Let's talk structure

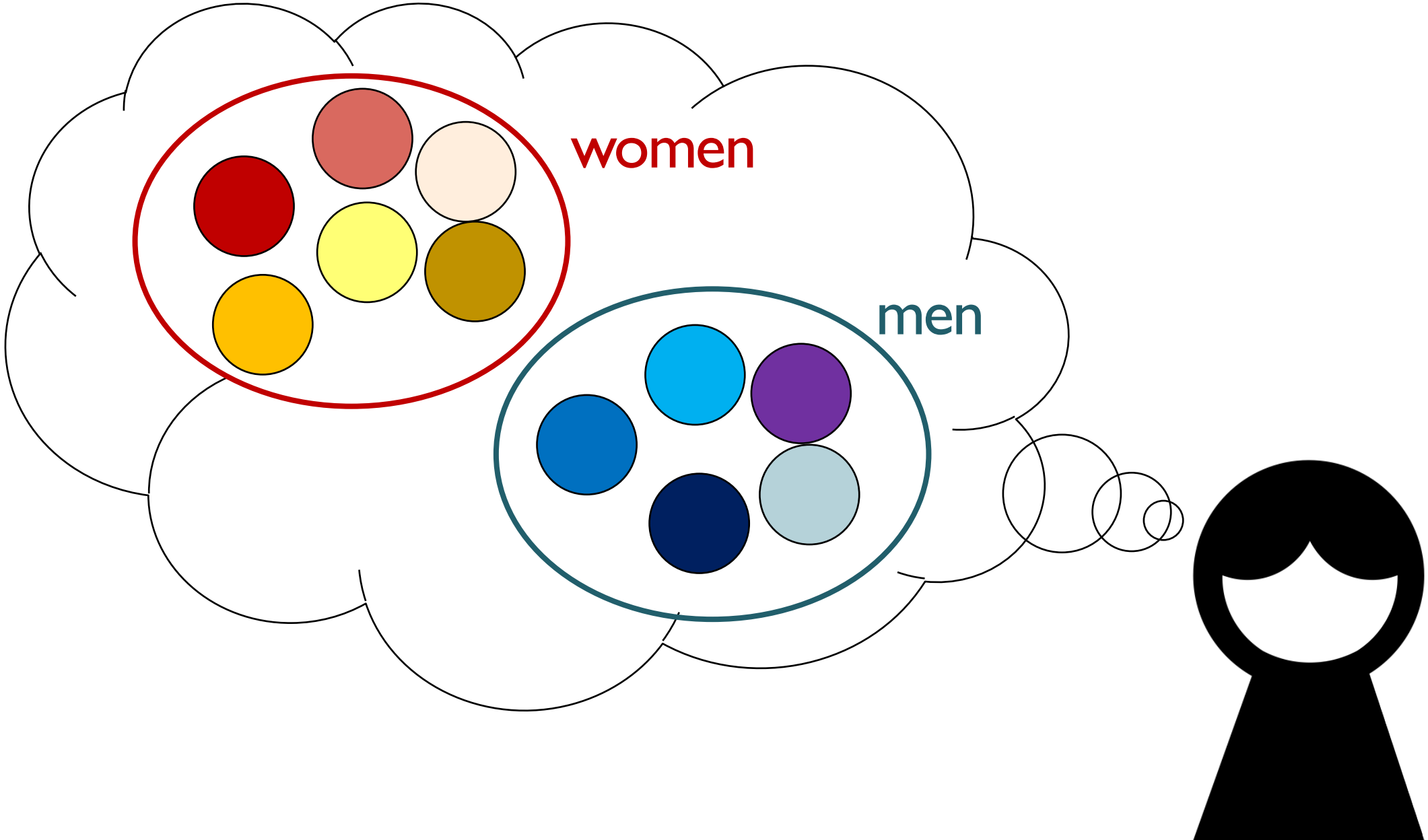
the positive consequences of structural representations of social categories

Marianna Zhang

3rd year PhD student

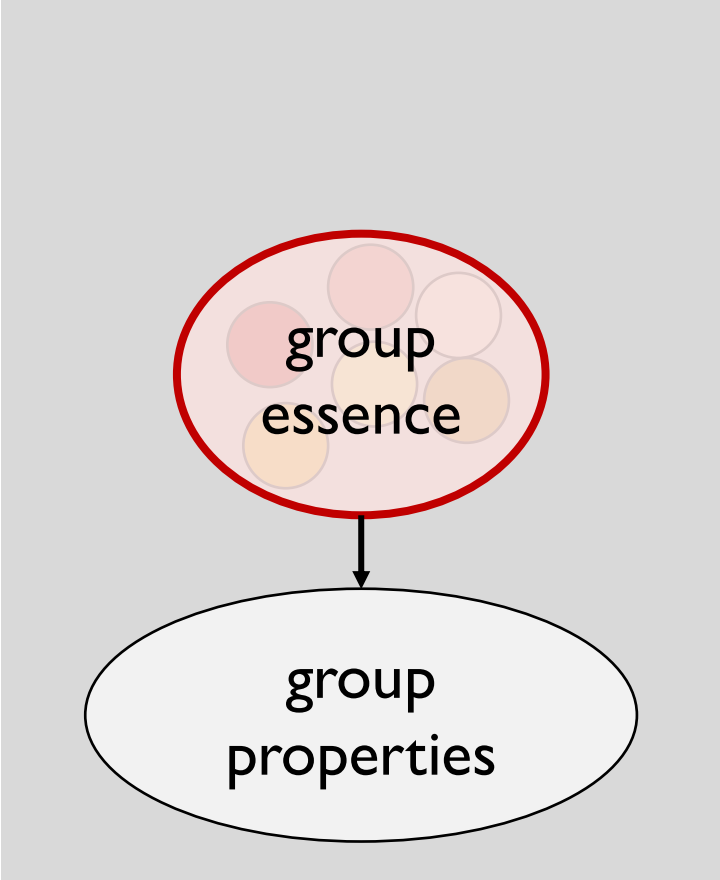
Devo brownbag
5.19.2021

We structure the social world using categories.



how *do* we represent social categories?

essentialism

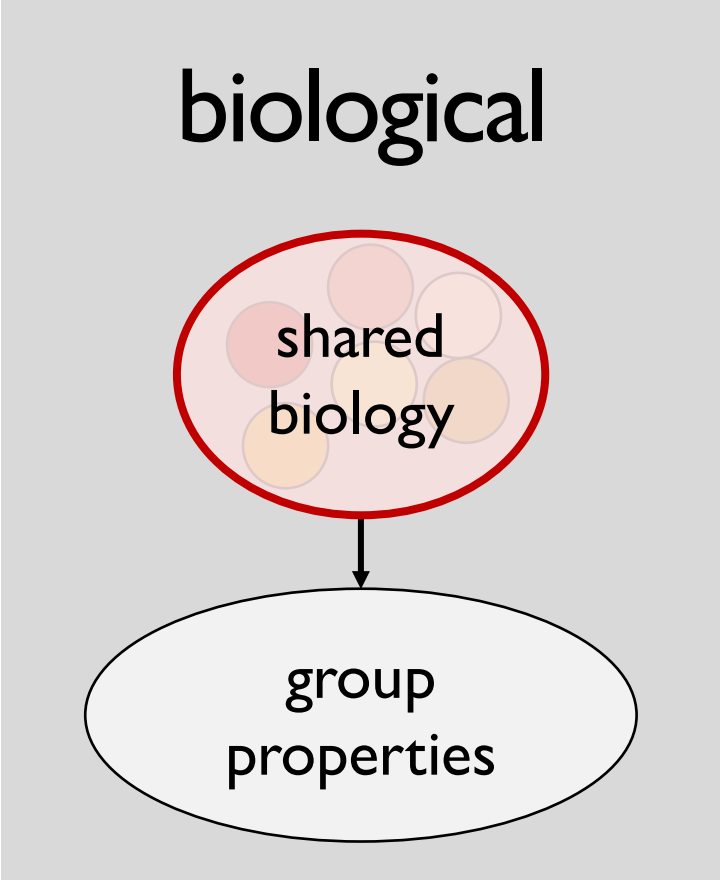


Category members share some internal **essence**

that causes typical category properties.

Gelman (2003)

essentialism



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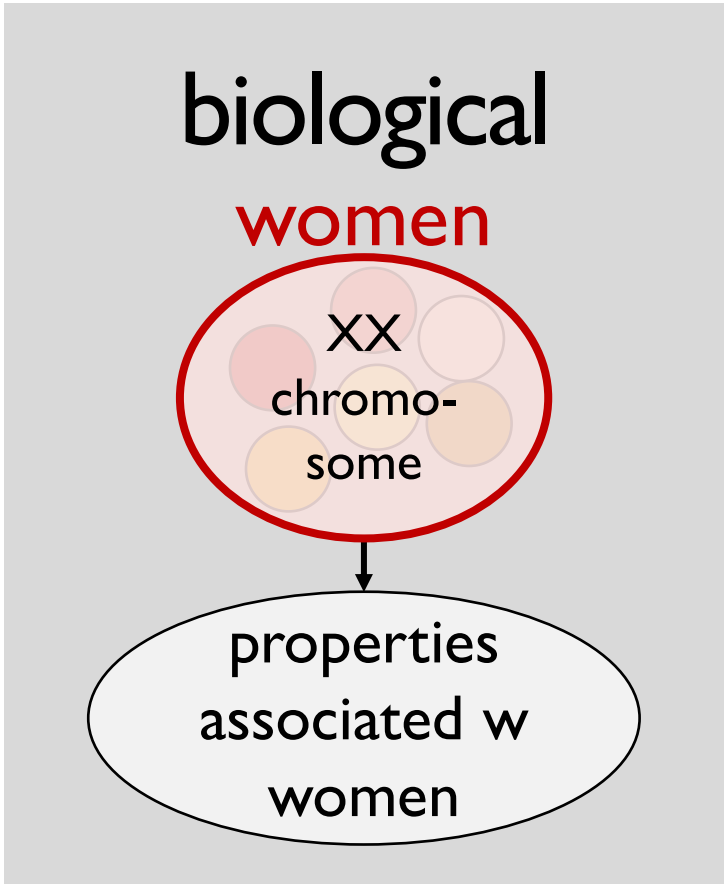
essentialism



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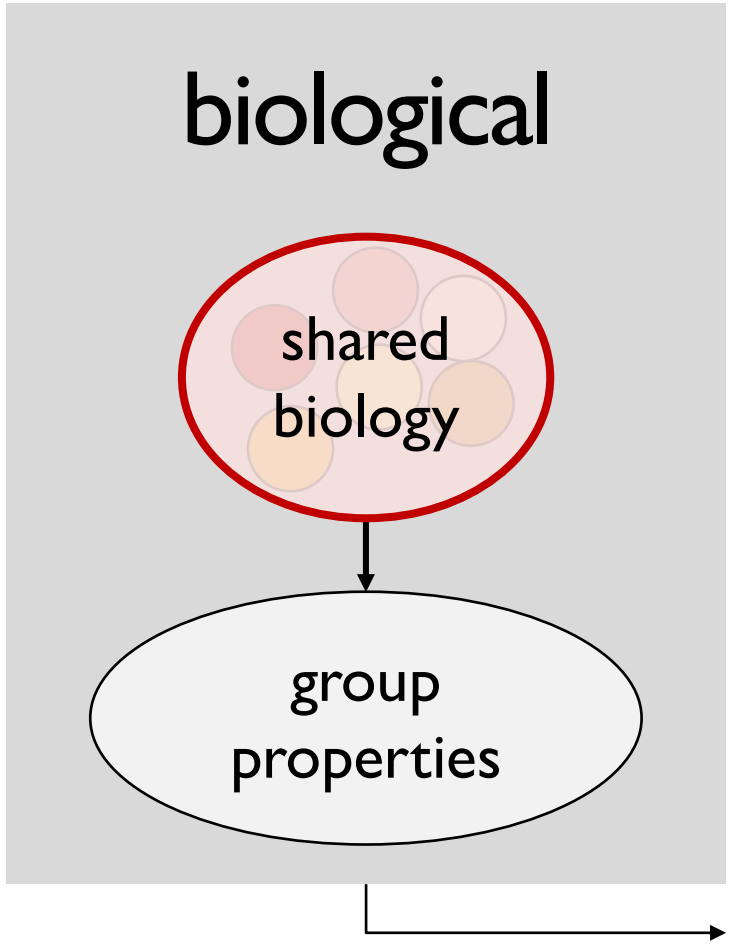


