

Evidence for Learning and Relationship with Nash

Recall our thesis...

Thesis:

Preferences/beliefs that lead to good outcomes become more frequent

Because of “prestige biased imitation”

(people who are successful are more likely to be imitated)

Thesis:

Preferences/beliefs that lead to good outcomes
become more frequent

Because of “reinforcement learning”
(preferences/beliefs that lead to good outcomes
are held onto more tenaciously)

Thesis:

Preferences/beliefs that lead to good outcomes
become more frequent

(even if not **aware** of why belief/preferences
lead to good outcomes)

Thesis:

Preferences/beliefs that lead to good outcomes become more frequent

→ Behavior will be consistent with Nash

(even if “just believe” or “just feels right”)

Today:

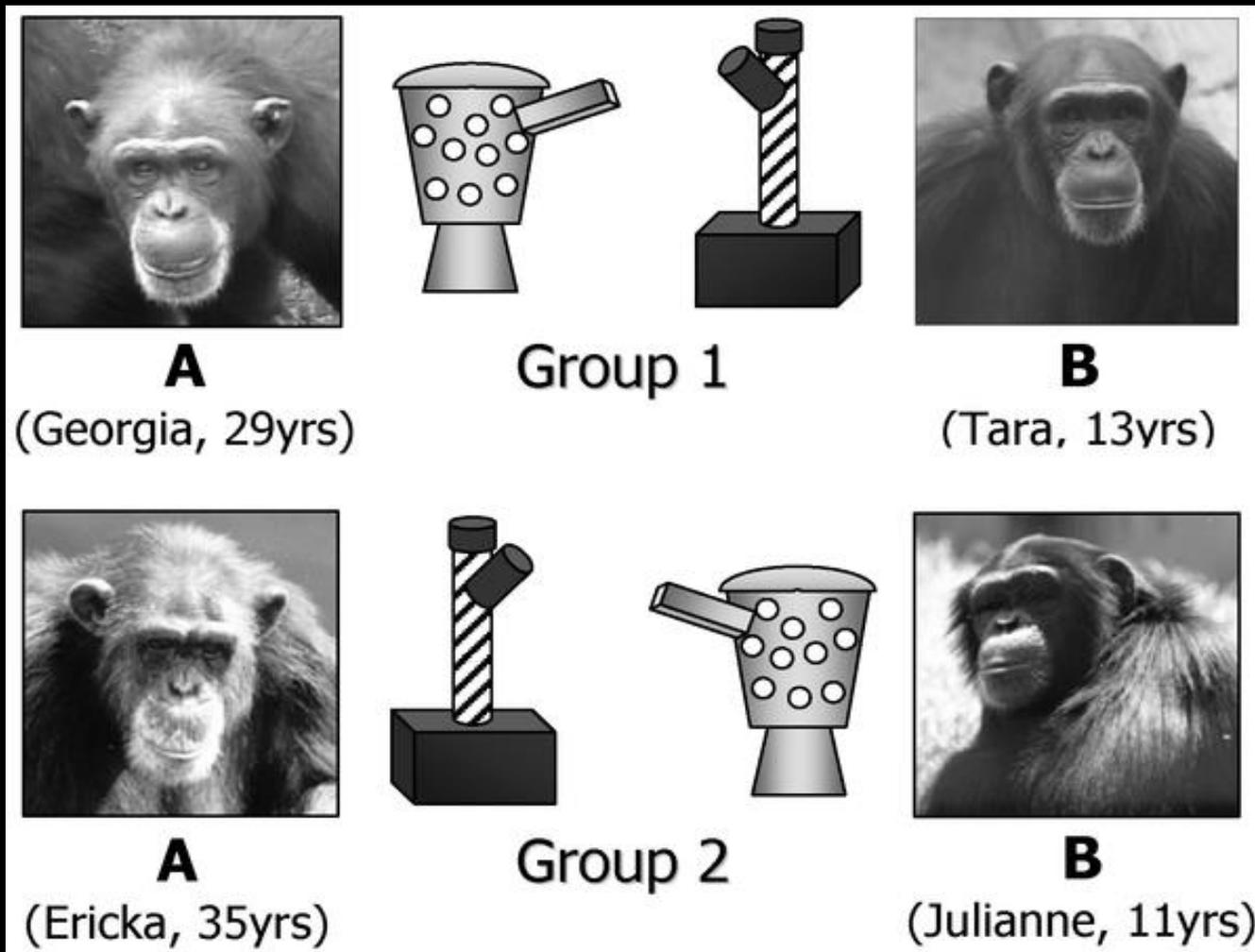
We will discuss the **evidence for learning**

