s siblings in their homes.

Demystifying Video Modelling

Dennis Moore
Monash University

Video modelling (VM) in its various permutations (Peer, Adult, and Self modeling; Point of view, scene view; with and without voice overs) has been widely adopted particularly in early intervention with children with Autism Spectrum Disorder (ASD). The research base for VM is such that it is widely accepted as an Evidence Based Practice. However it clearly doesn’t always work, and some have concluded it is only moderately effective relative to for example Behaviour Skills Training. Methodological confusions abound regarding its application, the theoretical underpinnings are sadly underdeveloped, and the active ingredients in the processes are poorly understood. In this paper we briefly consider the perhaps complex concept imitation, consider some data regarding the place of reinforcement in video modelling interventions, and ask (i) what happens if we don’t provide a model and (ii) is teaching imitation one of the delightful by-products of video modelling?

Choice Making in Children: Signalling Versus Strengthening Effects

Paula Hogg, Jessica McCormack, Sarah Cowie, & Javier Virues-Ortega
University of Auckland
Recent basic research has suggested that the effect of a reinforcer on behavior may depend on what that reinforcer signals about events in the immediate future, rather than on any response-strengthening function. The purpose of the present study was to extend the experimental paradigm used to study signaling and strengthening effects to humans. Seven typically developing children and one child previously diagnosed with autism spectrum disorder took part in the ‘Pocket Game’, in which the probability that the next reward would be in the same location as the last reward was varied across conditions, from 0.9 to 0.1. Almost all participants changed their allocation of responding to the just-reinforced-location across conditions. Six out of eight participants matched the proportion of responding expected to just-reinforced-location in each condition, and almost all the children were able to verbalize the rule that was in place for the current condition. These results are consistent with previous research conducted with pigeons. Findings suggest that reinforcers do act as a signal for future events for typically developing children. Reinforcers provide information that guides future behavior, rather than merely increasing the likelihood that the last reinforced response will reoccur.

Session 6 (10:50 – 12:30, Karen Sluter - Chair)

**Providing Therapeutic Environments for People with Intellectual Disabilities: Can ABA Help?**

Katrina Phillips  
University of Auckland and Rescare Homes Trust

During the process of deinstitutionalization much research focused on what a therapeutic environment should look like and what quality of life indicators should be measured. The current paper will discuss this literature and take stock of where we currently are in services. A case study will be presented on an intervention designed to further the therapeutic environment and increase quality of life.

**Implicit Attitudes and Materialism**

Stefan Lim, Timothy L. Edwards, & Rebecca Sargisson  
University of Waikato

Advertising may reinforce brief and immediate relational responses (BIRRS) of correspondence between ‘happiness’ and ‘material wealth’. This research looks into the possibility of changing BIRRS associated with materialism through 10 minutes of training. We hypothesised that participants can become more or less materialistic through reinforcement of materialistic or anti-materialistic relational responding, respectively. Eighty-four participants were divided into three groups, Materialistic, Anti-Materialistic, and Control, and received relevant training followed by an Implicit Relational Assessment Procedure (IRAP) and Materials Value Scale (MVS) survey. The IRAP was used to measure response latencies when individuals responded to pairs of stimuli consistent (e.g., happy/luxury) or inconsistent (e.g., happy/cheap) with materialistic attitudes. The MVS is a survey intended to measure materialism. Results showed that participants were faster to respond materialistically than they were to respond anti-materialistically, regardless of the type of training that they received. Participants who took the Anti-Materialistic training were predicted to score higher on the MVS, meaning they became more materialistic. In conclusion, 10 minutes of training was not sufficient to affect BIRRs associated with materialism. Moreover, the results indicate that the relational network associated with ‘being materialistic’ is complex and that there is not a clear ‘opposite’ of materialism.

**Investigating Influences of Incentives on Implicit Attitudes towards Body Size**

Tokiko Taylor, Timothy L. Edwards, & Rebecca Sargisson  
University of Waikato

The Implicit Relational Assessment Procedure (IRAP) was designed to detect relational responding that cannot easily be accessed via traditional survey methods. The IRAP requires participants to meet speed and accuracy criteria during practice trials before proceeding to test trials, which has resulted in an attrition rate of approximately 20%, on average, in the existing research. Variables affecting the attrition rate have not been systematically investigated. We examined the influence of incentives, a $20 voucher contingent on meeting performance criteria, on attrition rate and other IRAP performance measures. In addition, we examined whether the IRAP would reveal an implicit anti-fat bias in 82 university students. We found significant differences in the performance of the incentive group in their response accuracy and measurement of their implicit bias. The results indicated higher levels of bias compared with those from previous research studies, particularly in the incentive group. We did not find statistically significant differences in the attrition rate but found low attrition rate in both groups. This study reveals the utility of incentives for improving performance on the IRAP, a procedure that demands accurate responses under time pressure for assessing spontaneous relational responding.