Category members share some internal **essence**

(often cached out as shared biology)

that causes typical category properties.

problematic consequences:

1) what is the case

- group-based generalization (stereotyping)

2) what should be the case

- group properties seen as natural and just, counter-stereotypical examples seen as "wrong"

…

1) Taylor, Rhodes & Gelman (2009), 2) Levy et al. (1995)

a review: Rhodes & Moty (2020)

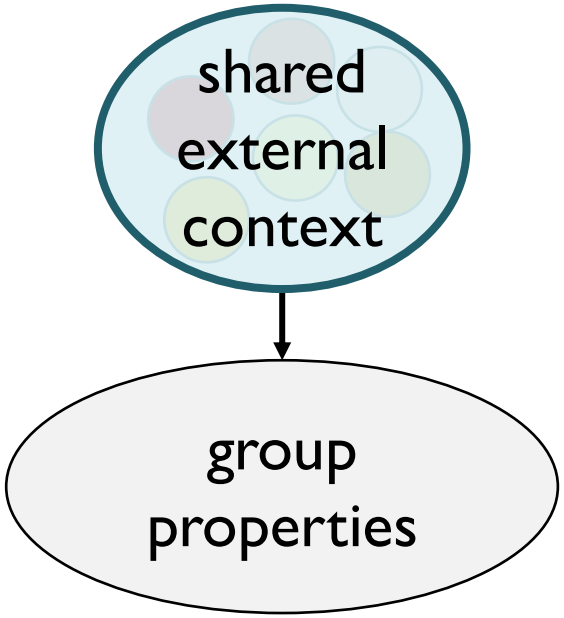
how *should* we represent social categories?

essentialism

biological

Category members share a **stable external context**.

structural

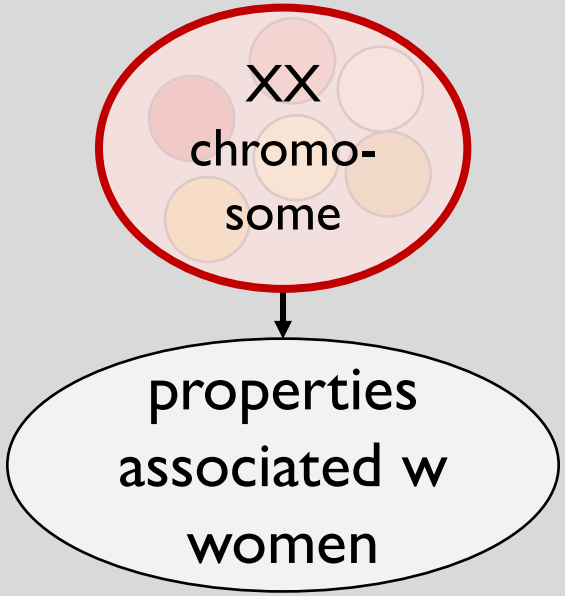


Haslanger (2000), Scott (1986)

essentialism

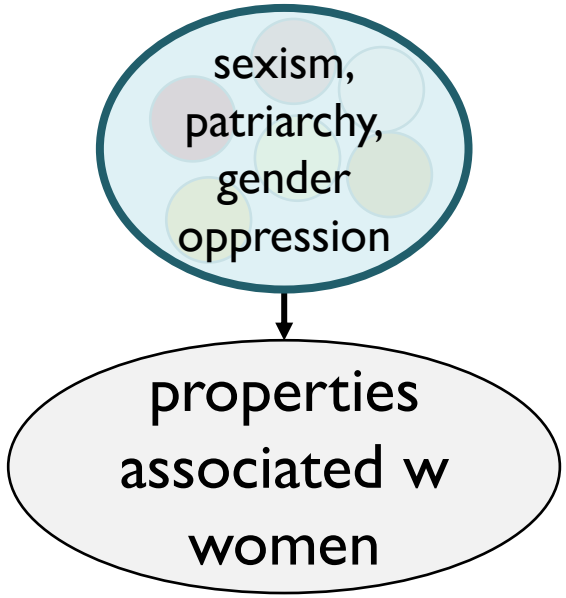
biological

women



structural

women

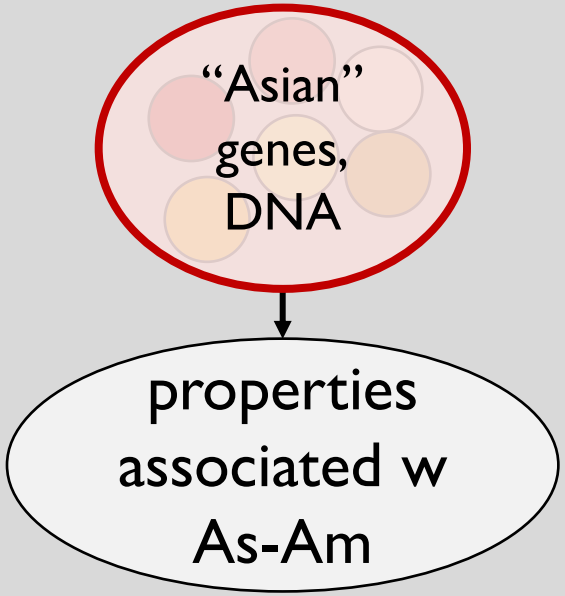


Haslanger (2000), Scott (1986)

essentialism

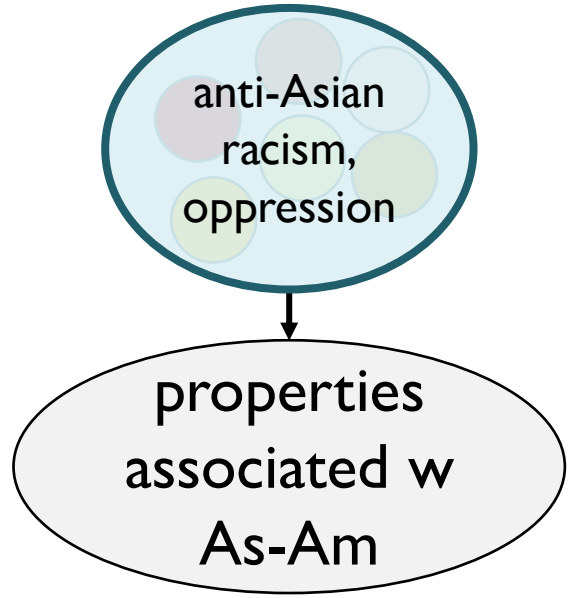
biological

Asian-Americans



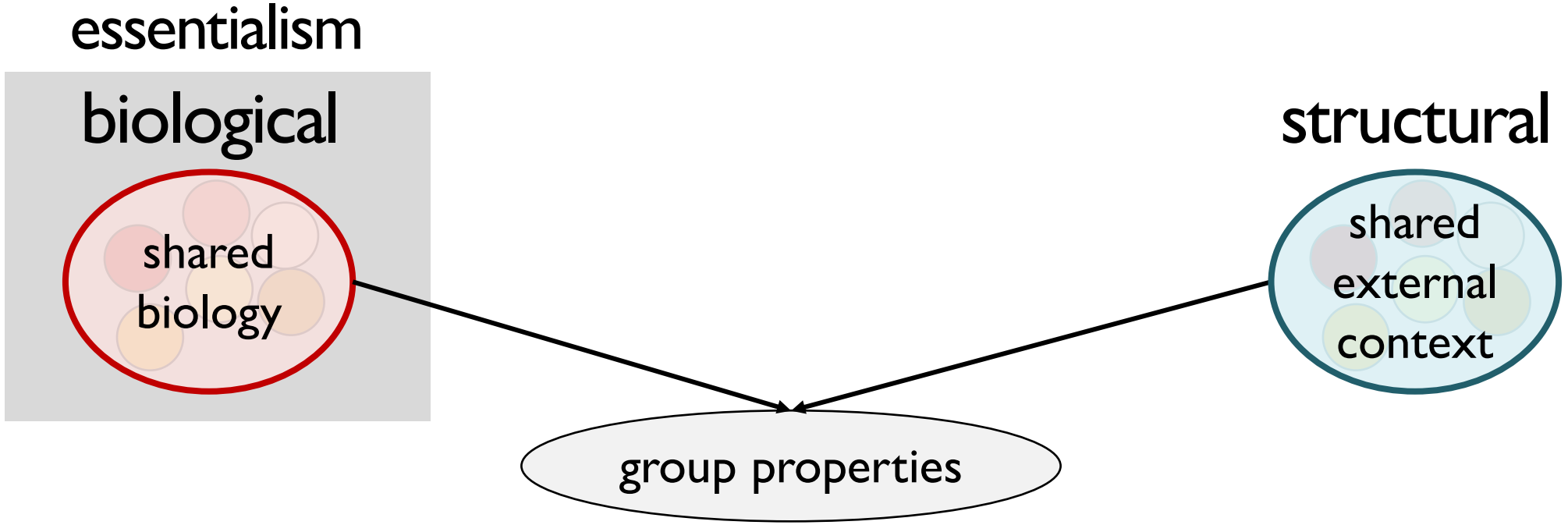
structural

Asian-Americans



Yuji Ichioka, founding of the Asian American Political Alliance, UC Berkeley (1968)

1) Could structural representations be a **more positive** alternative to essentialism?



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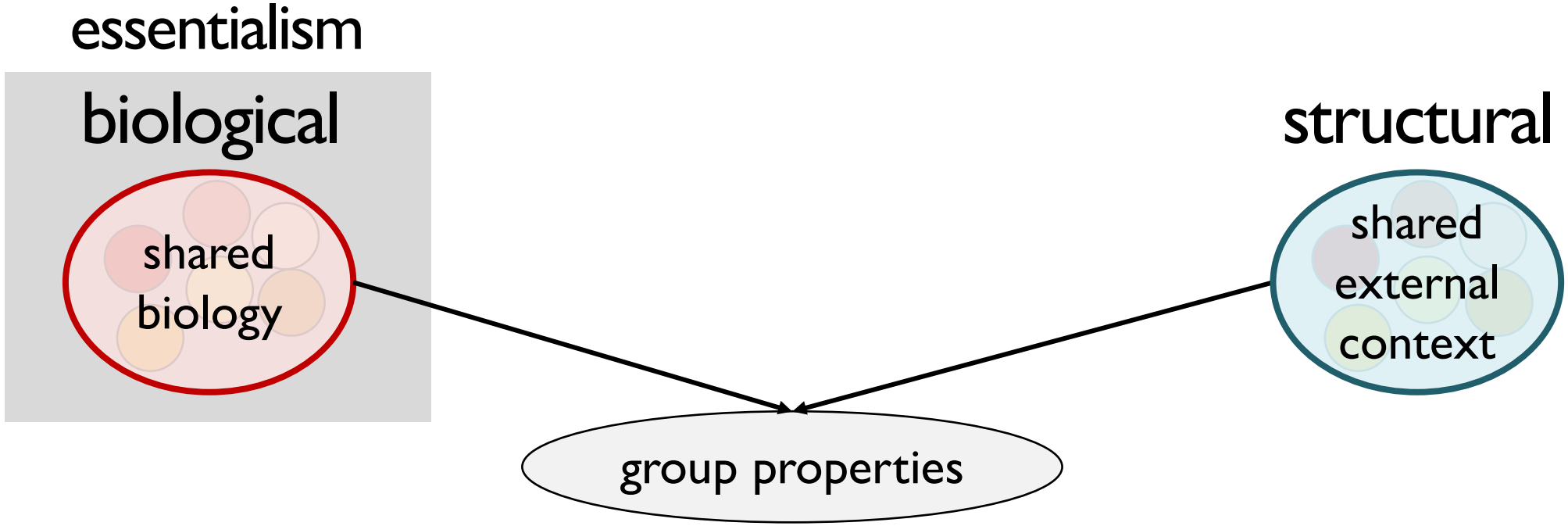


problematic consequences:

1) what is the case

- group-based generalizations (stereotyping)