And describe (in more detail) how this can
lead to Nash

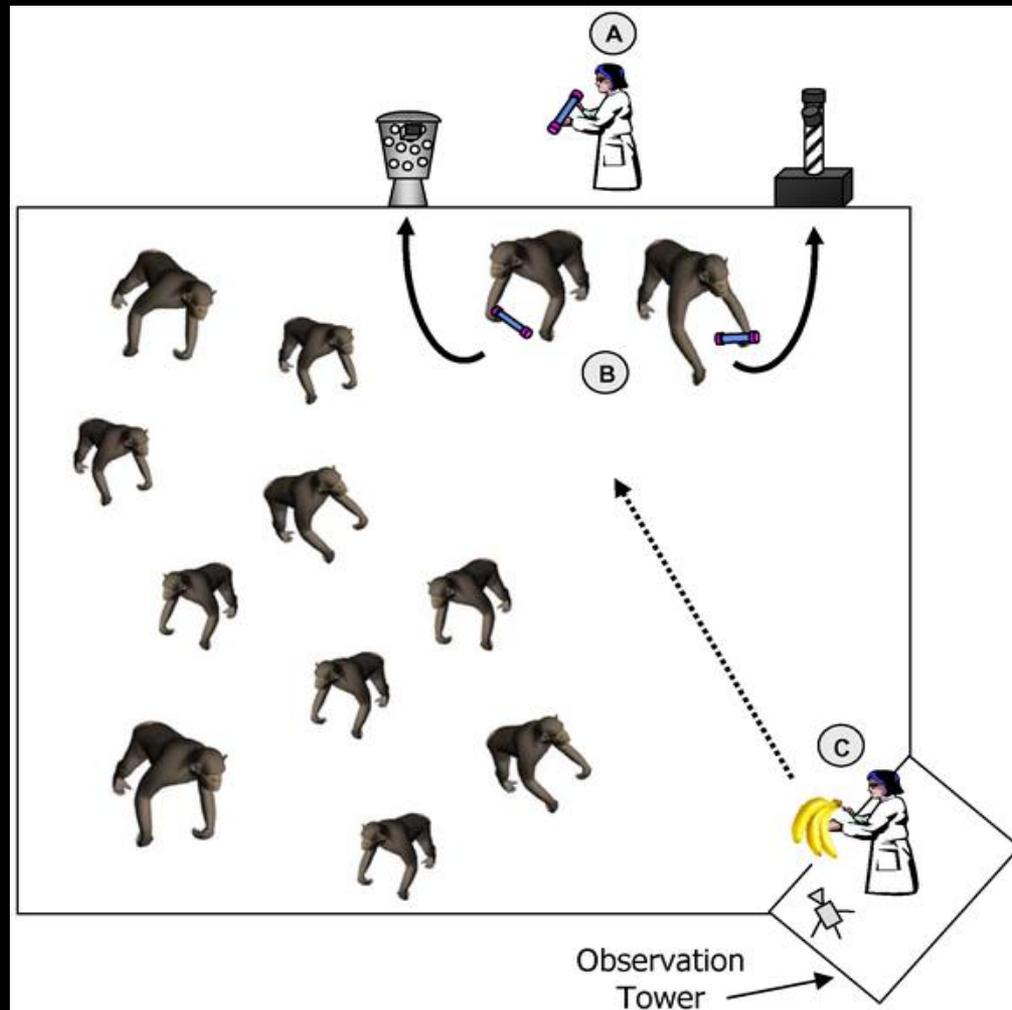
We will start by discussing the evidence for reinforcement learning...

Now let us discuss the evidence for prestige
biased imitation...