**Probability Discounting of Medical Benefits and Harms**

Rana Asgarova, Maree Hunt, Anna Macaskill, & Brian Robinson  
Victoria University of Wellington, Graduate School of Nursing, Midwifery and Health (VUW)

Long-term preventative treatment for cardiovascular illnesses does not guarantee benefit and carries a chance of harmful side effects. In our study, participants chose between successive ‘treatment’ and ‘no treatment’ options. The ‘no treatment’
alternative carried a higher probability of illness, while ‘treatment’ offered a lower probability of illness with a 100% chance of a side effect. For example, participants would choose between 30 out of a 100 individuals experiencing illness if untreated, versus 15 out of a 100 if treated, with all 100 experiencing a side effect. The titrating procedure adjusted probability of illness in the ‘treatment’ option to derive the smallest benefit a drug must provide to tolerate its side effect. We examined two variables expected to affect willingness to treat, framing (options framed as decreasing their chance of illness, or increasing their chance of being healthy) and side effect severity (headaches or cold hands/feet). The results did not show a consistent effect of framing. For side effect severity, most participants were either indifferent or required more benefit from the drug before they would tolerate headaches as compared to cold hands/feet. Sensitivity to side effect severity was more likely in participants with no family history of cardiovascular illness.

What can Facial Behaviour Reveal about Animal Welfare? (peer reviewed)

Kris Descovich1,6, Jen Wathan2, Matt Leach3, Hannah Buchanan-Smith1, Paul Fleknell4, David Farningham5, & Sarah-Jane Vick1

1University of Stirling, 2University of Sussex, 3University of Newcastle, 4University of Newcastle, 5Medical Research Council, 6Unitec Institute of Technology, 7University of Queensland

Facial behaviour is extensively studied in humans as a measure of psychological and emotional experiences but is infrequently used in animal studies, although recent and emerging evidence demonstrates that facial changes can reliably indicate pain states in many mammalian species. Increasingly, attention in animal welfare science is turning towards the determination and assessment of affective states in animals. Affective states are recognised as key drivers of good or poor welfare, but evident challenges exist in measuring internal states in non-human species. In this presentation, I discuss current evidence for facial representations of underlying affective states in animals, and how communicative or functional expressions can be useful within welfare assessments. Validated tools for measuring facial movement are outlined, and the potential of expressions as honest signals are discussed, alongside other challenges and limitations to facial expression measurement within the context of animal welfare. It is concluded that the measurement of facial behaviour in animals is a useful but underutilised measure that complements existing tools in the assessment of welfare.

Session 7 (13.30 – 15:30, James McEwan - Chair)

Divided Attention: The Matching Law and Lateralised ERP

Stuart McGill, Kirsten Ong, Douglas Elliffe, & Paul M. Corballis
University of Auckland

We investigated the effect of differential reinforcement on selective attending by translating Shahan and Podlesnik (2006) divided attention procedure to 23 human participants. To our knowledge this is the first translation of this study to humans. A delayed matching-to-sample procedure was implemented, where sample stimuli were arrays consisting of two targets (oval and rectangle) and six distractors (triangles). During the practice phase, an adaptive staircase procedure was used to adjust task difficulty so that participants’ responses were approximately 75% accurate. This was to attenuate the possibility of ceiling or floor effects confounding the results. Subsequently, the relative probability of reinforcement for correct matches, for each target, was varied from 9:1, 1:1 to 1:9. Relative accuracy was modelled using a hierarchical Bayesian extension to the Generalised Matching Law (GML). This extension models each individual while simultaneously providing mutually informed group sensitivity-to-reinforcement and bias parameter estimates. Additionally, Electroencephalography was recorded to assess lateralised potentials previously related to selective visual attending. Behavioural results successfully replicated Shahan and Podlesnik, with relative accuracy increasing as a linear function of the obtained reinforcement ratio.