2) what should be the case

- justifies properties as natural and normative

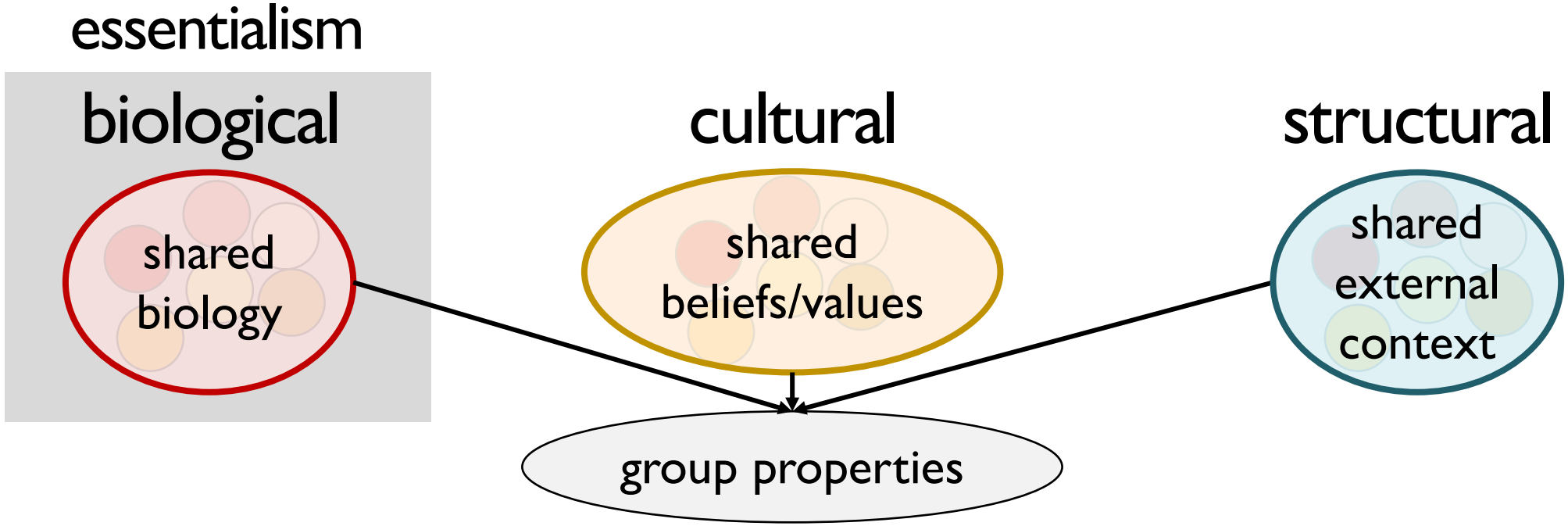
better consequences?

1) what is the case

- context-based generalizations

(Vasilyeva et al, 2019/2020)

2) Where does characterizing a group in terms of **group culture** fit in?



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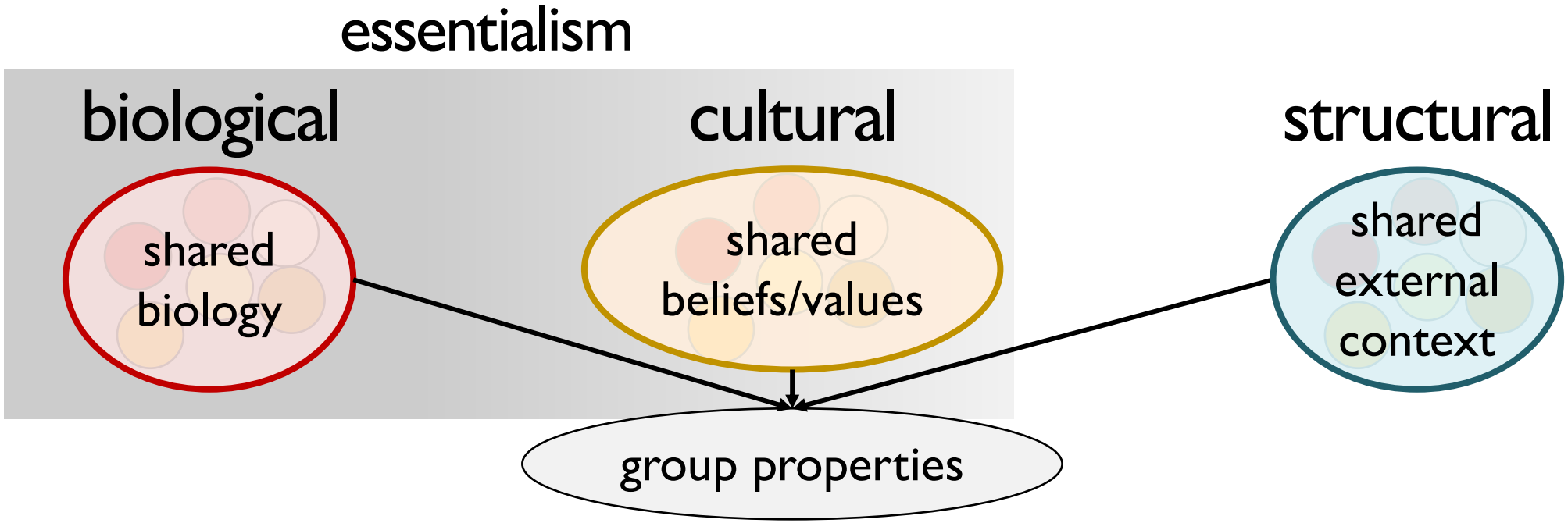

Bailey, Knobe & Newman (2021)

1) Could structural representations be a **more positive** alternative to essentialism?

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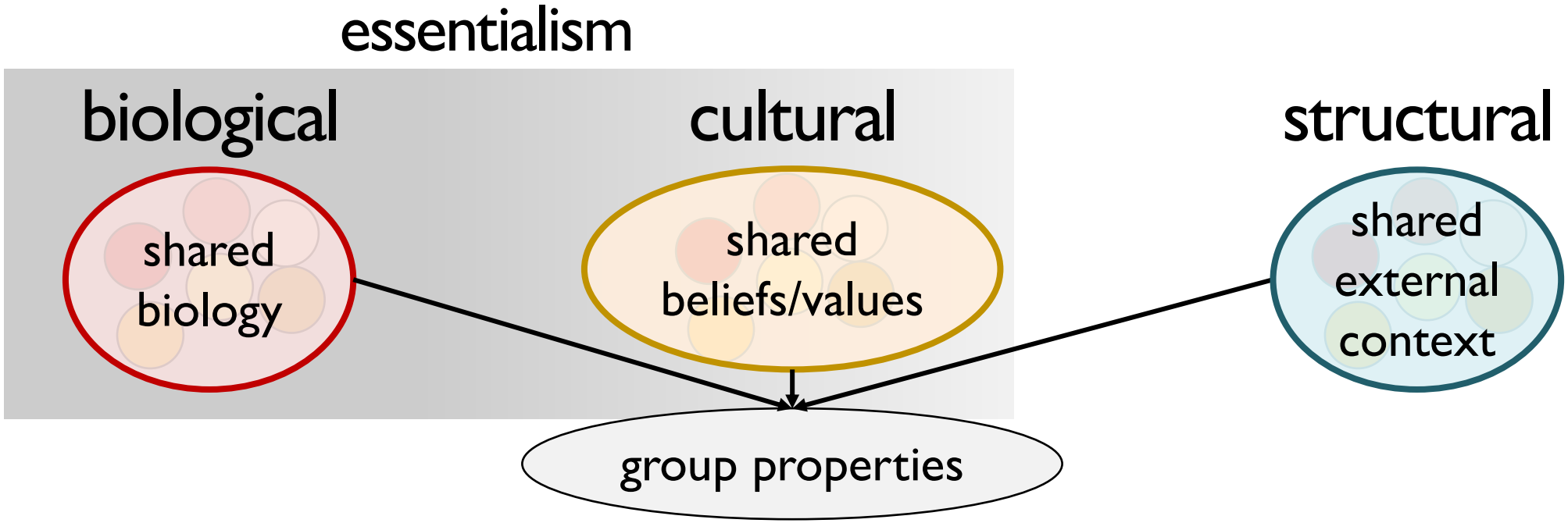
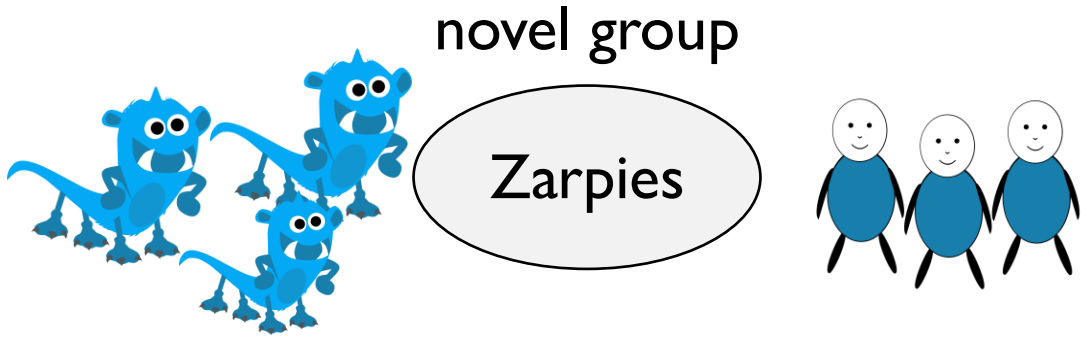
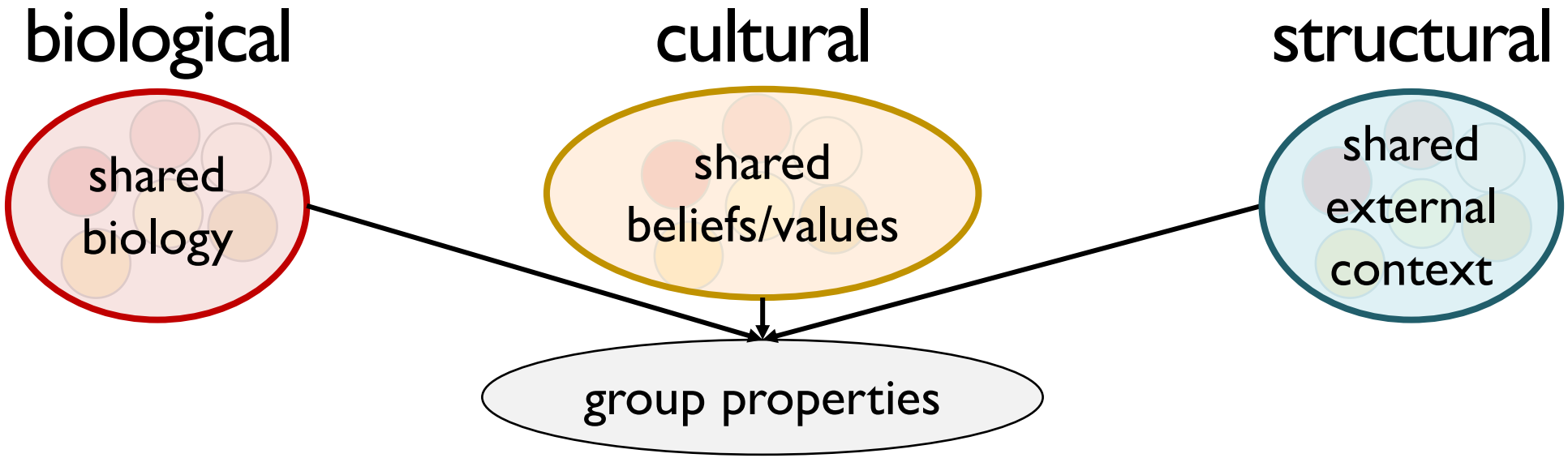
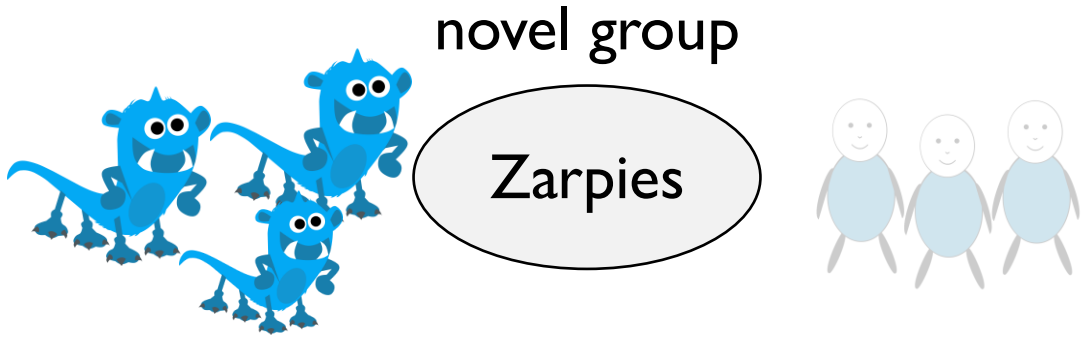




