

Stereotypies and the Effects of a Variable Feeding Schedule in Polar Bears

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Q400

Stereotypies

- Stereotypies are categorized by behavior patterns that are repetitive and serve no apparent goal or function (Mason, 1991).
- Often found in humans with mental handicaps/ disorders.
- Have long been noted in a variety of captive settings.

When do stereotypies occur?

- One variable that appears to be directly related to stereotypic activity is the timing of food events.
- Stereotypic activity often peaks immediately prior and following a large feeding. The peak is usually species specific.

What is being done about these behaviors?

- Many enrichment efforts--species specific.
- Food schedule experiments.
- More naturalistic enclosures to promote more naturalistic behaviors.

Methods

- Subject was one female 18 year old Polar bear (*Ursus maritimus*) named Tundra, housed at the Indianapolis Zoo.
- A within subject reversal design was used.
- Indiana university Undergrads coded behavior via palm pilots and the use of an ethogram.
- Data collection took place in the late afternoon (before the typical feeding).

Coding

- Ethogram consisted of 21 behaviors divided into 7 sub-groups of behaviors.
- 5 possible locations in the enclosure were also coded.
- Experimenters took down behaviors as well as location of bear every 15 seconds for 90 minutes.

CLASS	BEHAVIOR	DEFINITION
Stereotypy	Pacing	Repetitive moving pattern on land. Must occur 2 or more times (aka, one full back-forth motion), w/o more than a 2s pause in between.
	Circle Swimming	Repetitive swimming pattern. Must be at least one lap around rock.
	Pace Swimming	Repetitive swimming pattern. Same as definition as pacing, but in water.
Inactive	Sitting	Butt and back hind legs on floor while maintaining an upright position.
	Lying Down	At least part of back on ground (any down position that doesn't meet sitting definition).
Pause	Standing	Non-movement standing (3 or 4 paws on ground with no locomotion).
	Rearing	Rearing up on back two legs.
Active	Locomotion	Directional, non-repetitive movement.
	Nonpatterned Swimming	Swimming that doesn't meet a stereotypy definition. This also includes standing or floating when completely submerged in water.
	Manipulating Object	Any body contact with a mobile, non-edible object.
	Interacting w/ other bear	Oriented towards the other bear w/o vocalization.
	Vocalization	Any vocal sound produced by a bear while oriented towards the other bear (this is basically IOB w/ vocalization).
	Mating	Pasha mounting Tundra.
Food Oriented*	Eating	Mouth contact with any edible item (including drinking).
	Licking Air	Sticking tongue out without contact to an object.
	Sniffing	Nose-bridge of nose breaking horizontal plane. Must be sitting, walking, or standing for sniffing to occur (cannot be lying down or swimming on back).
Groom*	Licking Paws/Body	Licking, usually at paws, but on any part of body.
	Scratching Body	Contact with paw or mouth (w/o licking) to body, or rubbing body against a non-mobile object.
Other	Urinating or Defecating	#1 or #2!
	Out of Sight	Can't be seen.
	Other	A behavior that doesn't meet one of the definitions above.

Food Schedules

- Baseline- consisted of no food deliveries, used for comparison.
- VT-5- independent of what the bear was doing, whole capelins were thrown to the bear on a predetermined random schedule approximately 5 minutes apart.
- VT-1- same as VT-5 but approximately every 1 minute.

Food Schedules cont.

- In both the VT-5 and VT-1 the first half and last half hour were for observational purposes.
- The middle half hour was used for food deliveries.
- Each schedule was utilized and coded for 4 days.

Results

- A decrease in stereotypic activity and inactivity was only seen during the food period.
- Prior results using a fixed time schedule showed a decrease in these less desirable activities and increasing active behaviors in pre-food and food periods.

Possible Explanations

- Possible habituation. The smell of the fish and the appearance of the experimenters may have been enough to predict food delivery and had decreased stereotypic behavior before, but habituation did not allow this to happen in the variable time schedule.

Test this...

- Conduct a fixed-time schedule and compare the data to this variable time results.
- If data moves back to pre-food and food decreases in inactivity and inactivity it would show that habituation was not present and is indeed the time schedules.

References

- Fernandez, E.J., and Timberlake, W. (2004, May). Fixed-time food schedules and their effects on activity patterns in two adult polar bears (*Ursus maritimus*). Paper presented at the Association for Behavior Analysis Conference, Boston, MA.
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