

# THE NOSE KNOWS?

Assessing social learning in Asian elephants (*Elephas maximus*) in a  
problem-solving task

4/12/23

Matthew S. Rudolph The Graduate Center, Hunter College, CUNY

Celine E. Persad Hunter College, CUNY

Katherine E. Canter Hunter College, CUNY

Sarah L. Jacobson The Graduate Center, Hunter College, CUNY

Sherman de Silva University of California San Diego

Joshua M. Plotnik The Graduate Center, Hunter College, CUNY



# PREVIOUS STUDIES OF SOCIAL LEARNING

Social Learning:

Model / Observer



Visual



Auditory



Chemosensory cues

For reviews, see:

Heyes, C. (2012). What's social about social learning?. *Journal of comparative psychology*, 126(2), 193.

Laland, K. N. (2004). Social learning strategies. *Animal Learning & Behavior*, 32(1), 4-14.

Galef, B. G., & Laland, K. N. (2005). Social learning in animals: empirical studies and theoretical models. *Bioscience*, 55(6), 489-499.

# PREVIOUS STUDIES OF SOCIAL LEARNING

Observers watched a model  
interact with a novel device



## Results:

Evidence for social learning:



After watching the model, observers spent more time interacting with the apparatus than they did in unmodeled trials.



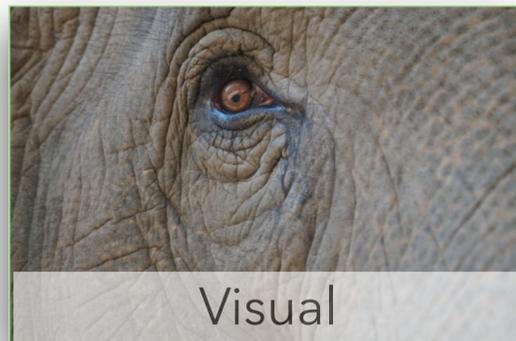
Olfaction



Gustation



Tactile



Visual



Audition





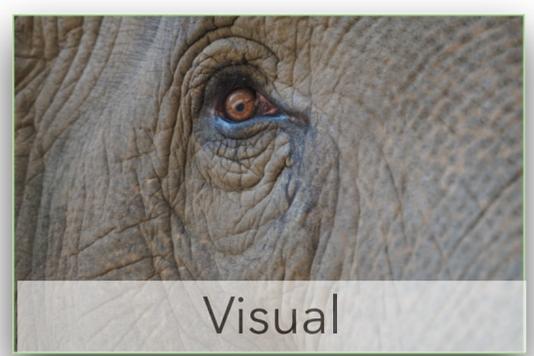
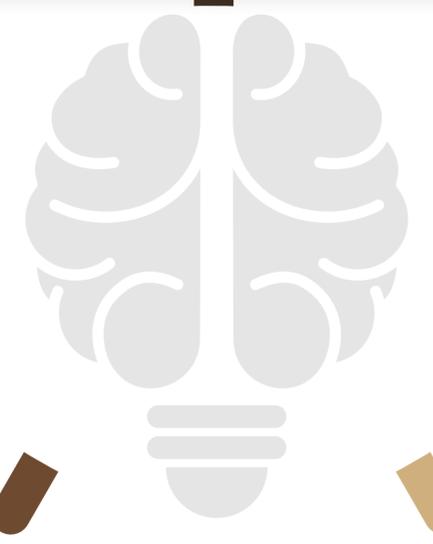
Olfaction