induce one of these representations…





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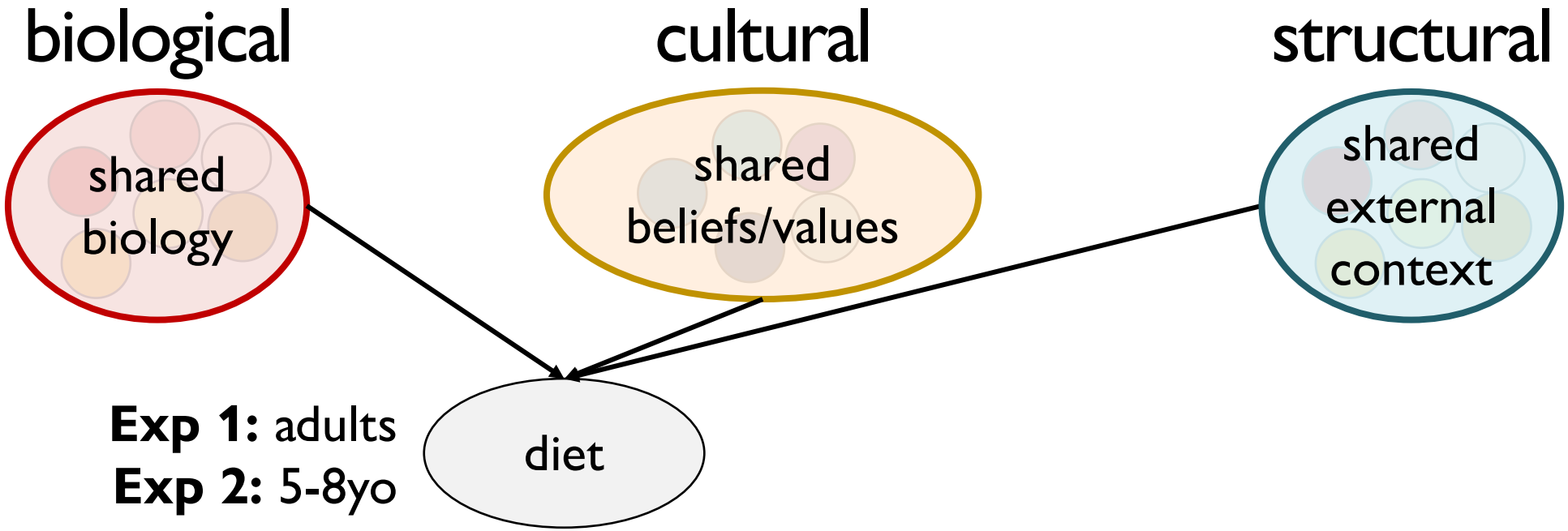
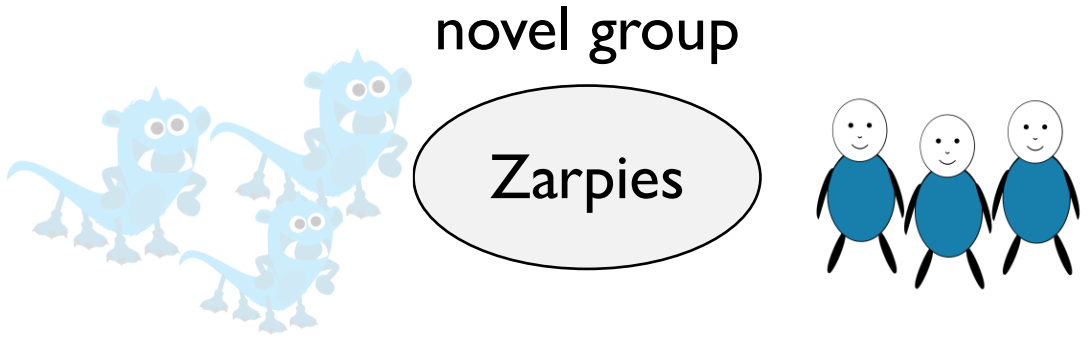




induce one of these representations…

biological

shared biology

cultural

shared beliefs/values

structural

shared external context

Exp 1: adults
Exp 2: 5-8yo

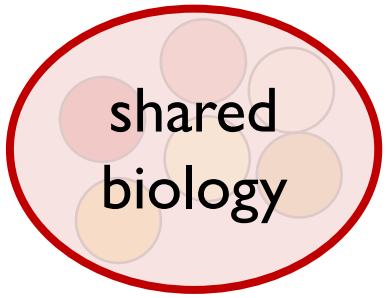
diet

low-status occupation

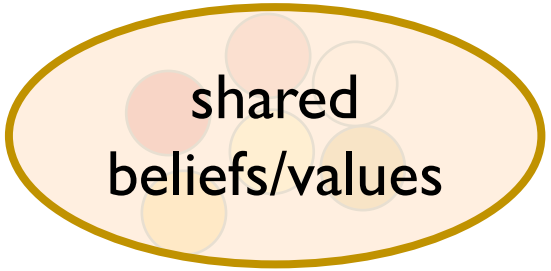
Exp 3: adults

induce one of these representations…

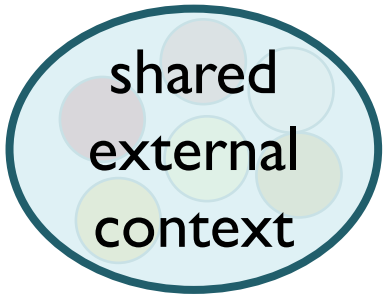
biological



cultural



structural



look at their different consequences…

1) what is the case

- generalize based on group vs context

2) what should be the case

- attitudes towards non-conformity
- attitudes towards present disparities

3) how to change what is the case

- intervene on group vs context

group diet

adults

5-8yo

Why does a group have a certain diet?

type in the chat!

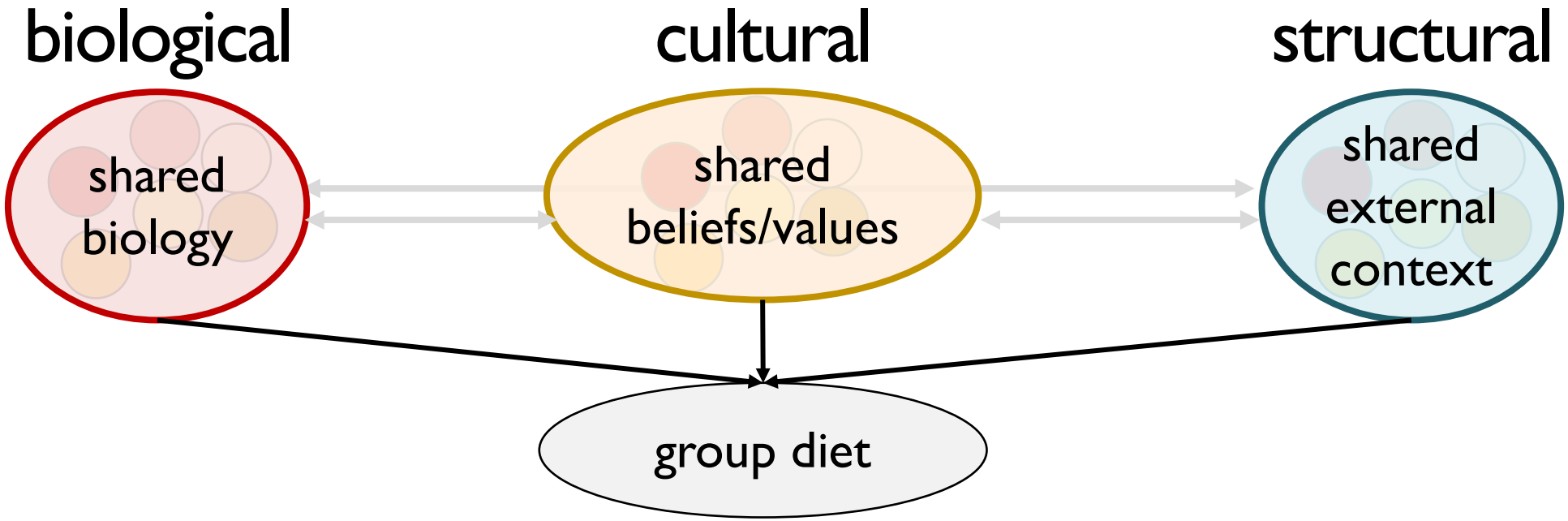
East Asian people & lactose intolerance (LCT gene for lactase)

"Our bodies best digest…" (folk biology)

religious beliefs (eg vegetarian, halal, kosher)

Northern Chinese & noodles

Southern Chinese & rice (climate for growing rice vs wheat)



Why does a group have a certain diet?

group has characteristic **physiology** that make some foods **suitable or not suitable to eat**

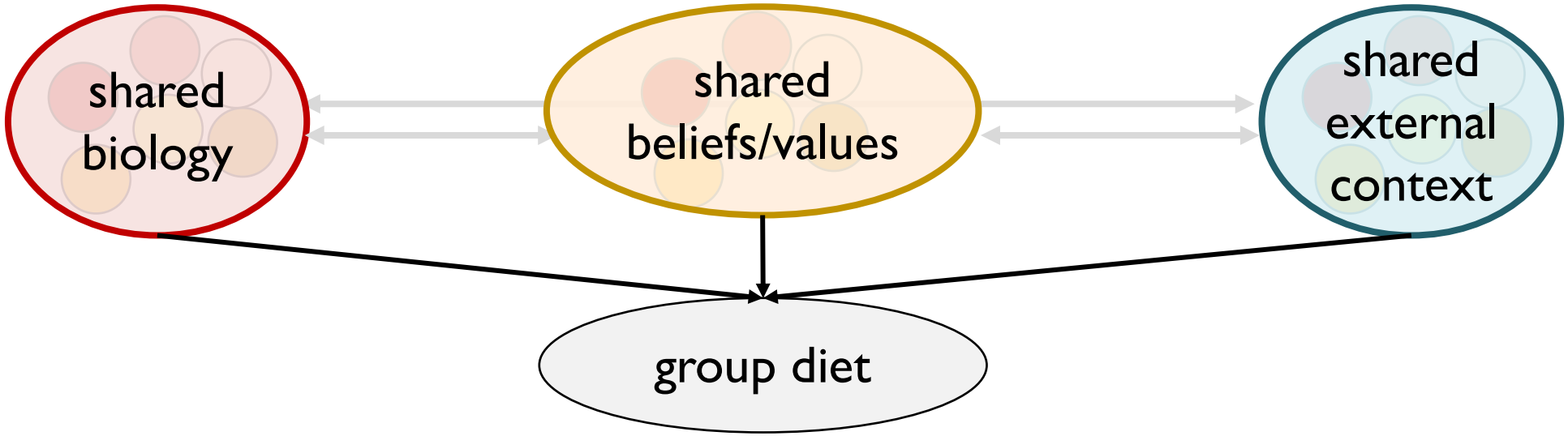
group has characteristic **shared beliefs, values** that make some foods **taboo**

group's **environment** makes some foods **available or not available**

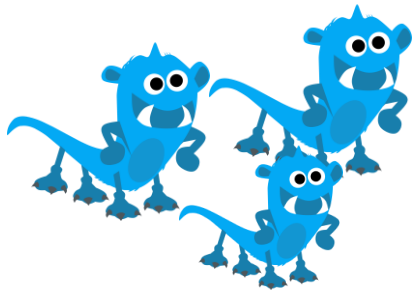
allergies / intolerance

taboo food restrictions

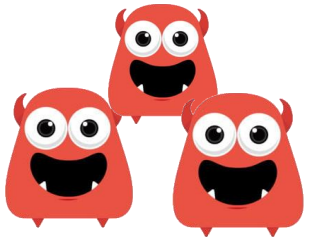
what grows where



*group labels, pictures, berries counterbalanced for 5-8yo



Zarpies

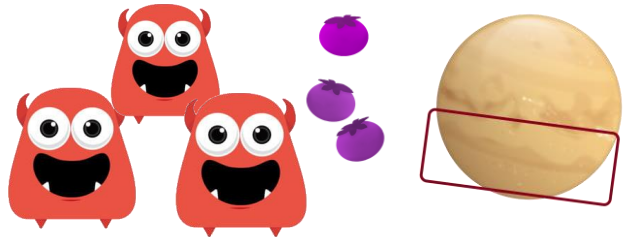


Vawns

Exp 1: adults (n=167, ~55/condition)
Exp 2: 5-8yo (n=67, ~22/condition)

*group labels, pictures, berries counterbalanced for 5-8yo

Zarpies live on this side of the planet.
Zarpies eat starberries.



