These pages will assist you in your note taking during the psychology presentation.

1. For what reasons would Perth Zoo need to utilise learning theories with the animals?
   - 
   - 
   - 

2. During the lecture complete the grid below by ticking (✓) which learning theories apply to the following animals.

<table>
<thead>
<tr>
<th></th>
<th>Numbat</th>
<th>Southern Hairy-nosed Wombat</th>
<th>Sumatran Orangutan</th>
<th>Southern White Rhinoceros</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASSICAL CONDITIONING</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPERANT CONDITIONING</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>OBSERVATIONAL LEARNING</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SYSTEMATIC DESENSITISATION</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

3. Consider the case study of the Numbat Predator Recognition Program.

A) What conditioned behaviours are being encouraged?

B) What are the stimuli?

C) What type of conditioning is this? Why?
4. During the lecture complete the grid below.

<table>
<thead>
<tr>
<th>OPERANT CONDITIONING</th>
<th>Explain</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Reinforcement</td>
<td></td>
<td></td>
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<tr>
<td>Negative Reinforcement</td>
<td></td>
<td></td>
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<tr>
<td>Positive Punishment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Punishment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Consider the case study of the Southern Hairy-nosed Wombat.
   A) What is the objective of the training?

   ____________________________________________________________

   B) What is the role of the target stick?

   ____________________________________________________________

   C) What is the role of the clicker and why is it used as a reinforcer?

   ____________________________________________________________

   D) What type of conditioning and reinforcement is this?

   ____________________________________________________________

6. Watch the footage of the Sumatran Orangutan teeth brushing session and answer the following questions.
   A) What reinforces Dinar’s behaviours throughout the session?

   ____________________________________________________________

   B) When are the reinforcements applied?

   ____________________________________________________________
7. Summarise the factors which may alter the effectiveness of the consequences?

<table>
<thead>
<tr>
<th>CONDITIONING FACTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<td>2.</td>
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<tr>
<td>3.</td>
<td></td>
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<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

8. How has observational learning benefited the orangutan breeding program at Perth Zoo?

9. During the Rhino desensitisation process, what must happen if at any stage the Rhino appears distressed?

10. Describe in your own words how systematic desensitisation training is performed using the snake phobia as an example.
Activity Sheet A – Oh, Behave!
Quantitative and Qualitative Data Collection

Readily observed behaviours can produce data that can be quantified and analysed statistically. Choose two individuals from the Hamadryas Baboon troop in the African Savannah and then complete the behaviour observation task to test the following hypothesis.

HYPOTHESIS: There will be a significant negative correlation between grooming behaviour and aggressive behaviour within a troop of Hamadryas Baboons.

Name of observer(s):_____________________________________________________
Name of time keeper(s):___________________________________________________
Name of scribes (s):_______________________________________________________
Date:__________________________ Time: ______________ AM/PM

Characteristics of individual A & B observed (distinguishing marks, size colour, scars):
_______________________________________________________________________

Age: Infant (I) Juvenile (J) Sub Adult (SA) Adult (A) Sex: M♂ / F♀ / Unknown

Weather (circle one from each group): Sunny/overcast/raining
hot/warm/cold
still/windy

Observation intervals: Use the behaviour key and record your chosen animal’s behaviour every _____ seconds. Make sure everyone in your group has a role (e.g. time keeper, scribe or observer).