Audition



Gustation



Visual



Tactile



© The Wild Elephant



© Center for Conservation and Research, Sri Lanka



© Space for Giants



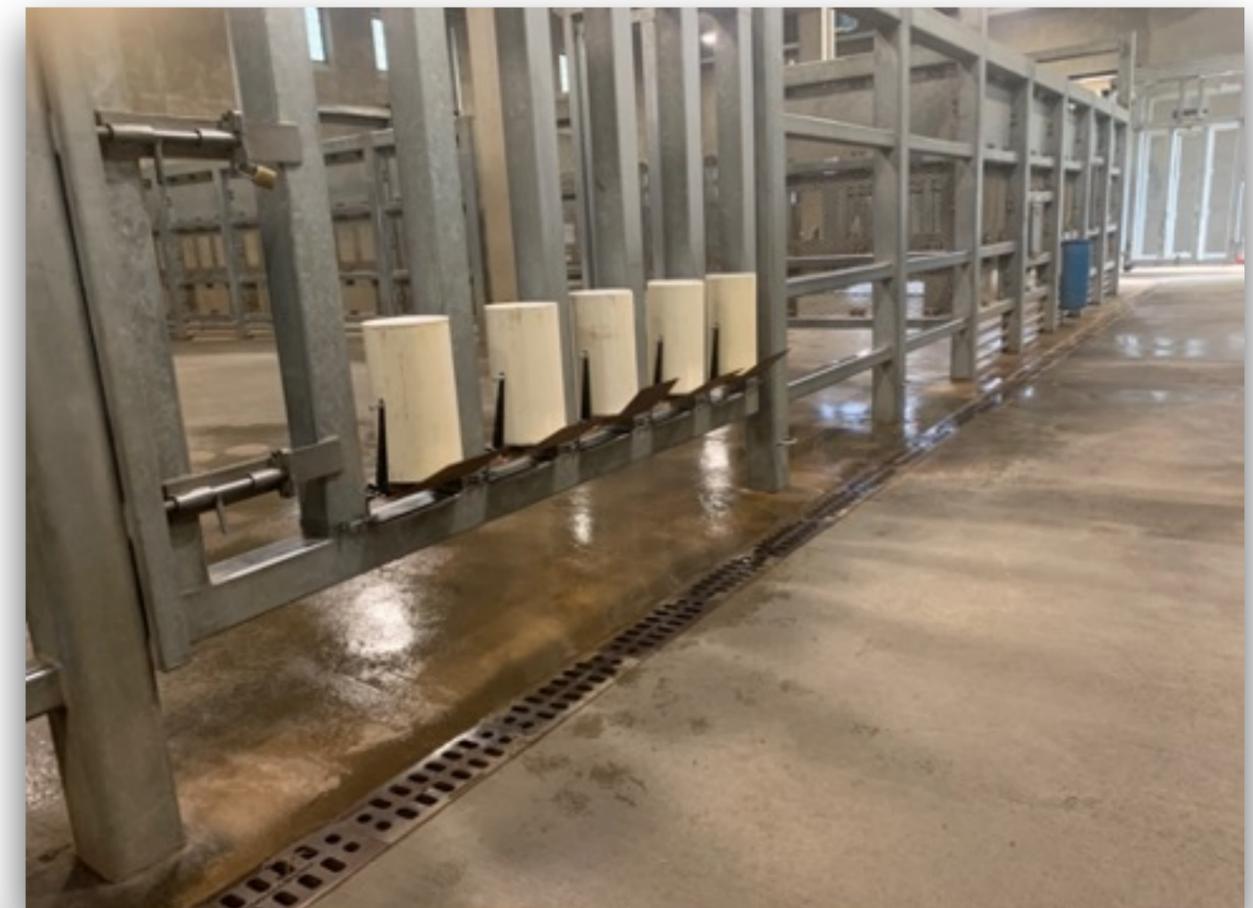
© @supriyasahuia



Trunk Push Top



Trunk Push Bottom



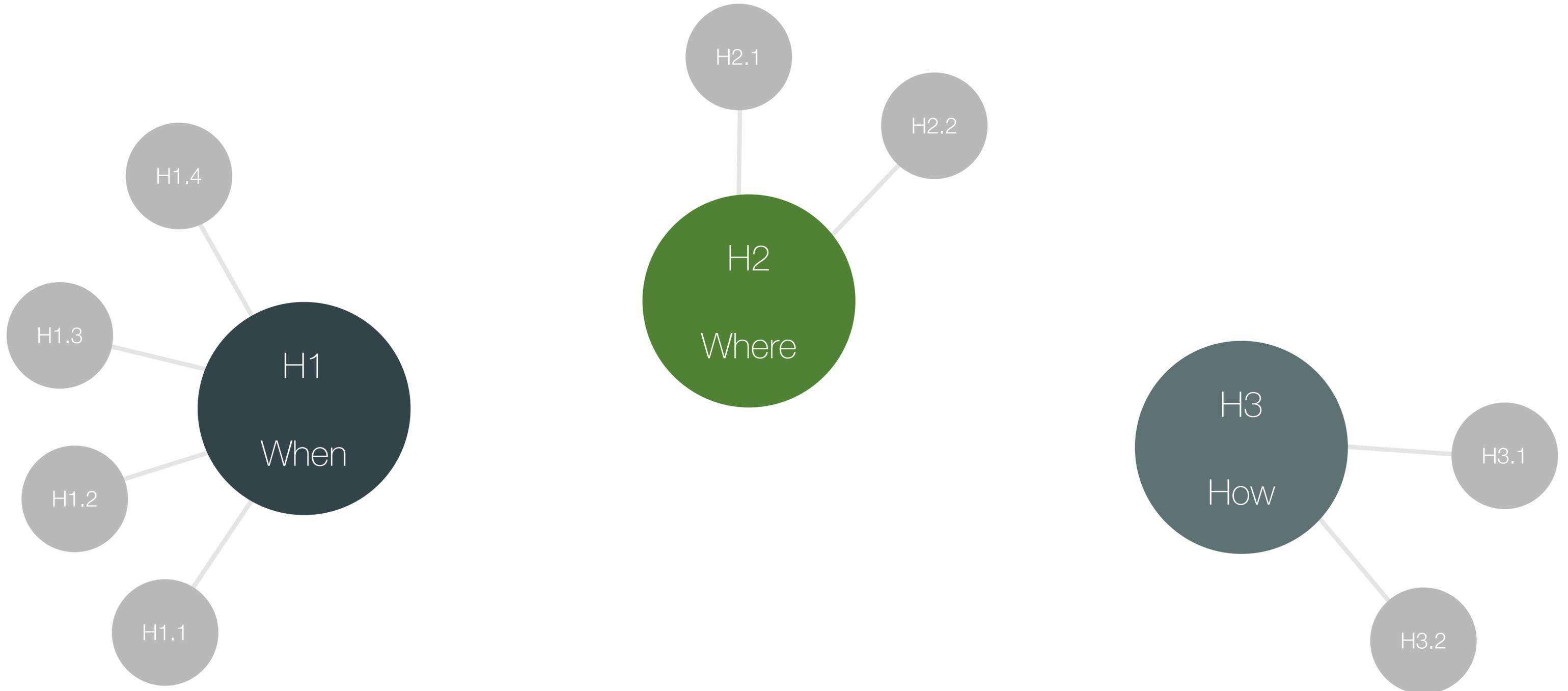
Trunk Pull



