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PSYCHOLOGY BEING INVESTIGATED

Captive Es are crucial in Nepalese culture, including religious ceremonies, timber trade, transportation, park management, and tourism. However, they are vulnerable to tuberculosis, a potentially fatal disease. A study investigates training Es to participate in a veterinary procedure called a TW, which allows them to be tested for the disease. The study emphasises the importance of accurate bh and psychological principles in ensuring Es' welfare.

OPERANT CONDITIONING AND POSITIVE REINFORCEMENTS

Fagen et al. trained Es using operant conditioning, rewarding them for performing trunk movements in the correct order, ensuring their bh was repeated.

PRIMARY & SECONDARY REINFORCEMENT

An E's bh involves trunk mosvement, a process reinforced by a primary reinforcer like a chopped banana. Secondary reinforcers, such as sounds, are used to reinforce the bh. In this study, a short blast on a whistle was used as a secondary reinforcer, creating a strong association between the bh and the consequence. While not meeting the E's basic needs, this reinforcer helps maintain the bh.

SHAPING AND BEHAVIOURAL CHAINING

The TW involves training Es to learn various bhs, such as injecting fluid into their trunks and holding them upright. The fluid is rewarded for similar positions to the desired one, known as shaping. Over time, the trainers gradually reward the Es for chaining the learned bhs together, increasing the reward for each correct order until the Es can perform the entire TW.

BACKGROUND

Nepalese researchers are developing new training methods using positive reinforcement to reduce TB transmission in captive Es. These techniques, which involve using sticks as aversive stimuli, aim to reduce stress, improve animal welfare, and protect trainers from injury. The Nepalese government introduced annual TB testing in 2011, aiming to reduce transmission and improve animal welfare. The use of these techniques is gradually being introduced due to concerns over animal welfare and keeper safety.

AIM

To investigate whether secondary positive reinforcement could be used to train the Es to voluntarily complete a TW, a bh that allows the Es to be tested for TB.

RESEARCH METHODOLOGY

A structured observation of E training sessions in stalls where they lived, not in the wild. was conducted using a behavioural checklist to measure their success in TW tasks.

BEHAVIOUR	DESCRIPTION
Trunk here	Distal end of the trunk gently placed on the outstretched palm of the trainer, with the ventral aspect of the trunk touching the trainer's palm
Trunk up	Distal end of the trunk is held upward in a loose curl with the dorsal aspect of the tip of the trunk in close contact with the E 's forehead/ held diagonally up and outward with a completely straight trunk.
Bucket	distal end of the trunk is gently placed inside a bucket.
Blow	E gives a strong, sharp exhale through the trunk.
Steady	E holds the trunk still with the trunk held in the position previously requested. The E can move her feet, ears, head, tail and body slightly as long as the trunk remains still in the previous position.
Syringe	E holds the trunk still in the trunk-here position to have the distal end of a catheter tip syringe placed inside the nostril of the trunk and up to 60 ml of saline or water instilled into the trunk.
Blow into bucket	E places the distal end of the trunk in the bucket and gives a strong, sharp exhale through the trunk.
Trunk down	trunk is held in a relaxed position with the trunk hanging loose towards the ground.

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Trunk out	trunk is held stretched straight outward, approximately parallel to the ground.
targeting	E moves such that the centre of the forehead makes contact with the end of a targeting stick placed at the height of the forehead.

SAMPLE

5 female Es [4 infants, 5-7 years old and 1 adult, >50 years old]. The infants were born in captivity. They haven't been exposed to SPR but used to traditional methods of learning. Mahouts were present but didn't interact with the Es.

PROCEDURE

TRAININpG

Mornings: 7:30-10am, and/or afternoons [4-7] pm. The training times were based on the availability of mahouts, but never more than 2 days apart.