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>35</td>
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<tr>
<td>2</td>
<td>19</td>
<td>36</td>
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<td>3</td>
<td>20</td>
<td>37</td>
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<td>4</td>
<td>21</td>
<td>38</td>
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<td>5</td>
<td>22</td>
<td>39</td>
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<td>23</td>
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<td>7</td>
<td>24</td>
<td>41</td>
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<td>8</td>
<td>25</td>
<td>42</td>
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<td>9</td>
<td>26</td>
<td>43</td>
<td></td>
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<td>10</td>
<td>27</td>
<td>44</td>
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<td>11</td>
<td>28</td>
<td>45</td>
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<td>12</td>
<td>29</td>
<td>46</td>
<td></td>
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<td></td>
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<tr>
<td>13</td>
<td>30</td>
<td>47</td>
<td></td>
<td></td>
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<tr>
<td>14</td>
<td>31</td>
<td>48</td>
<td></td>
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<td>15</td>
<td>32</td>
<td>49</td>
<td></td>
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<td>16</td>
<td>33</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Activity Sheet A – Behaviour Key

Activity:
R Resting
S Sitting
Fo Foraging
Ru Running
Ch Chasing
U Unseen
W Walking
St Standing
Fe Feeding
Cl Climbing
BC Being Chased

Visual and Vocal Interactions:
S Sexual behaviour
MA Mild Aggression
Sub Submission
MB Mounting Behaviour (MM, FF)
SA Serious Aggression
V Vocalising

Interactions:
PA Playing alone
GS Groom Self
GA Grooming Another
BH Being Held
PO Playing with others
BG Being Groomed
HA Holding Another
OC Other Contact

A guide to aggressive behaviour signals in Hamadryas Baboons:

<table>
<thead>
<tr>
<th>Aggression Level</th>
<th>Mild Aggression</th>
<th>Serious Aggression</th>
<th>Submission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal</td>
<td>Staring, Raising eyebrows</td>
<td>Open mouth with canines exposed, charging, hitting</td>
<td>Rump display, avoidance, being mounted</td>
</tr>
</tbody>
</table>
Back at school – Using your data

1. Analyse the data from your quantitative observation to illustrate how the animal that you observed used that portion of its day.

   a. Calculate percentages of time spent in different behaviours. 
      \[ \frac{\text{Number of minutes doing behaviour of interest}}{\text{Number of minutes doing all observed behaviours}} \times 100 \]

   b. Present your findings in an appropriate way. Consider the use of pie charts or bar graphs.

2. Which behaviours recorded would you consider aggressive, cooperative or solitary? Classify the recorded behaviours in the table below.

<table>
<thead>
<tr>
<th>Aggressive</th>
<th>Cooperative</th>
<th>Solitary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. What kinds of factors may have affected the types of behaviours that were shown during your observation period? What factors may trigger aggressive behaviours?

4. Was there observed grooming behaviour preceding or following aggressive behaviour within the troop?

5. Demonstrate how your findings confirm or disprove the hypothesis that grooming minimises aggression within a troop of Hamadryas Baboons?
Activity Sheet A – Qualitative Data Collection

*Duration: 5 minutes*

As a comparison, qualitative data can be collected from one of the following groups of animals: Slender-tailed Meerkats or African Painted Dog.

To carry out this exercise:
- Work in pairs (one student observes and the other records everything their animal does)
- Refer to the Appendices for background information on your animal
- Choose one focal animal in the group to observe
- Observe your focal animal for five minutes
- List all the observed activities in the space provided

Animal: Slender-tailed Meerkat □  African Painted Dog □

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Activity Sheet B – Keeping it together
Group Psychology

Several animal species, including humans, tend to live in groups. Living socially is a complex and effective survival strategy where individuals of the same species interact and influence one another, work together to achieve a particular goal (i.e. survival and reproduction) and live within well-defined rules, roles and social ranking or status.

Compare the group dynamics of an African Painted Dog pack or a Hamadryas Baboon troop to a football team. Utilise exhibit signage, observational data or conduct some further research to complete the table below. Some examples have been given to you.