Vawns live on the other side of the planet.
Vawns eat roundberries.

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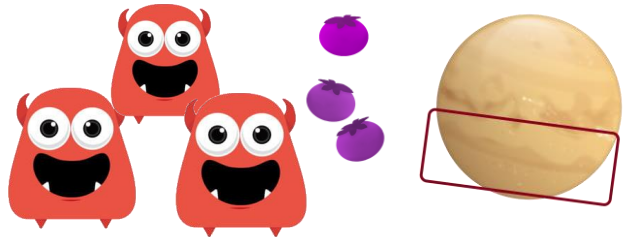

Vawns live on the other side of the planet.
Vawns eat roundberries.

Because of the way their bodies work, other berries make them sick, so …

allergies / intolerance

shared biology

Because they believe eating other berries is bad luck, …

taboo food restrictions

shared beliefs/values

Because starberries are the only berries that grow in the area where they live, …

what grows where

shared external context

…Zarpies eat starberries.

group diet

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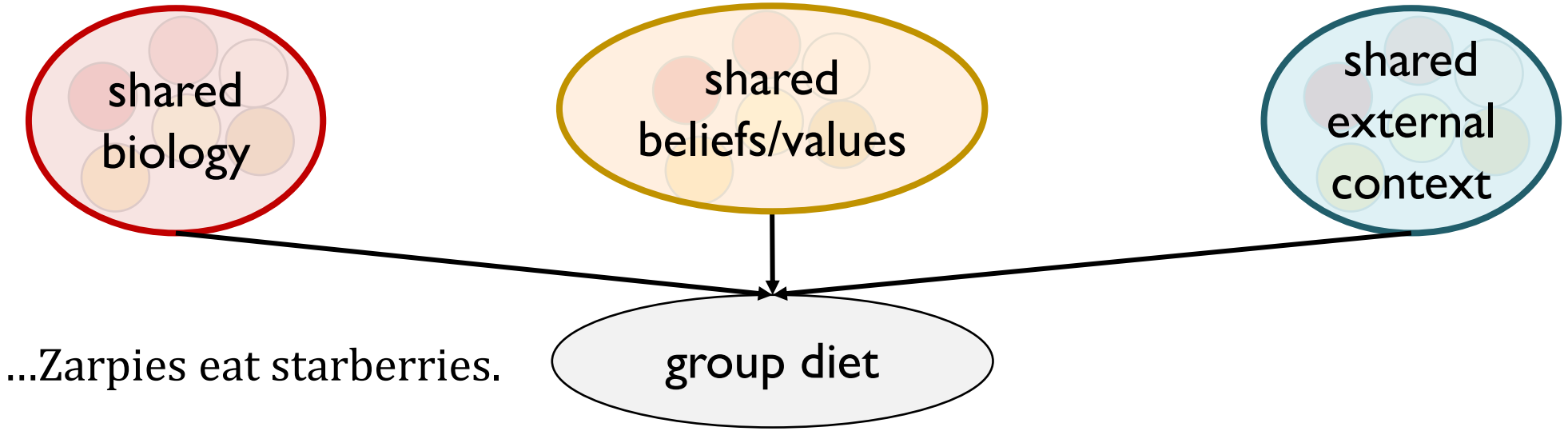
Exp 2: 5-8yo (n=67, ~22/condition)



look at their different consequences…

presented in fixed order: 2, 1, 3

1) what is the case

- generalize based on group vs context

2) what should be the case

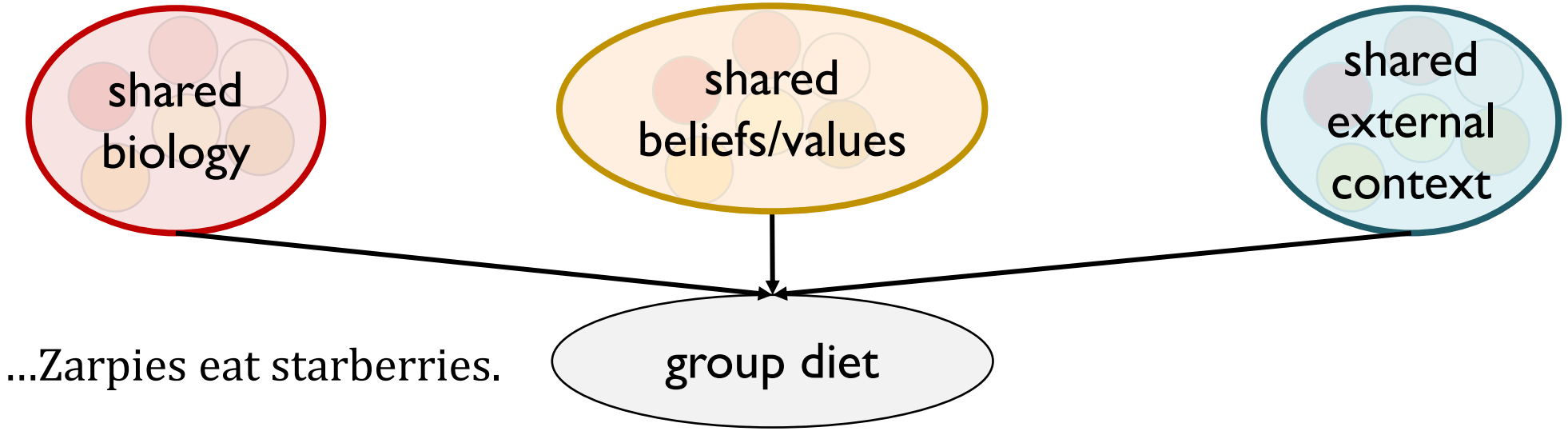
- attitudes towards non-conformity

3) how to change what is the case

- intervene on group vs context

Exp 1: adults (n=167, ~55/condition)

Exp 2: 5-8yo (n=67, ~22/condition)



structural representations could lead to…

OSF

1) *what is the case*
generalize based on context vs group

2) *what should be the case*
less negative attitudes about non-conformity

3) *how to change what is the case*
intervene on context vs group

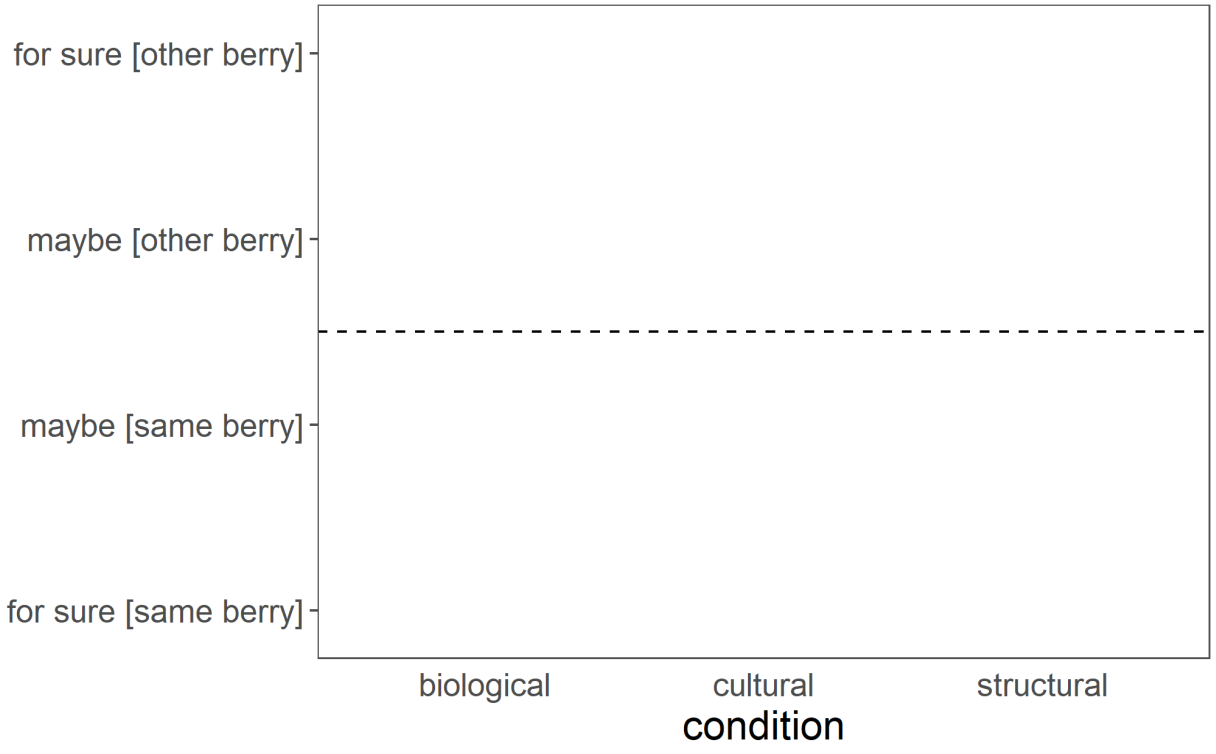
Exp 1: adults (n=167, ~55/condition)
Exp 2: 5-8yo (n=67, ~22/condition)

what is the case: generalization

Look, here's another Zarpie… lives **on the other side of the planet.**
Which berries do you think this Zarpie eats?
(starberries/roundberries → for sure/maybe)

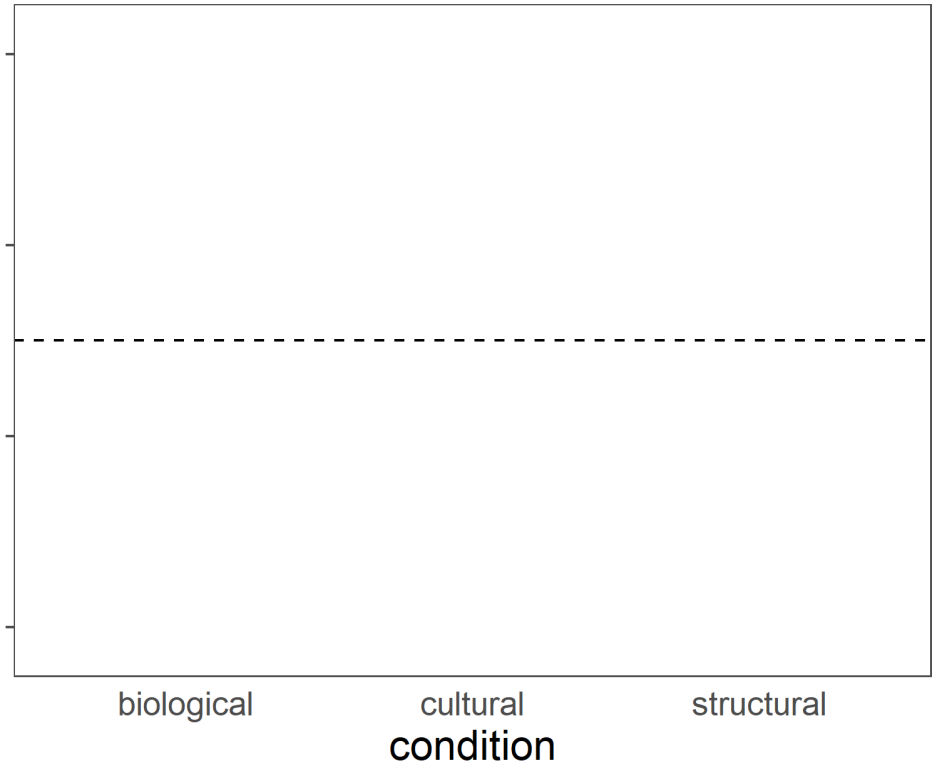
5-8yo

(n=67, ~22/condition)