TRAINING ELEPHANTS

1. Place trunk in hand [to inject saline]
2. Hold up trunk for saline to reach the base
3. Lower trunk into bucket and then-
4. Blow
5. Hold steady

THE BEHAVIOURS WERE TAUGHT BY:

1. Capturing: Es rewarded for natural bhs that are part of the sequence.
2. Luring: making the E s perform unusual bhs by placing treats strategically.
3. Shaping: rewarded for bhs to the desired position, gradually only rewarded for the correct bh.
4. Secondary reinforcement: associated the sound of a whistle [sec. reinf.] with a banana [prim. Reinf.] to help associate bh and reward.

VERBAL CUES AND BEHAVIOURAL CHAINING

Verbal cues: used 1 syllable cues [non-verbal to avoid the perception that Es that Es can understand language]. Encourages Es to follow bhs in sequence. First, only 2 bhs, then all 5.

SYRINGE AND SAMPLE FLUID

Syringe [aversive stimulus] gradually introduced after Es learned TW bh. Gradual desensitisation to the syringe using bananas during "trunk in hand". Counterconditioning used to associate syringe w banana- aversive to conditional stimulus.

VARIABLES

1. Minutes bw first offered cute to response of last cue
2. No. of cues given
3. Success rate for each bh and sequence: after 10th session, tested every 5 sessions. Passing=80% [8/10 right cues]. Bh is a success if mahout thought it would work during the actual TB testing.

Es also judged on performance of behavioural sequences [success≥80%]. Indiv bh not retested, but if E fails, they're tested on shorter sequences/indiv bhs. If E succeeded at 5 step TW, training ends. 2 steps regularly tested: trunk here & steady.

RESULTS

The 4 infants learned the TW in 25-35 sessions. Avg session: 12 mins, range: 10-13 mins. Overall training:367 mins, range:257-451 mins. The Adult E couldn't learn the sequence in time; can't do steady & blow in bucket. E 2&4 couldn't do "steady" except for when it's part of the whole sequence. E5 [adult] wasn't desensitised. All Es training time=378 mins. Success rate went from 39% in 10 sessions to 89.3% in 35 sessions. Singular bhs had significant diffs in the time taken to learn them. Hardest bh: Trunk here/in hand. Easiest: bucket, blow in bucket.

CONCLUSIONS

SPR works in training juveniles & traditionally trained Es to voluntarily & reliably do a TW.

ETHICS: DISTRESS

Strength: All ethics followed for E & mahout; eg chains let them move in stall and walk away if uncomfortable. This is important to minimise distress and potential harm.

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RELIABILITY: CHECKLIST
Strength: detailed, operationalised definitions increase reliability to pass/fail Es.

VALIDITY
NO EXTRA CUES
Strength: mahouts didn't talk/signal Es→ change in bhs was bc of SPR, increasing validity.

CHECKLIST: WEAKNESS
1. 70% accuracy in holding steady during trunk down; had to pass 3 trunk here & 4 trunk ups.
2. Extra time taken to train unnecessary bhs [trunk out]. Trainers stopped shaping when they realised it's useless but the time was added to the total, so the total time is inaccurate, as it doesn't represent the actual time taken to learn the TW.

OBJECTIVITY AND SUBJECTIVITY
Weakness: measurement of performance is subjective; trainers' bias while assessing if Es would do the TW despite the checklist.

GENERALISABILITY
No male adult. E5: visually impaired+weak trunk+abscess in front foot→discomfort, impatience.

Strength: naturalistic setting- noises, tourists therefore increased ecological validity.

INDIVIDUAL V SITUATIONAL
E5 couldn't learn→ indiv diffs. But trainers treated her differently→ situational diffs. Application: safe, effective way to train animals to do veterinary procedures and other things using positive reinforcement to reduce distress.

SIMILARITIES	DIFFERENCES
Bandura & Fagen: structured observations	Fagen: Es in environment, Bandura: Lab
S&S & Fagen: Small sample	Fagen: female Es as Ps, S&S: Male P.

STRENGTH	WEAKNESS
Behavioural checklist	Subjective observation
Normal setting	Small sample.

LINKS TO APPROACHES
Es learned new bhs using stimuli, so experiences shape bh & changes are observable.

ABBREVIATIONS:
Elephants: E s
Behaviour: Bh
Trunk wash: TW
P: Participant.