Matching and Undermatching in a Rapidly-changing Environment

Soh Zhen
University of Canterbury

Decision-making is based on the choices which are made across different time frames. Multiple studies examining preference behaviour in pigeons and rats using concurrent chains have yielded results which are analogous to those obtained in human decision making (Reynolds, 2006; Grace, 2016). One decision model is the matching law which states that choice behaviour is “matched” to the relative intensity of the received rewards for each choice. Analysis of a previously collected dataset from a study using concurrent schedules yielded matching and severe under-matching between experimental conditions. There were two experimental conditions and both utilized a rapid acquisition design. The first condition was the minimal variation condition. In this condition, the reinforcer ratio of the left to the right responses keys was 4:1 or 1:4. The second condition was the maximal variation condition. Reinforcer ratios varied from 1:8 to 8:1 resulting in an average reinforcer ratio, ranging from 1:4 to 4:1. Under the minimal variation condition, sensitivity of response rate to reinforcement rate was almost one (matching). Under the maximal variation condition, sensitivity of response rate to reinforce rate was approximately 0.5 (severe undermatching). We propose a preliminary model which can account for this difference.
Concurrent chains procedures are widely used as a tool to investigate choice behaviour. One striking phenomenon observed in concurrent chains research is the terminal link effect, whereby a subject’s preference for choosing a richer alternative over a leaner one increases as absolute terminal link duration increases with their ratio held constant. Four pigeons responded in a three-component concurrent-chains procedure in which the absolute and relative terminal-link durations were varied across components and conditions, respectively. Different conditions arranged pairs of fixed-interval (FI), variable interval (VI), mixed interval (i.e., two-interval VI) and VIFI schedules. Results showed that the terminal-link effect was obtained in all conditions, but was strongest with VIFI schedules. We fit three models of choice behaviour (hyperbolic value-added model, contextual choice model, and cumulative decision model) to the data. Although all were challenged, results were best described by the cumulative decision model with the additional assumption that reinforcers delivered after a variable delay (VI or MI) are more surprising and hence more effective.

Interaction of Reinforcer Magnitude and Probability in Concurrent Chains
Braden Campbell, Brooke Harvey, & Anthony McLean
University of Canterbury

This study examines the concatenated generalized matching law’s assumption that different choice affecting variables function independently. Relative probability and relative magnitude of reinforcement were varied in a concurrent chains procedure. Subjects were trained in a VIFI20s initial link dependent schedule, with 20s terminal links. At the end of the terminal link, there was a 16s reinforcement period during which 1 or more cycles of a food hopper may occur, depending on the scheduled reinforcer probability. Group 1 first experienced equal magnitudes across all probability ratios, and in a second series, unequal magnitudes in the two most extreme probability ratios. Group 2 experienced unequal magnitudes across all reinforcer probability ratios, and then equal magnitudes for the two extreme conditions. Sensitivity to reinforcer probability ratios was greater when reinforcer magnitudes were equal, than when they were unequal. This effect was seen across all 8 subjects, and suggests an interaction that contradicts the independence assumption. Models for concurrent chains were considered to explain our results. Our analyses suggest that of the tested models the Cumulative decision model (Grace, Bragason & McLean, 2001) provided the best fit to the data.

Does an Inhibitory Stimulus Function as a Punishing Consequence?
Vikki J. Bland1, Sarah Cowie2, Douglas Elliffe2, & Christopher A. Podlesnik12
1University of Auckland, 2Florida Institute of Technology
The use of punishment to reduce harmful behaviour has largely been abandoned for ethical reasons. However, positive reinforcement of alternative behaviour may fail to reduce harmful behaviour to safe levels. The present study investigates whether presentation of an inhibitory stimulus will punish responding for positive reinforcement. Pigeons responded on a simple schedule in the presence of a stimulus (S+) predicting response-contingent food deliveries on a VI 15-s schedule. A different stimulus (S-) previously associated with extinction was simultaneously presented on a VR 5 schedule. Food deliveries were not withheld. Behaviour was suppressed relative to behaviour in the presence of the S+ stimulus alone. More research is required to investigate how different environmental variables impact the functional reliability of an inhibitory stimulus used as a punishing consequence.