adults

(n=167, ~55/condition)



modeled on switched-at-birth tasks from essentialism:
e.g. Gelman & Wellman (1991)

structural reps: context-sensitive generalization in adults

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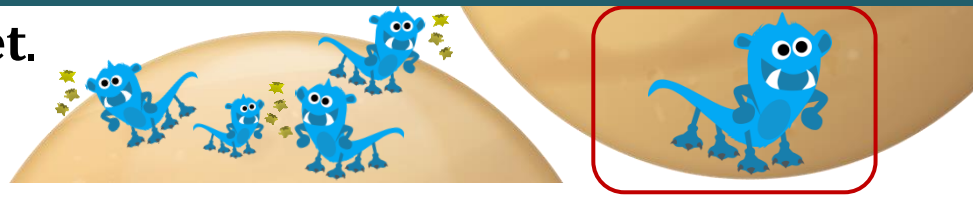
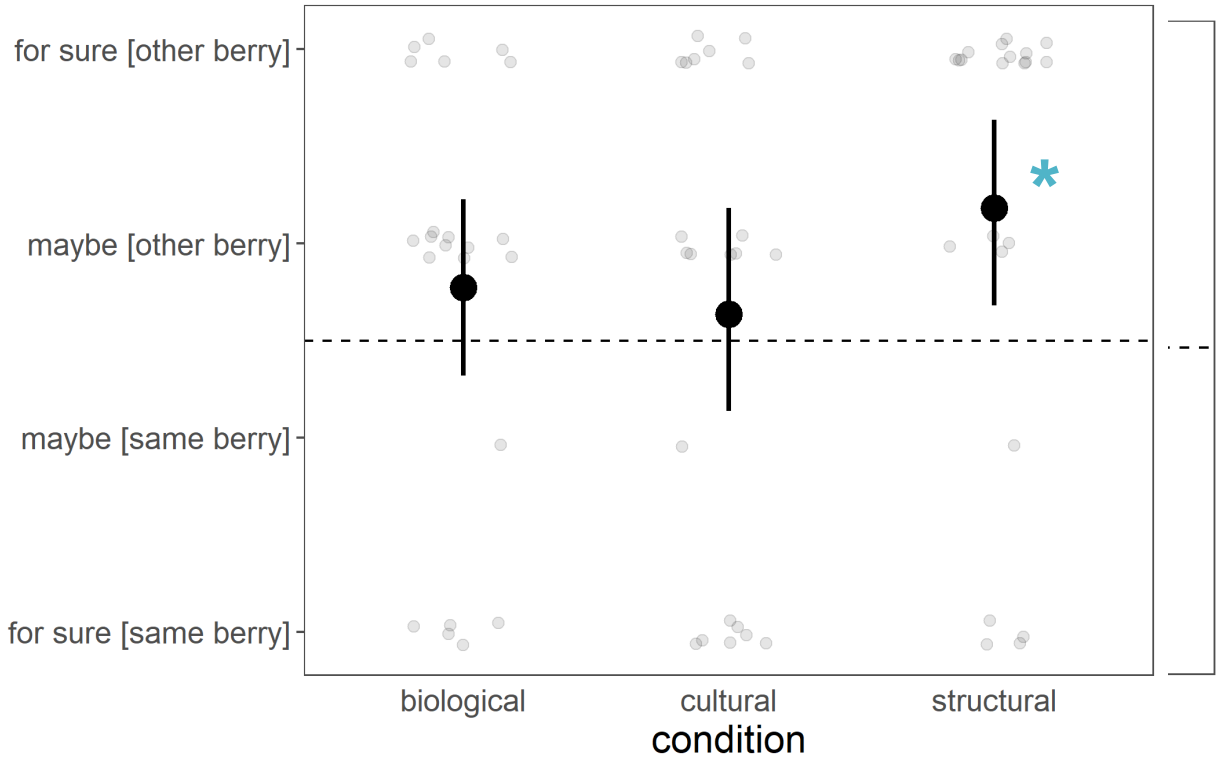
(starberries/roundberries → for sure/maybe)



5-8yo

(n=67, ~22/condition)



adults

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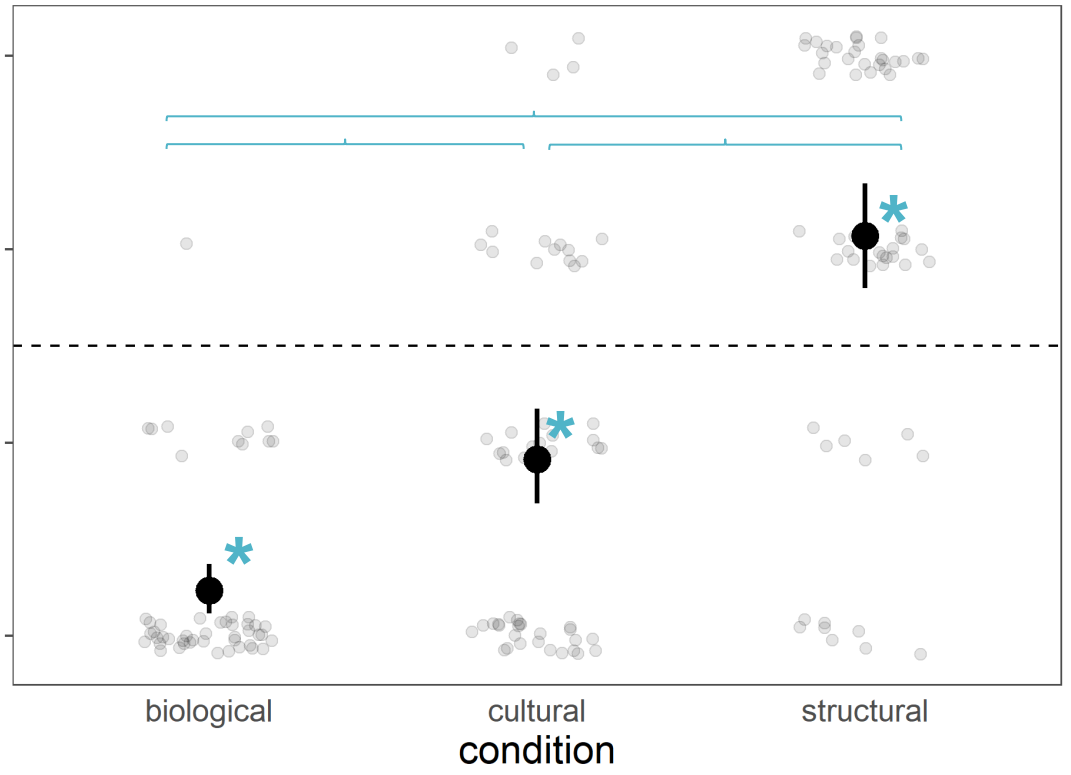


main effect of condition (controlling for difficulty of intervention) for adults, not 5-8yo

⊢ = statistically significant diff (FDR-corrected)

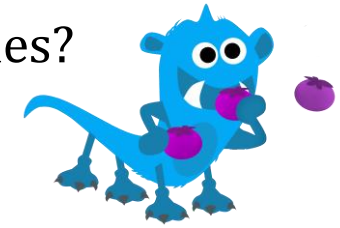
* = statistically significant diff. from midpoint (one-sample t-test)

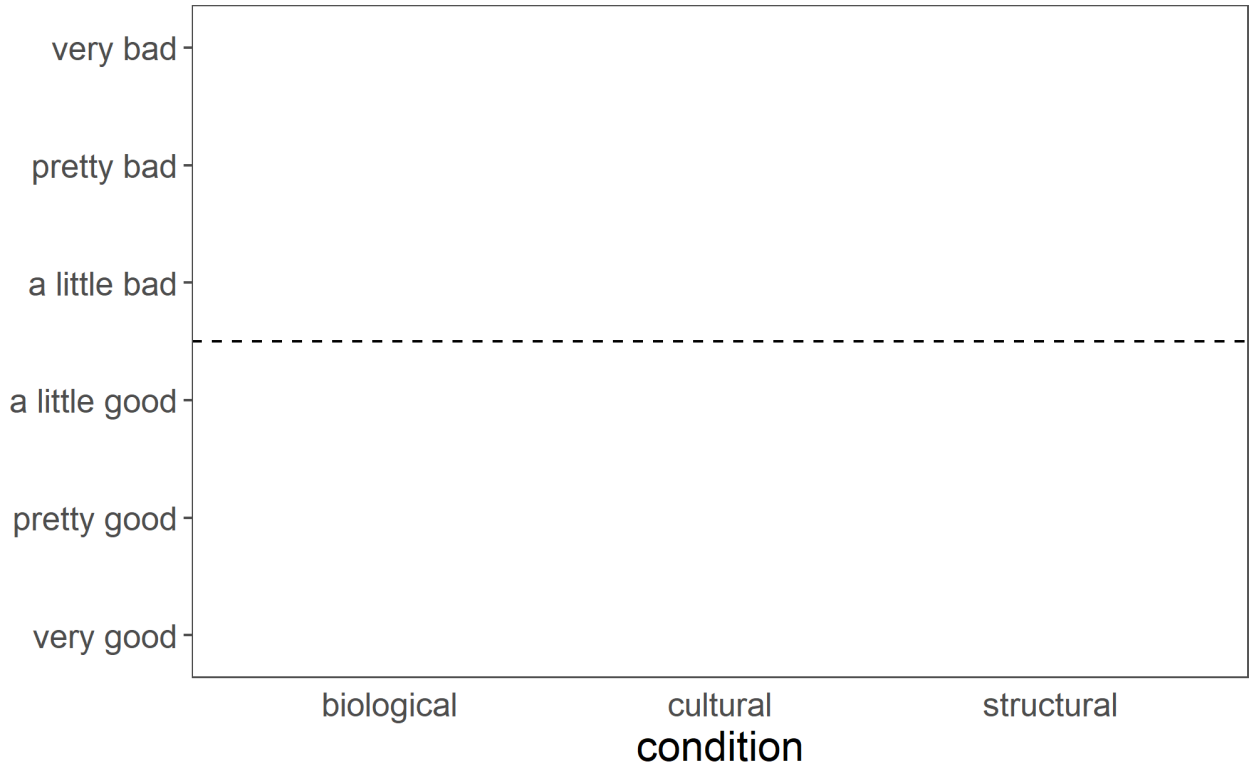
● = 95% bootstrap CIs

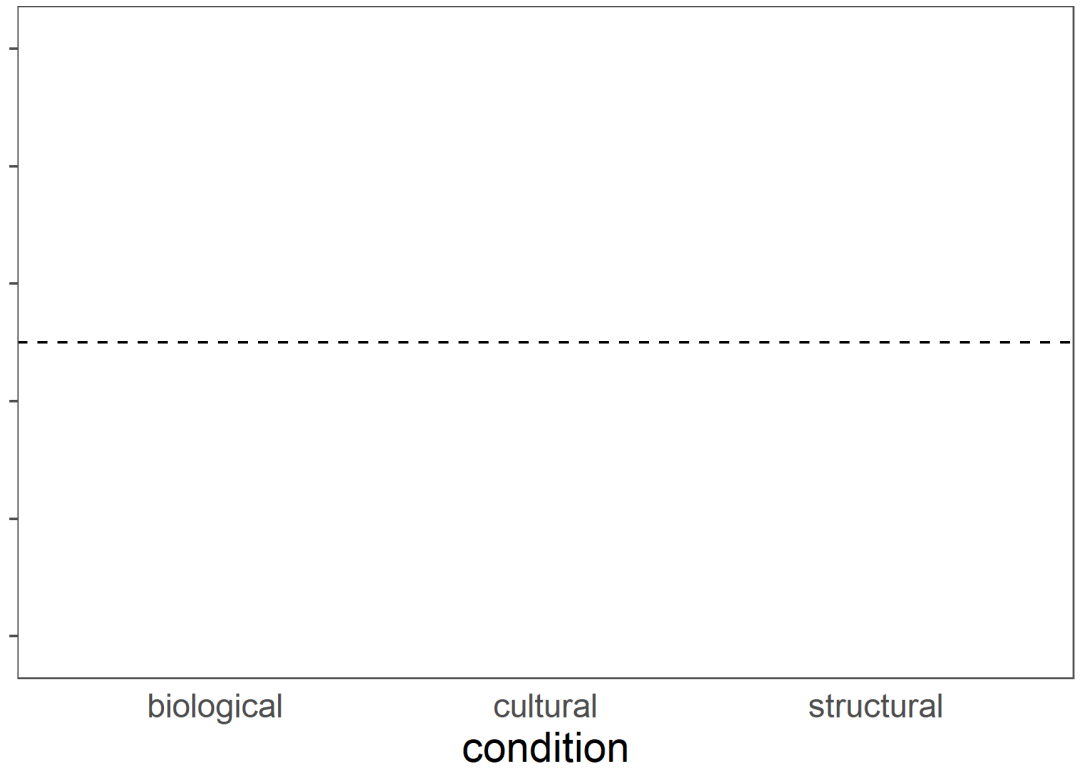
○ = individual participants

what should be the case: attitudes about non-conformity

Look, this Zarpie is eating **roundberries**!
Is it **okay or not okay** for this Zarpie to eat roundberries?
(okay/not okay → a little/pretty/very good or bad)







same measure from:
Roberts, Gelman & Ho (2016), Roberts, Ho & Gelman (2017)

structural reps: less negative attitudes about non-conformity

Look, this Zarpie is eating **roundberries**!

