

Multiple Factors at Play: Ontogeny and Adaptive Value of Play Behavior

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Introduction

Despite the prevalence and potential importance of play, very little is known about this intriguing behavior. It is thought that the purpose of play is to prepare animals for future behaviors, such as predation and tool use [1]. If this “practice theory” is correct, younger animals should play more often, and animals with different lifestyles should perform different types of play behaviors. To test these hypotheses we examined play in two species at the Oregon Zoo – the caracal (*Felis caracal*) and the Asian elephant (*Elephas maximus*).



The solitary hunter



The gregarious herbivore

Hypothesis: Younger animals will play more often.

Hypothesis: Caracals will exhibit more aggressive play than elephants.

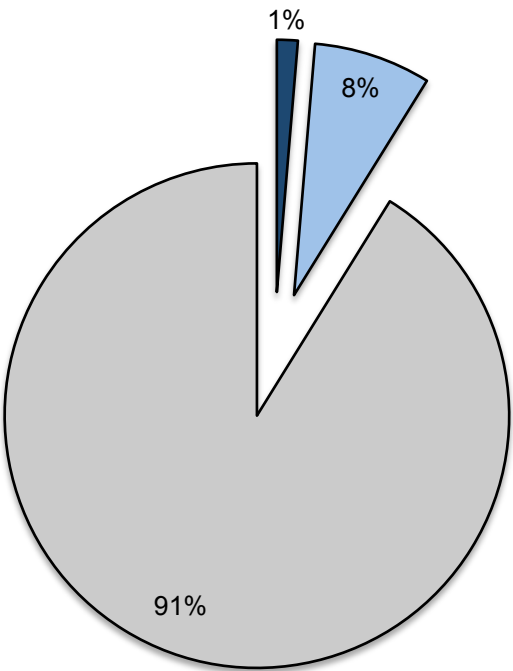
Functional Definition: “Play is all motor activity performed postnatally that appears to be purposeless, in which motor patterns from other contexts may often be used in modified forms and altered temporal sequencing.” [1]

Results

Play Behavior Time Budgets for Asian Elephants



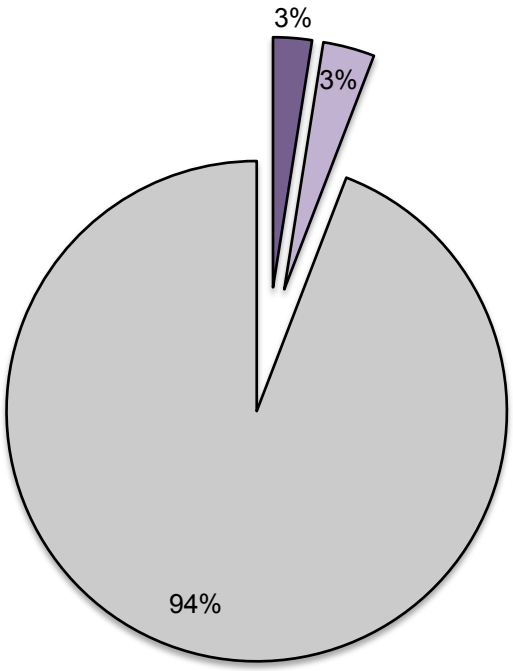
Sam
Male, 3 Yrs.



- Play with ball
- Chase birds
- Not playing



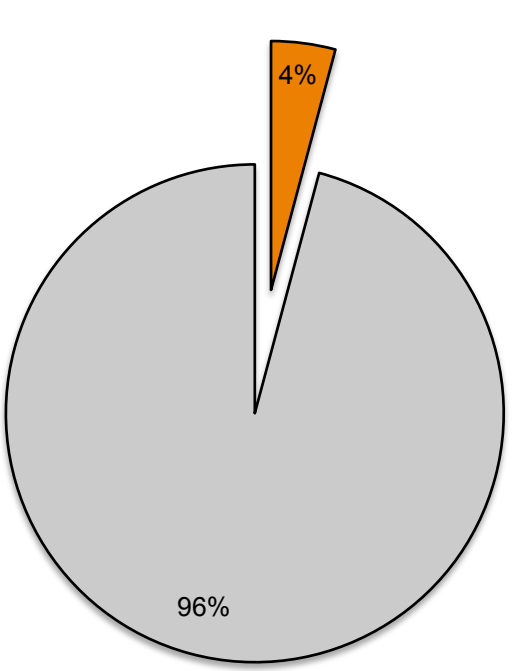
Chendra (unrelated)
Female, 18 Yrs.