Academic Discounting: Magnitude Effects and Correlations with other Tasks (peer reviewed)
Rebecca Olsen, Anna Macaskill, & Maree Hunt
Victoria University of Wellington
Understanding the decision making processes involved in student procrastination could lead to the development of interventions that improve student learning outcomes. Delay discounting refers to the fact that reinforcers lose their value if they are delayed. Procrastination may be caused by the fact that reinforcers for studying are delayed, however no task measuring delay discounting of the value of academic outcomes currently exists. We developed a measure of academic discounting modelled on tasks successfully used in the discounting literature. Participants were first-year psychology students. All participants showed systematic delay discounting of an assignment worth 20% of their grade. In general, large delayed rewards are discounted less steeply than small delayed rewards (the magnitude effect). We found that the magnitude effect also exists in academic discounting; participants discounted a ‘not important’ assignment more steeply than an ‘important’ assignment. Finally, we assessed correlations among academic and money discounting tasks, a self-report measure of procrastination and an experiential video discounting task. The only significant (positive) correlation was between video discounting and the self-report measure of procrastination. This may be due to experiential and/or unpleasant aspects of both tasks. The overall results of these experiments show that delayed rewards are an important contributor to student procrastination.
Sunday 28 August – Posters

**Systematic Review of Self-management Apps for Chronic Illness** (peer reviewed)
Jasmine Chung & Marko Ostojic
Monash University

Given the increasing use of smartphone Apps, and their convenience and cost-effectiveness, an opportunity exists for them to be included in self-management programs for attenuating the impact of chronic illness on an individual's life. However, accessibility does not guarantee effectiveness for the user. Quality interventions require effective behaviour change strategies, a feature that many self-management Apps lack, leading to a need for a comprehensive examination of assessment measures used to analyse Apps for their ability to change and monitor behaviour. Accordingly, this systematic review examined content analyses that focused on health related self-management Apps. The review conducted a search via three databases (Ovid PsychINFO, Ovid MEDLINE, and ProQuest Psychology Journals), and only included articles published between 1996-2016. The predetermined search terms produced an initial 3657 studies, which were further filtered with inclusion and exclusion criteria, resulting in 15 studies for final review. Multiple assessment measures for apps were identified, and were examined on: (a) behavioural change strategies utilised, (b) functionality and usability of Apps, (c) generalisation to various health conditions, (d) scoring procedures and design of measure, (e) inter-rater reliability/agreement, and (f) applicability to assessment of Apps. We report and discuss the most suitable measure(s) for evaluating health related self-management Apps.

**Flower Power and the Autistic Gardener** (peer reviewed)
Derek English, Angelika Anderson, Brett Furlonger, & Dennis Moore
Monash University

Typically, more than 50% of high functioning Australian adolescents and adults with autism are unemployed. Their experience with conventional modes of workplace training, understanding complex verbal instructions and following live in situ demonstrations may exacerbate the difficulties they experience with finding and keeping a job. Of the limited research available, video modelling has been observed to be an effective component for use in vocational interventions for some, but not all, adults with ASD. Accordingly, the effectiveness of a video modelling (VM) with video-feedback (VFB) intervention to teach edible flower growing skills to three adults with Autism Spectrum Disorder (ASD) was evaluated. A multiple probe design across skills was used to assess the effects of the intervention on the three participants’ ability to perform skills accurately. The use of VM with VFB led to improvements across skills for two of the participants. The third participant required video prompting (VP) for successful skill acquisition. Skill performance maintained at follow up for all three participants. Social validity data gathered from participants, parents, and co-workers were positive. These findings suggest that VM with VFB and VP with VFB were effective and socially acceptable interventions for teaching vocational gardening skills to young adults with ASD.

**Functional Behavioural Assessment: A Comparison of Brief Functional Analysis and Discrete-trial Functional Analysis** (peer reviewed)
Esther Garraway-McMaster, Dana Santon, Natalie James, & Shyan Juang Low
Monash University

There is substantial support in the empirical literature for the effectiveness of Functional Behavioural Assessment in informing effective interventions to address behaviours of concern. Recent developments include a focus on addressing identified implementation barriers, including developing brief functional analysis procedures. While several different such approaches have been developed, to date little research has been conducted comparing specific forms of functional analysis. To this end the aim of this study was to trial an expedient functional assessment procedure using an open-ended functional assessment interview adapted from Hanley (2012) and open-ended observational methodology to inform the functional analysis. Then two types of functional analysis: brief functional analysis and discrete-trial functional analysis were compared in terms of their relative efficacy, efficiency and social validity to determine which method is more feasible in applied setting. In conclusion, this study hopes to improve current functional behavioural assessment through the use of open-ended functional assessment interview and open-ended observational methodology. This study also aims to discover more about the differences in social validity between brief functional analysis and discrete-trial functional analysis, in bet to trigger further improvement in the area of functional behavioural analysis.