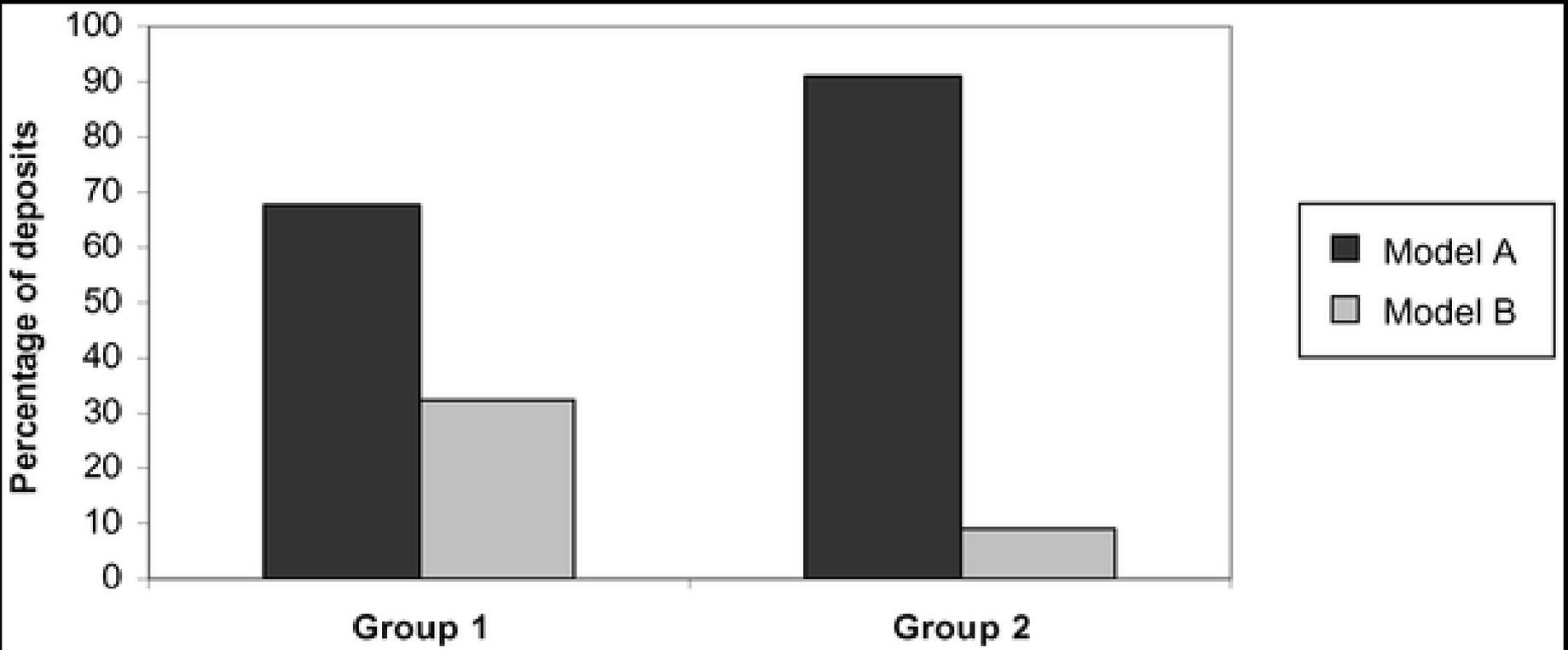
First study shows that chimpanzees selectively imitate prestigious individuals



Horner V, Proctor D, Bonnie KE, Whiten A, et al. (2010) Prestige Affects Cultural Learning in Chimpanzees. *PLoS ONE* 5(5): e10625.
 doi:10.1371/journal.pone.0010625. CC BY.
<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0010625>



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doi:10.1371/journal.pone.0010625 CC BY.

<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0010625>

Strong evidence in humans, too

Chudek et al (2011) show that 5 year olds
imitate prestigious individuals more

Step 1: Show subjects video of “prestigious” model getting attention, and another getting ignored

Step 2: Show both models expressing preferences over food, artifact, beverage, etc.

Step 3: Elicit subjects’ preferences over these categories

Table 1

Full models — Logistic regression coefficients (standard errors)

Predictors	Statistical models			
	Pooled	Artefact	Food and drink	Labelling
Prestige	.90 (.37) ^c	2.60 (1.30) ^b	1.42 (.67) ^b	−.57 (1.07)
Sex	.00 (.34)	−1.33 (1.43)	1.30 (.73) ^a	−2.90 (1.48) ^b
Order	−.56 (.33) ^a	−2.49 (1.50) ^a	−.42 (.57)	−1.94 (1.36)
Age	−.02 (.03)	−.08 (.14)	.03 (.06)	.01 (.10)
p_{LLRT}	.16	.04	.14	.13
n	100	23	44	23

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Final project?