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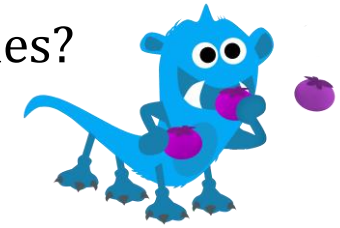
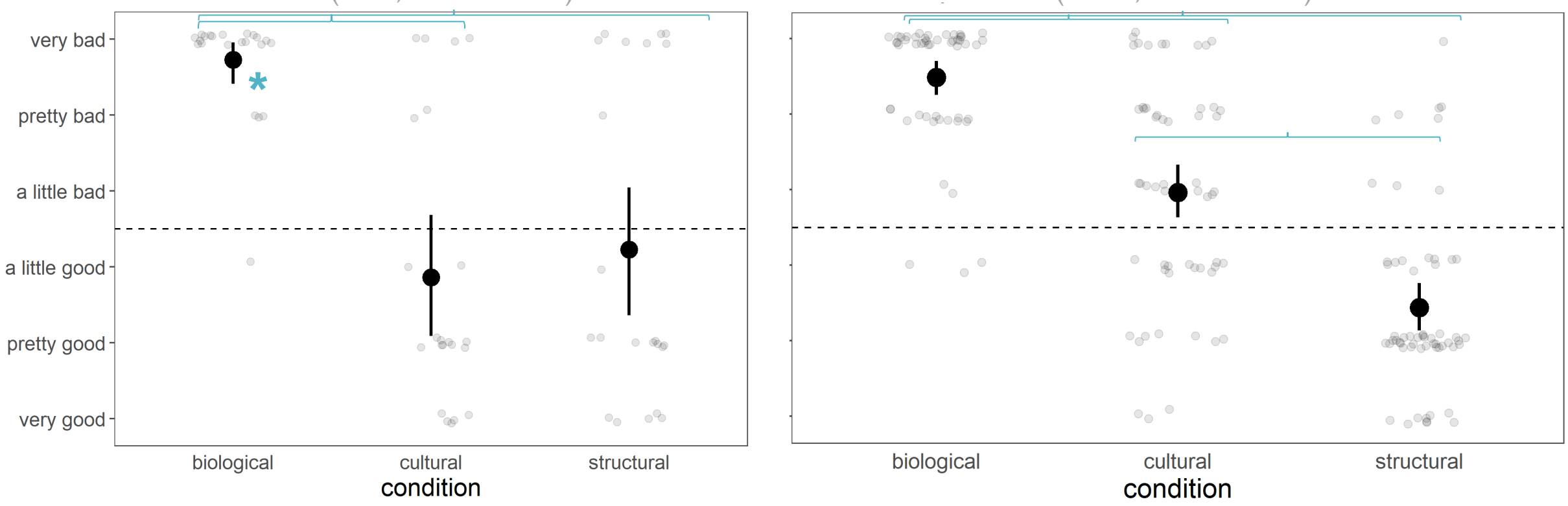




main effect of condition (controlling for difficulty of intervention) in both groups

= statistically significant diff (FDR-corrected)

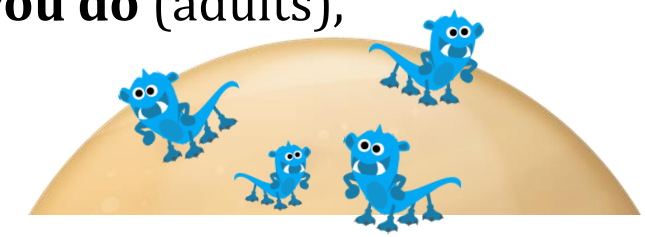
* = statistically significant diff. from midpoint (one-sample t-test)

= 95% bootstrap CIs

= individual participants

how to change what is the case: intervention

storm blew away starberries (5-8yo) / starberry harvest failed this year (adults)
We'll need to get the Zarpies to eat roundberries instead.
If you could make anything happen, **what could we do** (5-8yo) / **what would you do** (adults),
so that the Zarpies can eat roundberries? (open-ended)



intervention coding

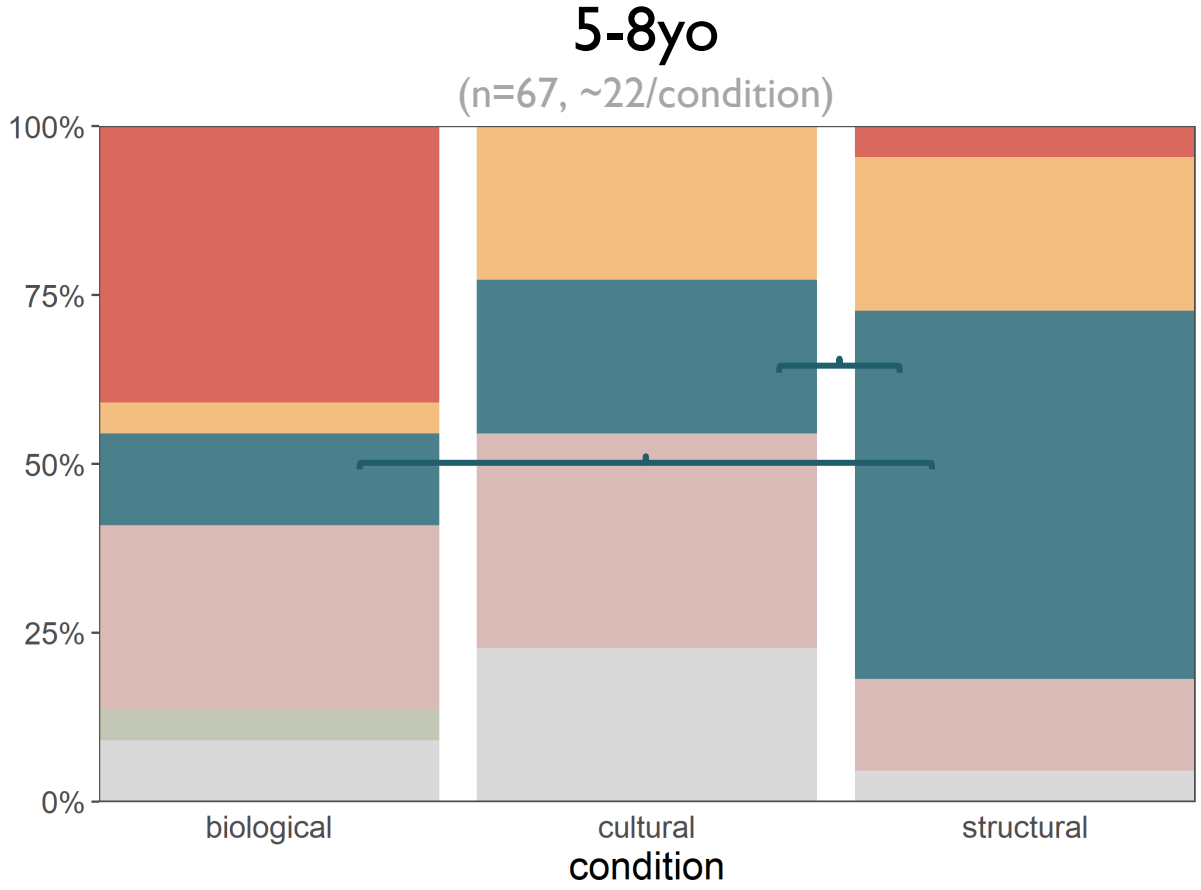
If you could make anything happen, **what could we do** (5-8yo) / **what would you do** (adults), **so that the Zarpies can eat roundberries?** (open-ended → 2 independent coders blind to condition)

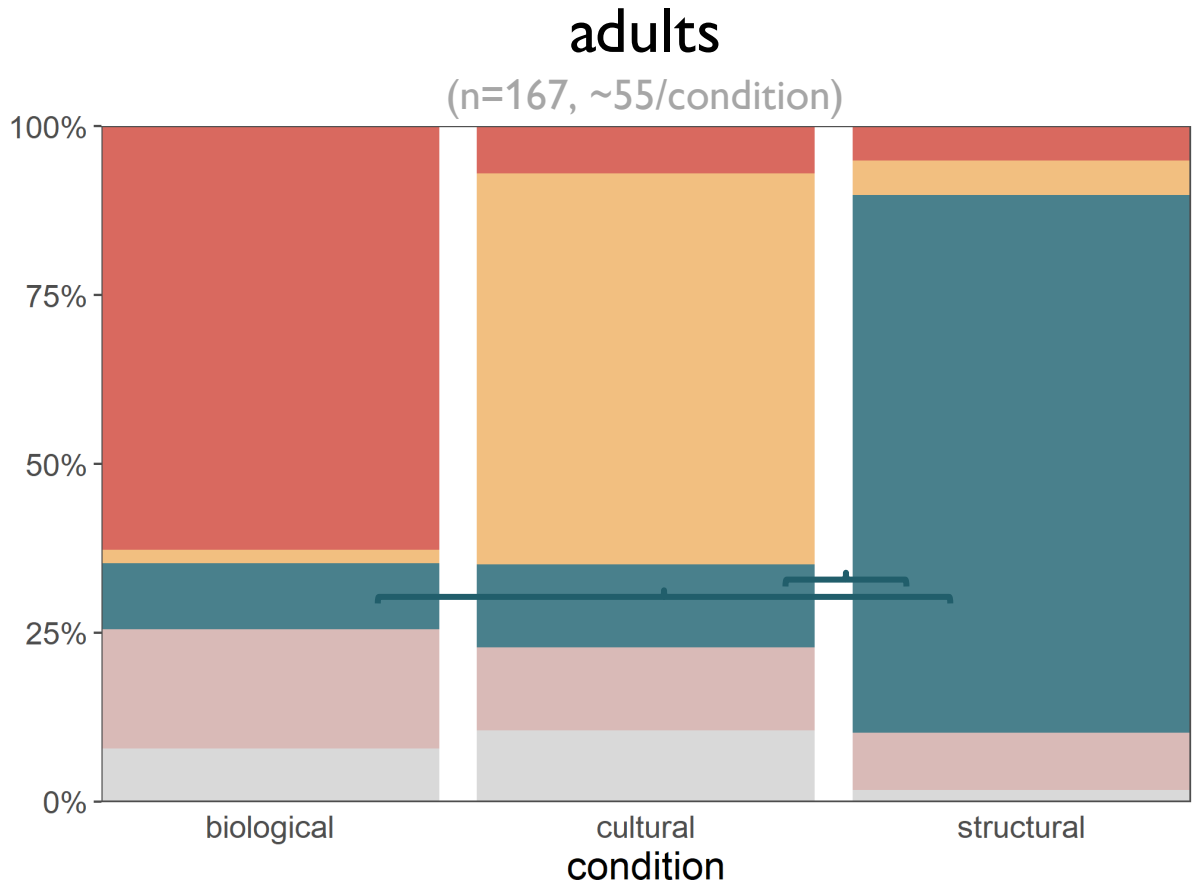
	5-8yo (85% agreement, κ = 0.81)	adults (94% agreement, κ = 0.92)
change group biology	give them a pill or medicine have them eat a little at a time	give them a pill or medicine have them build tolerance
change group beliefs/culture	tell them the berries are good luck	convince them it's not bad luck
change environment (increase food access)	get them roundberries from other side ask the Vawns to share roundberries	grow, plant, or import the other berry have them visit the other side of the planet
change the food	turn them into starberries take the stuff they can't eat out	prepare the berries so they are safe to eat
other	find more starberries do nothing	don't know

structural reps: interventions on **structural context**

If you could make anything happen,
what could we do (5-8yo) / **what would you do** (adults)
so that the Zarpies can eat roundberries?