**Rethinking Entrepreneurial Intention: Goal Needs Implementation Intention** (peer reviewed)
Shuja ul Islam
National University of Emerging and Computer Science - FAST, Islamabad, Pakistan

Entrepreneurial intention has attracted considerable attention as a potentially useful variable in explaining the entrepreneurship process. But so far, entrepreneurial intention lacks predicting power regarding the intention-behavior link. One possible explanation is the difference between goal and implementation intention. Entrepreneurial intention has been operationalized so far as a goal intention. However, according to well-established research in psychology, implementation
intention is a more proximal predictor of behavior. The aim of this paper, therefore, is to justify the need to measure both goal intention and implementation intention. Our review of the literature supports goal intention as a previous element needed for the development of implementation intention. Together, the strength of goal intention and the formation of implementation plans, would jointly predict intention. An initial model is drafted to integrate both types of intention and may serve as the basis for future studies on entrepreneurial intention and behavior.

The Effect of Bodyweight as an MO on State Dependent Valuation Learning in Hens

Surrey Jackson1, James McEwan2, Mary Foster1, & Lewis Bizo2
1University of Waikato, 2University of New England

Several recent studies have demonstrated that animals prefer stimuli correlated with food under high deprivation conditions over stimuli correlated with food under low deprivation conditions (termed state dependent valuation learning). The purpose of this study was to test preference at baseline and then test for preference under extinction conditions with two groups of hens maintained at two different bodyweights (75% and 95% of free-feeding weight). During training both groups experienced one stimulus associated with prefeeding and one not associated with prefeeding. Our results support previous findings in that most hens preferred the stimulus that had been correlated with no prefeeding in the post-training preference test. However, there were no differences between the two bodyweight groups.

The Emergence of Derived Relations using the Differential-outcomes Procedure

Jessica McCormack, Javier Virues-Ortega, & Doug Elliffe
University of Auckland

The differential outcomes procedure has been found to enhance conditional discrimination learning in animals and humans. By pairing each discriminative stimulus with a unique reinforcer it provides an addition cue to correct responding. This can lead to faster and more accurate learning, as well as the development of equivalence relations. In the present study, we taught novel tacts to four boys with pervasive developmental disorders. Three of the four boys met mastery sooner in the differential outcomes condition relative to variable outcomes. In addition, we tested for the emergence of equivalence relations, and found that stimulus-outcome or response-outcome relations emerged in three out of four students. The study provides evidence for the effectiveness of the differential outcomes procedure for children with pervasive developmental disorders.

Relationships among Procrastination, Psychological Flexibility, and Delay Discounting

Kylie Sutcliffe, Maree Hunt, & Anna Macaskill
Victoria University

Academic procrastination is a widespread issue, associated with negative outcomes such as lower grades and more physical and mental health problems. Psychological flexibility refers to our ability to act in accordance with our chosen values based on what the present situation affords. Students with low psychological flexibility and those that discount delayed rewards more steeply may be more likely to procrastinate. 139 third-year psychology students at Victoria University completed self-report measures of psychological flexibility and academic procrastination, and tasks that measured delay discounting in a) a hypothetical delay paradigm and b) an experienced waiting paradigm. The only measures significantly correlated were psychological flexibility and procrastination (a negative correlation), suggesting that psychological inflexibility may contribute to an individual’s tendency to procrastinate. This finding could inform interventions that reduce procrastination and improve student outcomes.

The Relationships among Hypothetical Waiting, Hypothetical Postponing, and Experiential Waiting in Delay Discounting

Kendra Thompson-Davies, Anne Macaskill, & Maree Hunt
Victoria University

A concern that remains in delay discounting studies involving comparisons between humans and nonhumans is that current procedures do not test the idea of “waiting” in directly comparable ways. Humans are typically tested using hypothetical questionnaires that do not capture the costs of waiting, while nonhumans are tested under operant conditions that involve waiting. Instead of imagining waiting for a reward, the hypothetical discounting procedure represents imagining the postponing of a reward. The current study investigated in a population of first-year psychology students from Victoria University the relationships among three delay discounting tasks: the typical hypothetical postponing discounting task, a hypothetical waiting discounting task, and an experiential discounting task involving video watching. The main aim was to determine whether hypothetical waiting was more correlated to experiential waiting or hypothetical postponing in terms of discounting rates. Results were that among the three tasks - the hypothetical postponing discounting task and the video discounting task had a weak positive correlation. The hypothetical waiting discounting task was not significantly correlated with either of the other two tasks, contrary to what was anticipated.