<table>
<thead>
<tr>
<th>FOOTBALL TEAM</th>
<th>ANIMAL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Troop □ Pack □</td>
</tr>
<tr>
<td>SOCIAL NORMS</td>
<td></td>
</tr>
<tr>
<td>Definition:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sing club song after a game</td>
</tr>
<tr>
<td></td>
<td>• Wear club uniform when playing a game</td>
</tr>
<tr>
<td>SOCIAL ROLES</td>
<td></td>
</tr>
<tr>
<td>Definition:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Coach</td>
</tr>
<tr>
<td>SOCIAL STATUS</td>
<td></td>
</tr>
<tr>
<td>Definition:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Captain</td>
</tr>
</tbody>
</table>
Activity Sheet C – Can you teach an old dog new tricks? Operant Conditioning

Design an operant conditioning program for any of these domesticated animals:
- Cat
- Dog
- Bird

Consider the following:
- What are some behaviours you can teach a cat? A bird? A dog?
- What are some different ways that people train their pets?
- What is something that your pet has learned to do or learned not to do?
- What is the objective of the conditioning program i.e. what will you want the animal to do or not do?
- How is the desired behaviour reinforced or undesirable behaviour extinguished?
- When are the reinforcement(s) applied?
- What methods or processes will ensure the effectiveness of the consequences? For example, how will you ensure the animal carries out the behaviour for another individual in your family?

After designing your program answer the following questions:
- What is an example of an inherited or innate behaviour in a pet and a learned behaviour in a pet?
- How do you distinguish an innate behaviour from a learned behaviour?
- What are some common mistakes owners make in training their pets?
- Which animals have reputations for being intelligent? Are these reputations true?
- How does an animal's brain affect its intelligence?
Activity Sheet D – *Along came a spider*
Systematic Desensitisation

Arachnophobia is an abnormal fear of spiders and other arachnids (this may include scorpions). Not only is arachnophobia the most common animal-based phobia, it is among the most common of all phobias. Though many arachnids are harmless, a person with arachnophobia may still panic or feel uneasy around one. In some cases, even a realistic drawing or an object resembling a spider can also evoke a fear response.

Create a hierarchy of graduated exposure therapy for a person who has arachnophobia.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
Activity Sheet E – *Look Who’s Talking!*
Animal communication

Communication is a way of conveying messages to another individual. These messages can be **verbal** where words are used, or **non-verbal**. The table below outlines many ways that animals communicate with one another. Utilise exhibit signage and observational data to complete the table below.

For each form of communication describe its purpose, provide an example of an animal that makes use of this type of communication and how it was used.

<table>
<thead>
<tr>
<th>FORM</th>
<th>FUNCTION</th>
<th>ANIMAL OBSERVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olfactory Communication (Smell) Example:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Communication Example:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tactile Communication (Touch) Example:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance Example:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posture Example:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hamadryas Baboon \textit{(Papio hamadryas)}

**Group Structure**
A group of baboons is called a troop.

The Hamadryas Baboon has an unusual four-level social system.

<table>
<thead>
<tr>
<th>Name of Group</th>
<th>Description of Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harem or Unimale Group</td>
<td>One male and up to ten females which the males lead and guard. A harem will typically include a younger &quot;follower&quot; male, but he will not attempt to mate with the females unless the older male is removed.</td>
</tr>
<tr>
<td>Clan</td>
<td>Two to four harems unite repeatedly to form a clan – often to forage together during the day. Males in the clan tend to be related.</td>
</tr>
<tr>
<td>Band</td>
<td>Two to four clans can unite to form a band which will sometimes travel together and fight other bands as a unit.</td>
</tr>
<tr>
<td>Troop</td>
<td>Several clans come together to form one troop before they go to sleep.</td>
</tr>
</tbody>
</table>

**Social Behaviour**
Males are the dominant members of all baboon social groups and a male may try to either attract or kidnap females to start his own harem when he reaches puberty. Harem-less males will also join a harem with an old resident male and basically serve as a 'stud’ while the older male remains as a patriarch and leads the harem. The dominant male or patriarch will also be the focus of the females’ grooming attention. A hierarchy also exists amongst the females and the female with the highest status is usually positioned the closest to the dominant male during the day. The dominant male will also ensure that his females do not stray or lag behind his group by biting them on the neck.