Show that prestige biased imitation exists for traits that make people prestigious

“prestige biased instruction” works similarly

Instruction=explicitly told what to do

(instead of imitating)

Prestige biased=More likely to take advice from
someone who is doing well

Notice that any of these three process may lead to useful behaviors!

For example:

Potty training

Tying shoe-laces

Calling mom

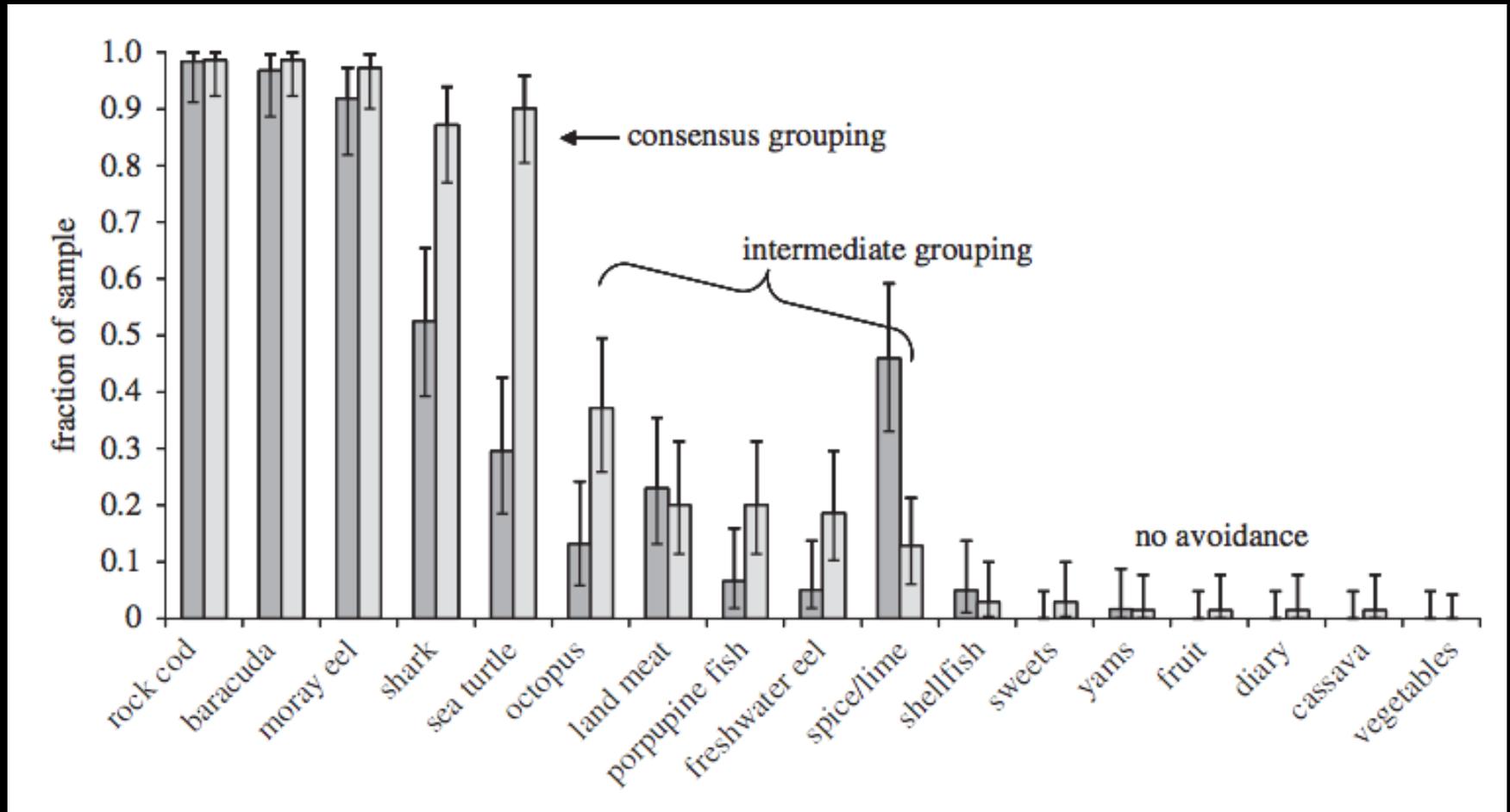
Learning how to write referee reports

Recall that there is no need to be aware of the “usefulness” of the behaviors

In Fiji, pregnant women adopt food taboos that protect them from sickness based on superstition