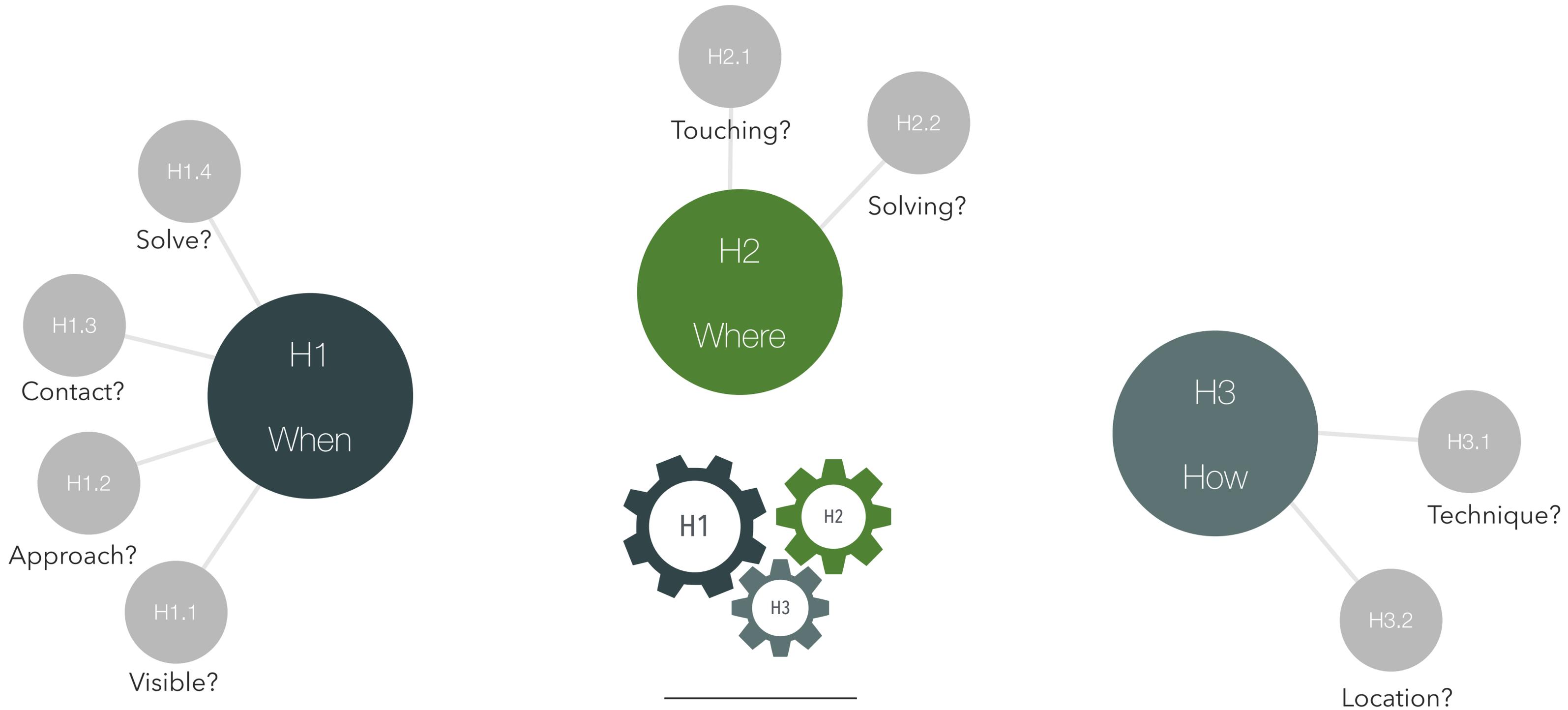
Foot Push

ROSAMOND GIFFORD  
**ZOO**  
AT BURNET PARK  
Syracuse, NY

# HYPOTHESES

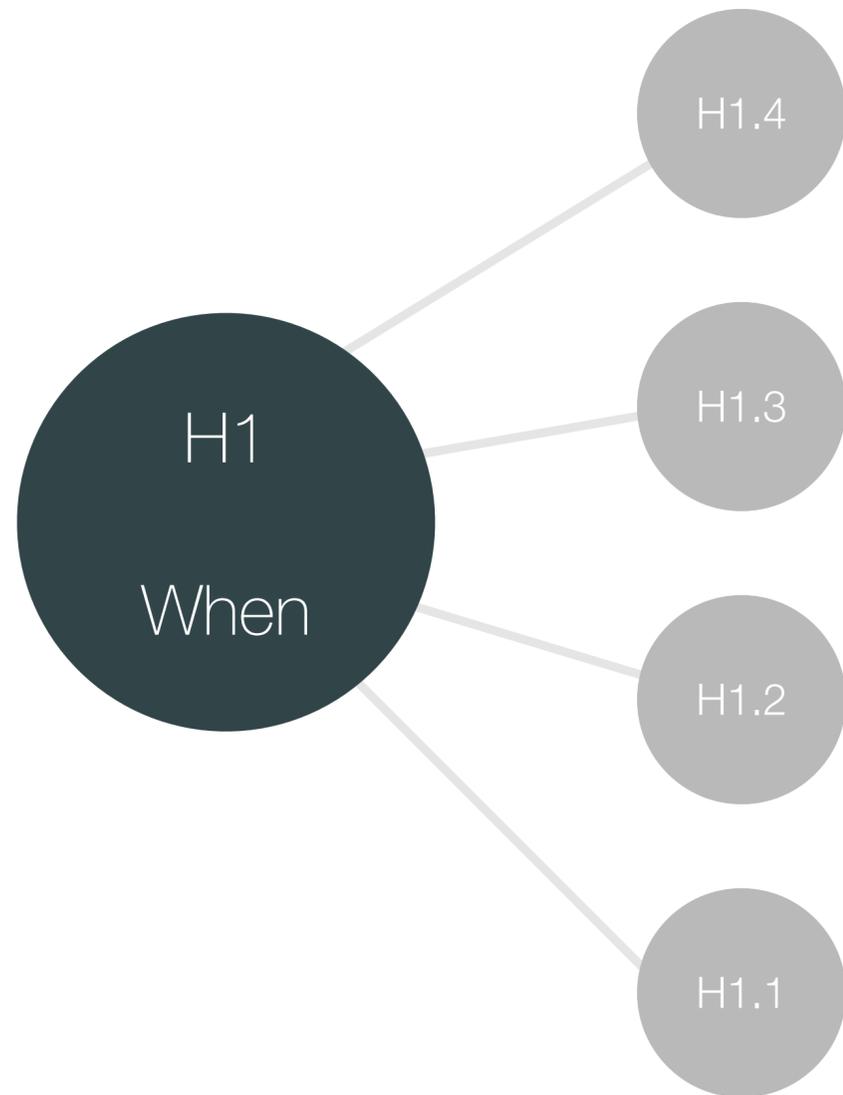


# HYPOTHESES





# RESULTS



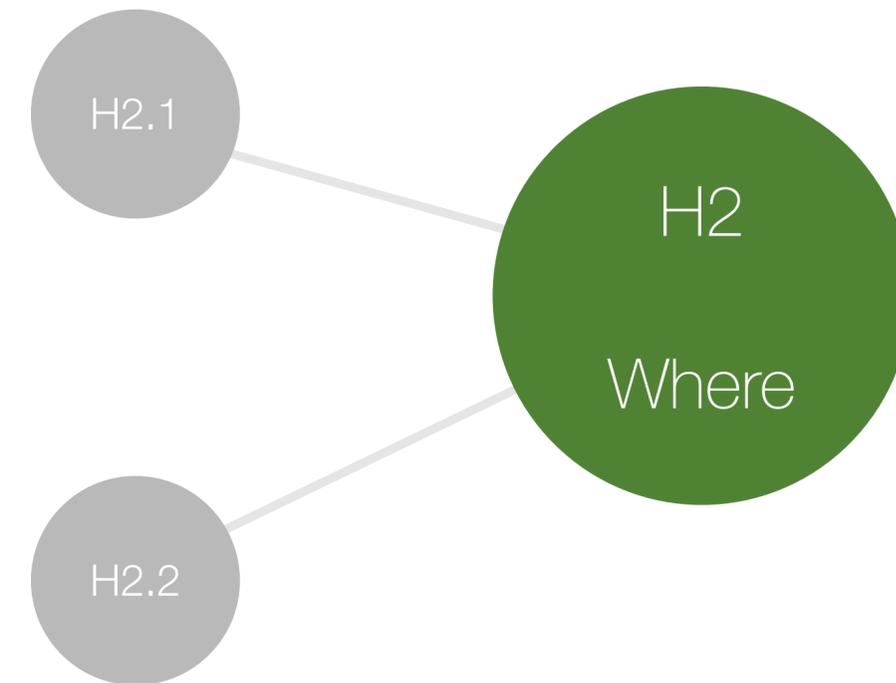
	Romani	Mali	Targa	Kirina
Visible faster?		<b>Faster</b> ( $M=20.87, SD=6.08$ )*		<b>Faster</b> ( $M=24.61, SD=8.40$ )*
Approach faster?		<b>Faster</b> ( $M=30.69, SD=6.24$ )*		<b>Faster</b> ( $M=32.52, SD=8.08$ )*
Contact faster?		<b>Faster</b> ( $M=34.93, SD=7.37$ )*	<b>Faster</b> ( $M=50.04, SD=24.22$ )*	<b>Faster</b> ( $M=35.77, SD=8.04$ )*
Solve faster?		<b>Faster</b> ( $M=74.10, SD=52.35$ )*		<b>Faster</b> ( $M=36.67, SD=7.32$ )*

\*= $P < .05$

# RESULTS

	 Romani	 Mali	 Targa	 Kirina
Touching the soiled canister first?	<b>5/20</b>	<b>5/20</b>	<b>6/20</b>	<b>6/20</b>
Solving the soiled canister?		<b>11/20*</b>	<b>8/20*</b>	