- Play with bamboo stick
- Interact with gate
- Not playing



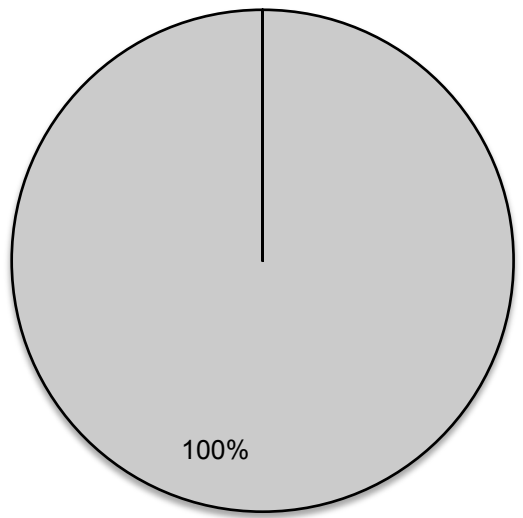
Shine (Sam's aunt)
Female, 28 Yrs.



- Interact with gate
- Not playing



Rose (Sam's mother)
Female, 17 Yrs.



- Not playing

Disparate Play Behavior Observations

Asian Elephant

Chase birds

Locking trunks

Grab tail of elephant

Playing with ball

Gate exploration

Pseudo-mounting

Trumpeting

VS.

VS.

VS.

VS.

VS.

VS.

VS.

Caracal

Chase each other

Swiping

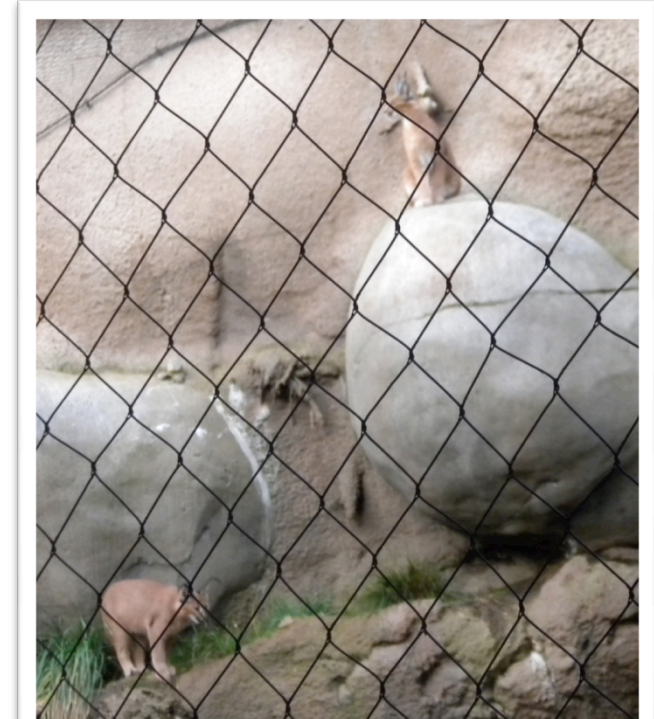
Bite another cat

Digging

Climbing

Stalking

Hissing



Conclusions

Young animals engaged in play behavior more often than their elder family members.

Through play, young animals can learn and practice skills that will be used later in life. Older animals, who presumably have already learned these skills, should not need to engage in play as often.

The caracals exhibited more aggressive play behavior than the elephants.

In order to survive, adult caracals must be able to chase and capture prey, as well as protect themselves from larger animals by fighting back or hiding. The play behavior of caracal kittens mirrored these required skills. Play behavior in the young elephant involved social interaction and pseudo-sexual behaviors, reflecting the main concerns of adult elephants.



Future Directions

- Observational studies of play in wild animals
- Studies of play in other hunting species
 - Solitary vs. group hunters (e.g. Lions)
- Intraspecies study of sexual dimorphism in play behaviors

References

[1] Bekoff M, Byers JA: *Animal play: evolutionary, comparative, and ecological perspectives*: Cambridge University Press; 1998.
All images taken by CaraHolton or Shelly Skolfield at the Oregon Zoo.

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