Source: Henrich and Henrich 2010

Fijian Food Taboos



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Consensus grouping are most likely to carry
Ciguatera, a dangerous toxin

Poisoning falls during pregnancy

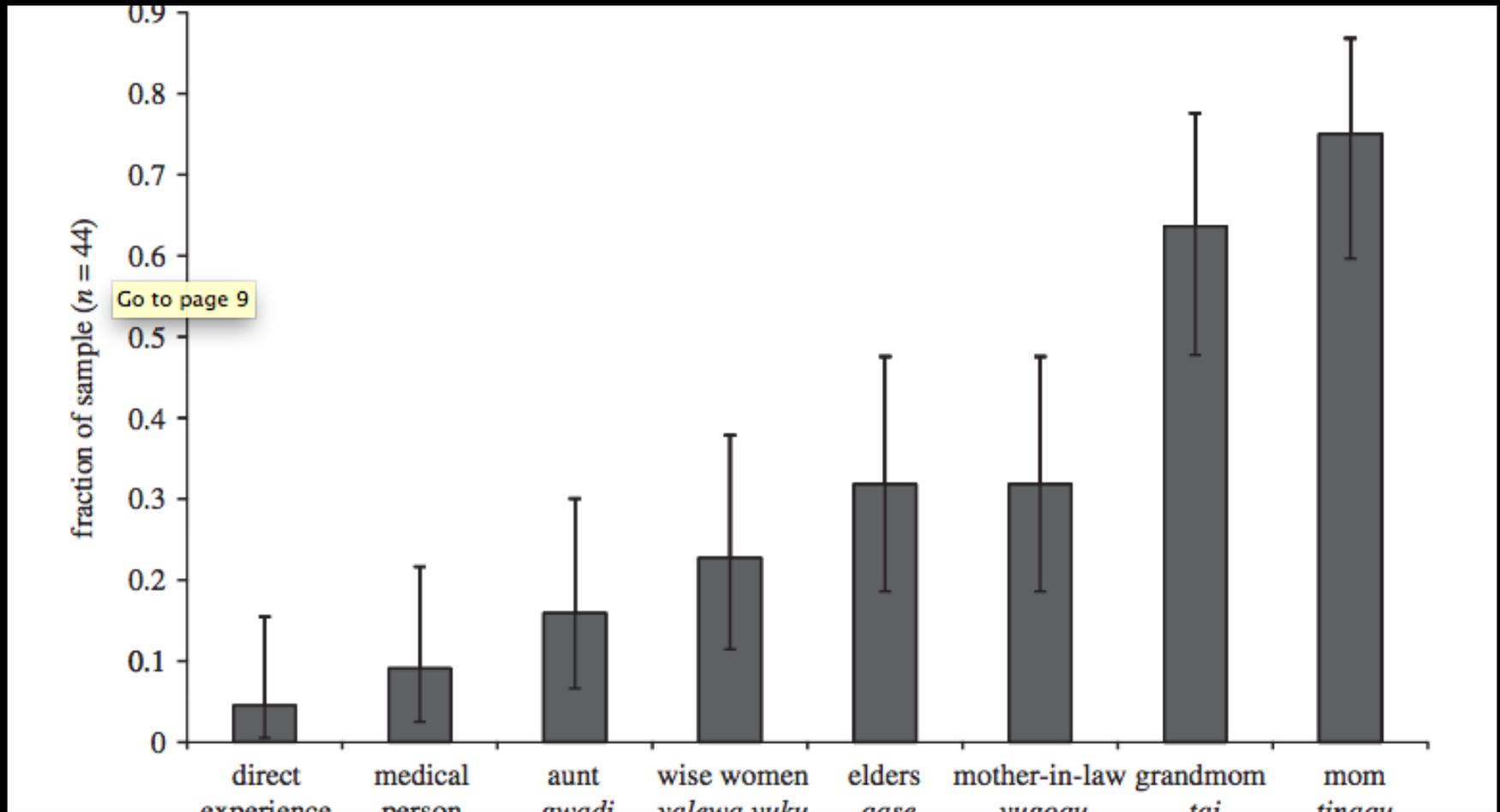
number	relevant periods	(poisoning per year)	signed-rank p -value
(i)	during pregnancy	0.043	0.0008
(ii)	during the final 28 weeks of pregnancy	0.048	0.0011
(iii)	during breastfeeding	0.027	0.0001
(iv)	during pregnancy and breastfeeding	0.033	0.0005
(v)	adulthood not	0.070	n.a.