\*= $P < .05$

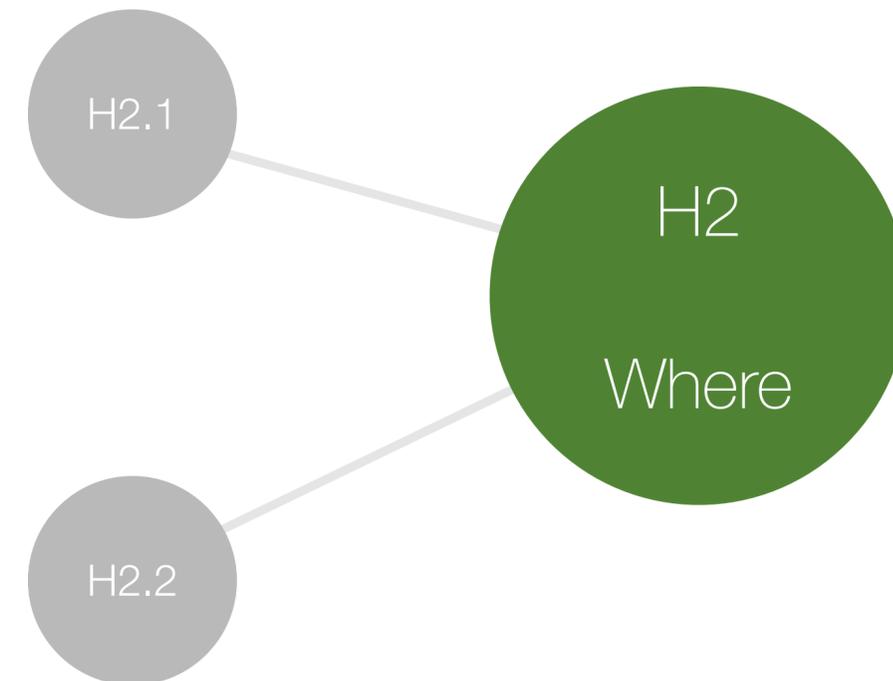


# RESULTS



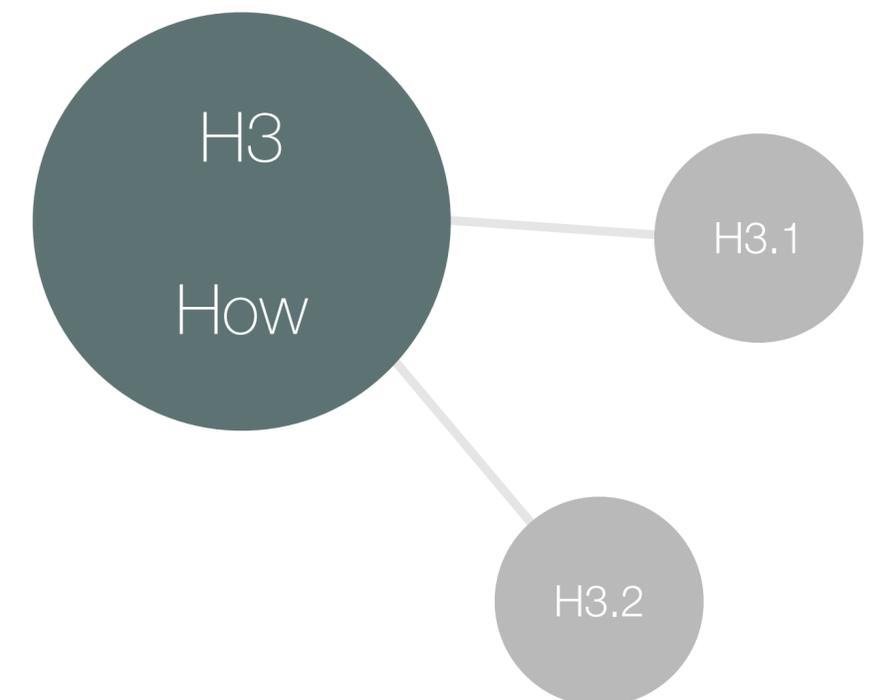
	Romani	Mali	Targa	Kirina
Touching the soiled canister first?	<b>5/20</b>	<b>5/20</b>	<b>6/20</b>	<b>6/20</b>
Solving the soiled canister?		<b>11/20*</b>	<b>8/20*</b>	

\*= $P < .05$



# RESULTS

Hypothesis 3: Elephants will utilize a similar technique or interact with a similar location of the canister as the model elephant.