Males will sometimes raid other harems for females, resulting in aggressive fights and should a ‘kidnapped’ female have an infant already, the new male may kill the offspring. Therefore, female counter-strategies are expected. These counter-strategies may include mating with multiple males or offering the new male many mating opportunities but without the risk of falling pregnant. This is known as a deceptive oestrus cycle where the rump area swells, but without being fertile. This behaviour is likely to prevent the new male from killing the offspring of the previous dominant male and at the same time the female will avoid the costs of being pregnant and lactating simultaneously.
Appendix 1 (cont.)

Visual Communication
Social presenting: This is a submissive display whereby females and juvenile males present the hindquarters or rump to dominant males.

Staring: This is a threatening display where the eyes are fixed on the stimulus, the eyebrows are raised and the scalp is retracted, and the facial skin is also stretched by moving the ears back.

Staring with open mouth: Stare accompanied by an open mouth but the teeth are covered.

Head-bobbing: This is used as a threatening display where the head bobs up and down.

Tension yawning: This is another threatening display where the mouth is opened fully to reveal the canines.

Teeth-chattering: This is done by a male Hamadryas Baboon to a female when she is presenting herself and indicating that she is ready to accept a mate.

Vocal Communication
Two-phase bark: This is a deep, loud call which is repeated at 2-5 second intervals. This sounds like "wahoo" and is emitted by adult males. This call is emitted when a predator is threatening the troop. This call is also heard when there is aggression between males.

Rhythmic grunts: This call is low and soft and is given by all Hamadryas Baboons except infants. It is a friendly call and may be made when one individual is approaching another.

Shrill bark: This is a distress call and is emitted by all Hamadryas Baboons except adult males. Other members of the troop will flee upon hearing this call.

Lip-smacking: This is when the lips are protruded, then smacked together repeatedly. This is a reassuring display by the Hamadryas Baboon.

Useful Websites


Zoos Victoria, Melbourne, last viewed 31 March 2015 <http://www.zoo.org.au/melbourne/animals/hamadryas-baboon>
Appendix 2

African Painted Dog (*Lycaon pictus*)

**Group Structure**
A group of African Painted Dogs is called a pack.

At 14-30 months of age females will leave their birth pack and join other packs that lack sexually mature females. Males typically stay with the pack into which they were born. Most other social mammals are matriarchal, where a group of related females forms the core of the pack.

Females compete for access to males that will help to rear their offspring. In a typical pack there are 50% more males than females, and the dominant female is usually the mother of the pups. This unusual situation may have evolved to ensure that packs do not over-extend themselves by attempting to rear too many litters at the same time.

The species is also unusual in that other members of the pack including males may be left to guard the pups whilst the mother joins the hunting group, in smaller packs, leaving adults behind to guard the pups may decrease hunting efficiency.

African Painted Dogs are unlike other large carnivores in that they rarely fight among themselves, either for food or dominance.

**Communication**
African Painted Dogs are the most social of all canines.

They lick the mouth of an alpha member and submission is indicated by exposing their bellies and throats to a dominant dog.

Members of a pack vocalise to help coordinate their movements during hunting. Its voice is characterized by an unusual chirping or squeaking sound, similar to a bird.

Bonds between pack members are continually reinforced at 'greeting ceremonies'. Before a hunt, African Painted Dogs greet each other with leaps, grunts, squeals and tail wagging. When angry or defensive, they produce a deep-throated low growl. Unfortunately, these methods of communication place the dogs in danger: any illness in the pack quickly spreads to all members. They are especially vulnerable to diseases carried by domestic dogs (e.g. distemper and rabies).
Appendix 2 (cont.)

Hunting
African Painted Dogs hunt in packs. Like most members of the dog family it is a cursorial hunter, meaning that it pursues its prey in a long, open chase. During pursuit, it may reach speeds of up to 75 kilometres per hour. Their diet includes gazelle, antelope, zebra and warthog.