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But Fijian women don't know this

“the violation of [food taboos] is perceived to carry social or supernatural sanctions”

Where did they learn these taboos?



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All over the world, people use spices for the
same reason

Source: Billing and Sherman 1998 and 1999

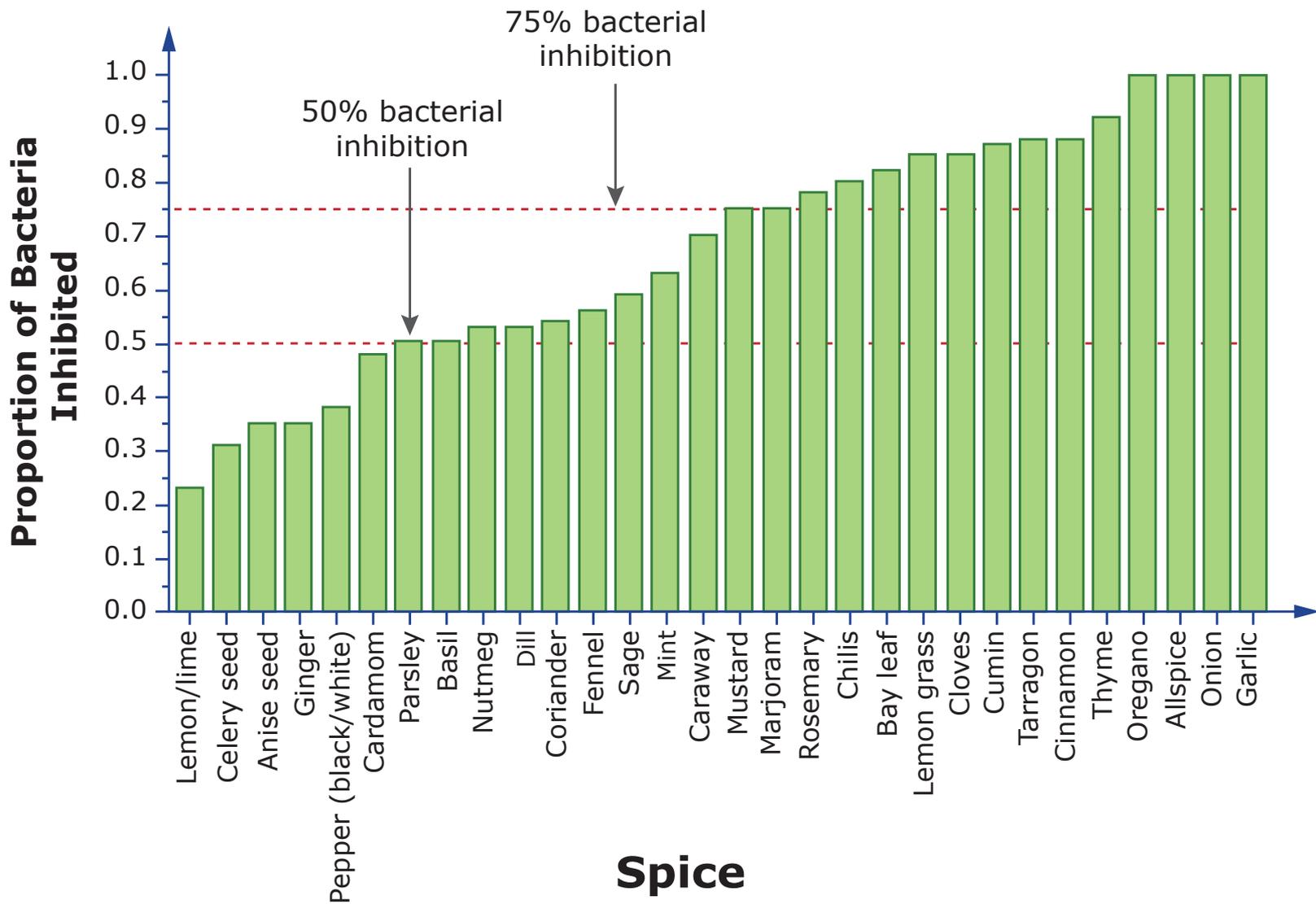


Image by MIT OpenCourseWare.

Spices are used most where they are most useful