# DISCUSSION

	Romani	Mali	Targa	Kirina
Visible faster?		<b>Faster</b> ( $M=20.87$ , $SD=6.08$ )*		<b>Faster</b> ( $M=24.61$ , $SD=8.40$ )*
Approach faster?		<b>Faster</b> ( $M=30.69$ , $SD=6.24$ )*		<b>Faster</b> ( $M=32.52$ , $SD=8.08$ )*
Contact faster?		<b>Faster</b> ( $M=34.93$ , $SD=7.37$ )*	<b>Faster</b> ( $M=50.04$ , $SD=24.22$ )*	<b>Faster</b> ( $M=35.77$ , $SD=8.04$ )*
Solve faster?		<b>Faster</b> ( $M=74.10$ , $SD=52.35$ )*		<b>Faster</b> ( $M=36.67$ , $SD=7.32$ )*
Touching the seeded canister first?	<b>5/20</b>	<b>5/20</b>	<b>6/20</b>	<b>6/20</b>
Solving the seeded canister first?		<b>11/20*</b>	<b>8/20*</b>	
Using the Same Technique?				
Similar location on the apparatus?				

# DISCUSSION

	Romani	Mali	Targa	Kirina
Visible faster?		<b>Faster</b> ( $M=20.87$ , $SD=6.08$ )*		<b>Faster</b> ( $M=24.61$ , $SD=8.40$ )*
Approach faster?		<b>Faster</b> ( $M=30.69$ , $SD=6.24$ )*		<b>Faster</b> ( $M=32.52$ , $SD=8.08$ )*
Contact faster?		<b>Faster</b> ( $M=34.93$ , $SD=7.37$ )*	<b>Faster</b> ( $M=50.04$ , $SD=24.22$ )*	<b>Faster</b> ( $M=35.77$ , $SD=8.04$ )*
Solve faster?		<b>Faster</b> ( $M=74.10$ , $SD=52.35$ )*		<b>Faster</b> ( $M=36.67$ , $SD=7.32$ )*
Touching the seeded canister first?	<b>5/20</b>	<b>5/20</b>	<b>6/20</b>	<b>6/20</b>
Solving the seeded canister first?		<b>11/20*</b>	<b>8/20*</b>	
Using the Same Technique?				
Similar location on the apparatus?				

# DISCUSSION

	Romani	Mali	Targa	Kirina
Visible faster?		<b>Faster</b> ( $M=20.87$ , $SD=6.08$ )*		<b>Faster</b> ( $M=24.61$ , $SD=8.40$ )*
Approach faster?		<b>Faster</b> ( $M=30.69$ , $SD=6.24$ )*		<b>Faster</b> ( $M=32.52$ , $SD=8.08$ )*
Contact faster?		<b>Faster</b> ( $M=34.93$ , $SD=7.37$ )*	<b>Faster</b> ( $M=50.04$ , $SD=24.22$ )*	<b>Faster</b> ( $M=35.77$ , $SD=8.04$ )*
Solve faster?		<b>Faster</b> ( $M=74.10$ , $SD=52.35$ )*		<b>Faster</b> ( $M=36.67$ , $SD=7.32$ )*
Touching the seeded canister first?	<b>5/20</b>	<b>5/20</b>	<b>6/20</b>	<b>6/20</b>
Solving the seeded canister first?		<b>11/20*</b>	<b>8/20*</b>	
Using the Same Technique?				
Similar location on the apparatus?				



© The Wild Elephant



© Center for Conservation and Research, Sri Lanka



© Space for Giants



© @supriyasahuia

# SHOULDERS OF GIANTS



Dr. Josh Plotnik



Sarah Jacobson



Also be sure to check out:

**P21:** Evaluating boldness in Asian elephants (*Elephas maximus*) using predator playbacks



CCC Lab



**P45:** Are giant pandas, a relatively solitary mammal, averse to inequity?

**P48:** Applications of elephant cognition research to conservation practice

# THANK YOU QUESTIONS?



Also be sure to check out:

**P21:** Evaluating boldness in Asian elephants (*Elephas maximus*) using predator playbacks

**P45:** Are giant pandas, a relatively solitary mammal, averse to inequity?

**P48:** Applications of elephant cognition research to conservation practice