After a successful hunt, hunters regurgitate meat for those that remained at the den during the hunt, such as the dominant female and the pups. They will also feed other pack members such as the sick, injured or very old that cannot keep up. African Painted Dogs are the only carnivorous species to allow their young to feed first. The adults wait until the pups are finished before they will feed.

Useful Websites


Appendix 3

Slender-tailed Meerkat (*Suricata suricatta*)

Group Structure
A group of meerkats is called a mob, gang or clan.

Meerkats are small burrowing animals, living in large underground networks with multiple entrances which they leave only during the day. They are very social, living in colonies averaging 20-30 members. Usually, the alpha pair reserves the right to mate and normally kills any young not its own, to ensure that its offspring has the best chance of survival. The dominant couple may also evict, or kick out the mothers of the offending offspring. New meerkat groups are often formed by evicted females pairing with roving males. If the members of the alpha group are relatives (this tends to happen when the alpha female dies and is succeeded by a daughter), they do not mate with each other and reproduction is by group females stray-mating with roving males from other groups. In this situation, pregnant females may attempt to kill and eat any pups born to other females.

Social Behaviour

Meerkats demonstrate altruistic behaviour within their colonies. One or more meerkats act as a ‘sentry’ or lookout, while others are foraging or playing, to warn them of approaching dangers. When a predator is spotted, the sentry gives a warning bark, and other members of the gang will run and hide in one of the many bolt holes they have spread across their territory. The sentry is the first to reappear from the burrow and search for predators, constantly barking to keep the others underground. If there is no threat, the sentry stops signalling and the others feel safe to emerge.

Meerkats also baby-sit the young in the group. Females that have never produced offspring of their own often produce milk to feed the alpha pairs young, while the alpha female is away with the rest of the group. They also protect the young from threats, often endangering their own lives to protect them. When danger is signalled, the babysitter takes the young underground to safety and is prepared to defend them if the danger follows. If retreating underground is not possible, she collects all young together and lies on top of them.

The young of most species learn solely by observing adults however meerkats actively teach their young. For example, meerkat adults teach their pups how to eat a venomous scorpion. They will remove the stinger and help the pup learn how to handle the creature.
Despite this altruistic behaviour, meerkats sometimes kill young members of their group. Subordinate meerkats have been seen killing the offspring of more senior members in order to improve their own offspring's position.

Meerkats have also been known to engage in social activities, including what appear to be wrestling matches and foot races.

**Communication**
Animals in the same group regularly groom each other to strengthen social bonds. The alpha pair often scent-mark subordinates of the group to express their authority, and this is usually followed by the subordinates grooming the alphas and licking their faces. This behaviour is also usually practiced when group members are reunited after a short period apart. Most meerkats in a group are all siblings or offspring of the alpha pair.

Meerkats make at least 10 different vocalisations. These include a threatening growl and an alarm bark indicating the approach of snakes, birds of prey, or other predators. As they search for food they utter a “vurruk-vurruk”.

**Useful websites**
Perth Zoo 2015, Perth, last viewed 31 March 2015

Wikipedia The Free Encyclopaedia 2015, San Francisco, last viewed 31 March 2015
<http://en.wikipedia.org/wiki/Meerkat>

Animal Discovery Meerkat Manor, New York, last viewed 31 March 2015
Appendix 4

Learn the Lingo
Several terms and phrases are used when discussing animal behaviour. Find the meaning of the following terms and expand your biological vocabulary.

- Alpha
- Altruistic behaviour
- Bond
- Bridge
- Classical conditioning
- Dominance hierarchy
- Grooming
- Harem
- Mating ritual
- Matriarchal
- Observational learning
- Operant conditioning
- Patriarchal
- Reinforcement
- Scent-mark
- Stimulus
- Submission
- Subordinate
- Symbiosis
- Systematic desensitisation
- Territory