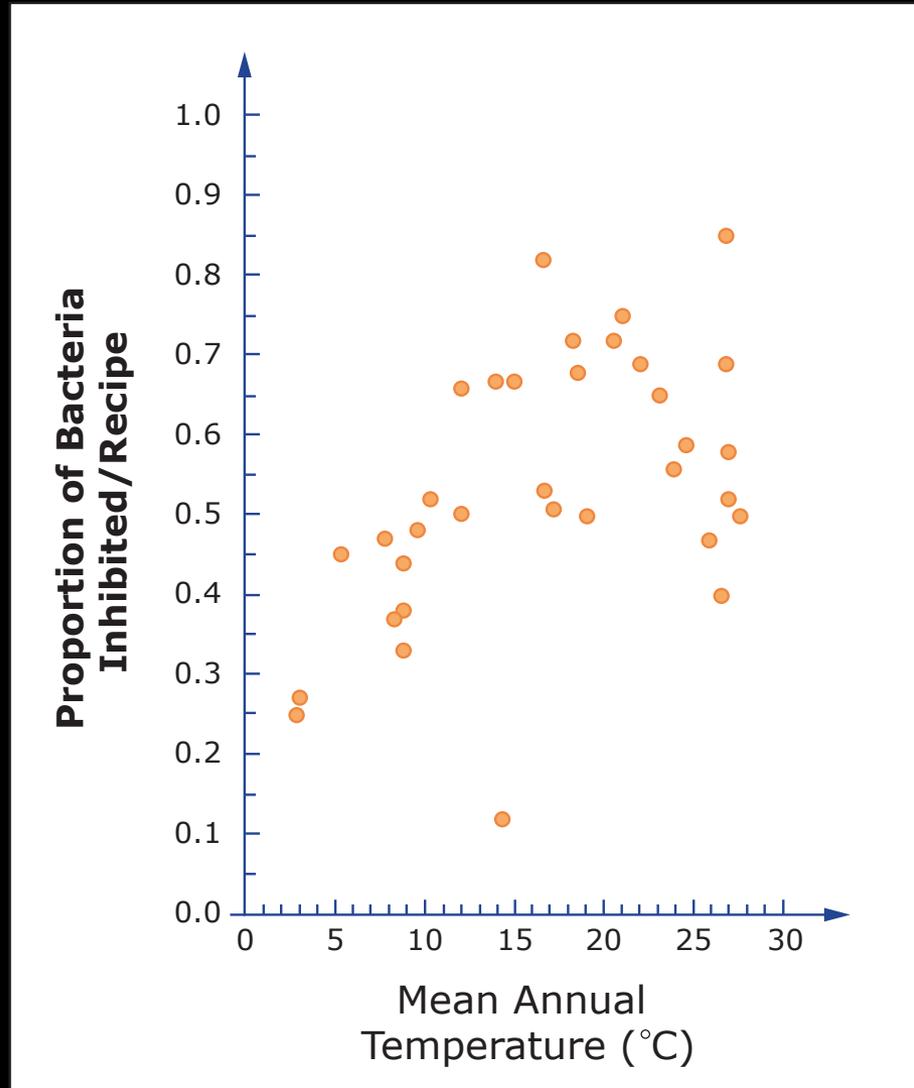


Image by MIT OpenCourseWare.

People use spices because they like the taste,
not because they know of their antibacterial
power

Evidence: usage patterns persist after the
introduction of refrigeration

People's taste for spices is learned, not evolved

Evidence: Children of immigrants adopt local tastes

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14.11 Insights from Game Theory into Social Behavior
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