change group biology *5-8yo *adults
change group beliefs/culture *adults
change environment (increase food access) *5-8yo *adults
change the food
other





target of intervention differs across conditions (Fisher's exact test) in both groups

* = main effect of condition on __ interventions, controlling for difficulty of intervention

= statistically significant diff. (FDR-corrected)

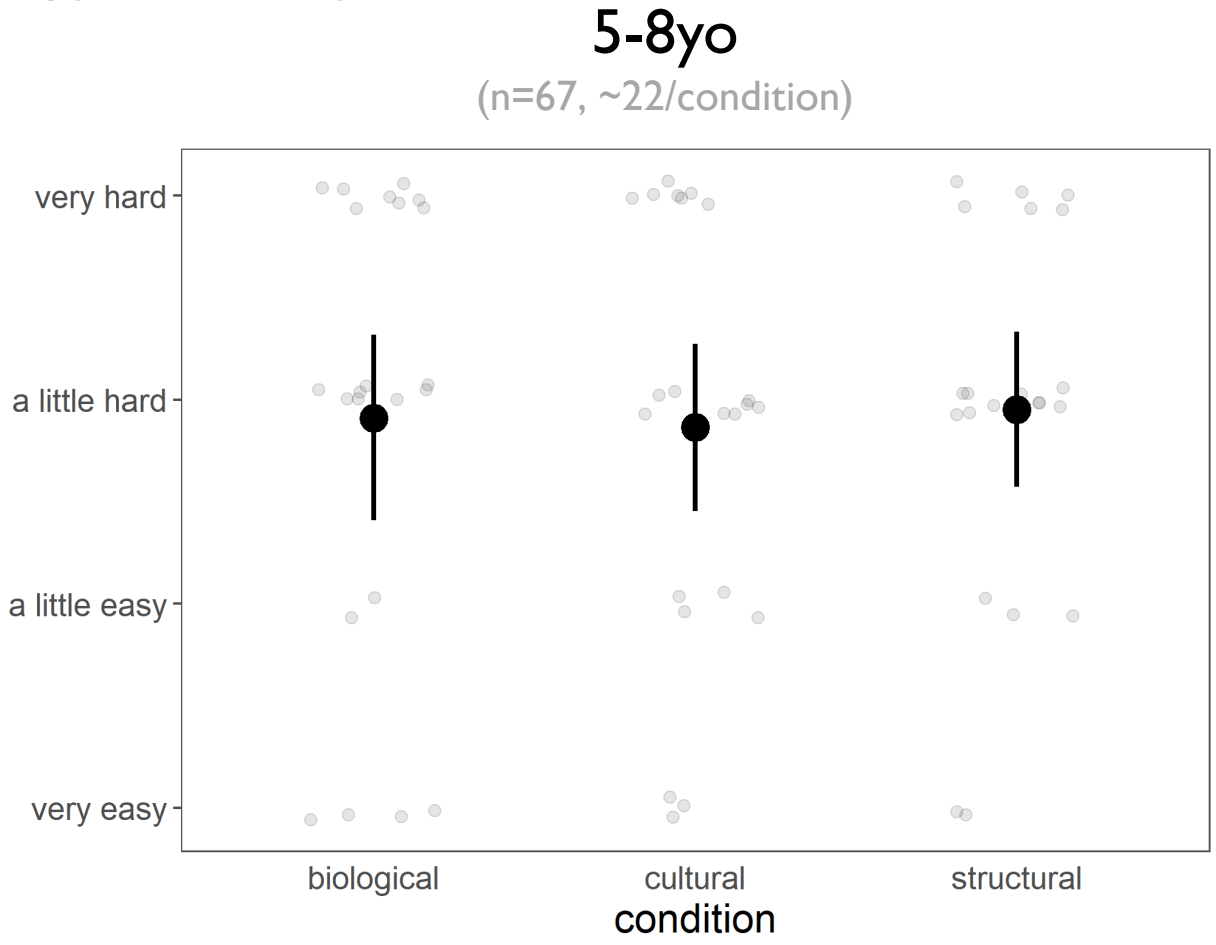
difficulty of intervention was controlled for in other analyses

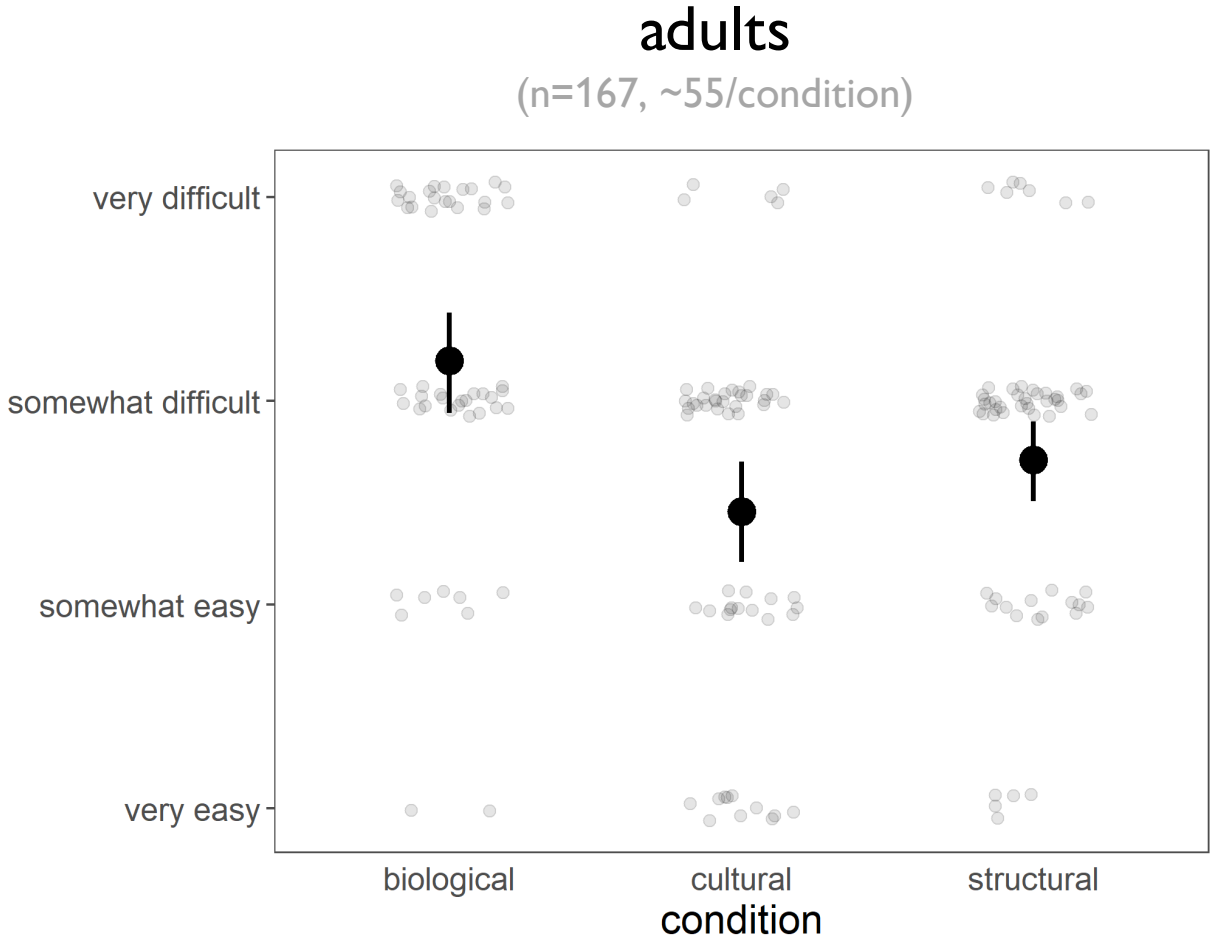
Would it be easy or hard to do that? (5-8yo) (easy/hard → very/a little)
How easy or difficult would it be to do the action you suggested above? (adults) (easy/difficult → very/somewhat)

cf. Peretz-Lange, Perry & Muentener (2021)

difficulty of intervention was controlled for in other analyses

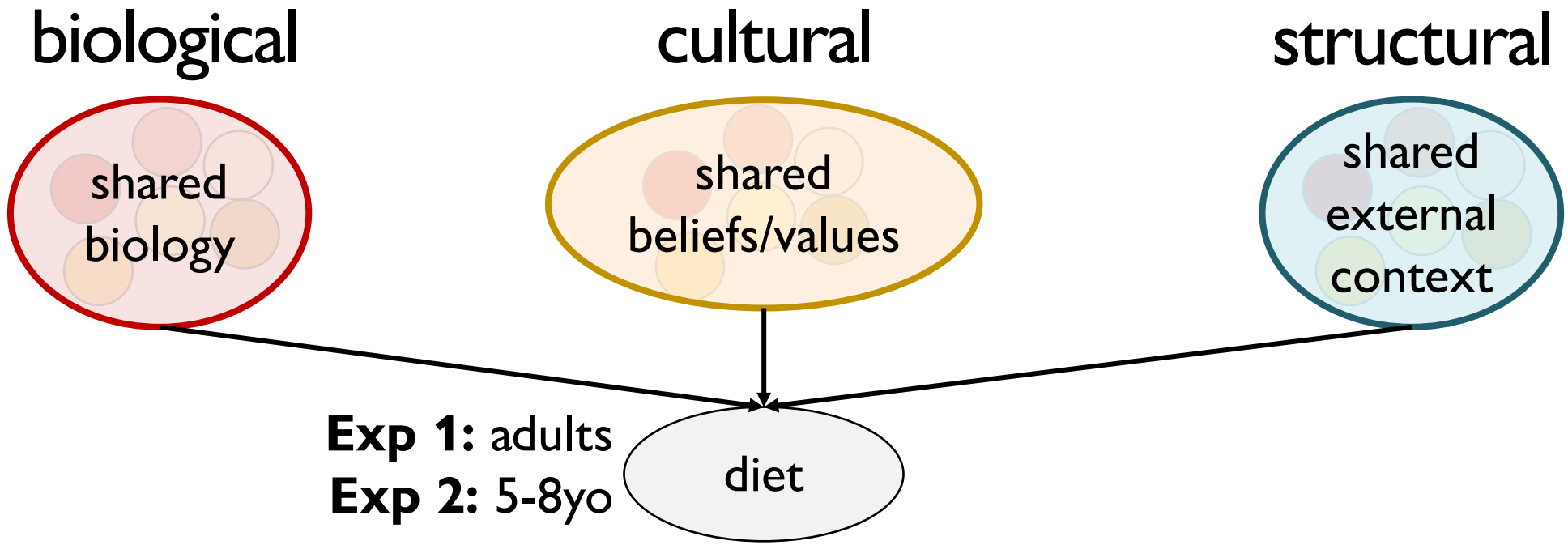
Would it be easy or hard to do that? (5-8yo) (easy/hard → very/a little)
How easy or difficult would it be to do the action you suggested above? (adults) (easy/difficult → very/somewhat)





no main effect of condition for either 5-8yo or adults

= 95% bootstrap CIs
= individual participants



structural representations lead to:

what is the case

context-sensitive generalization (for adults)

what should be the case

less negative attitudes about non-conformity

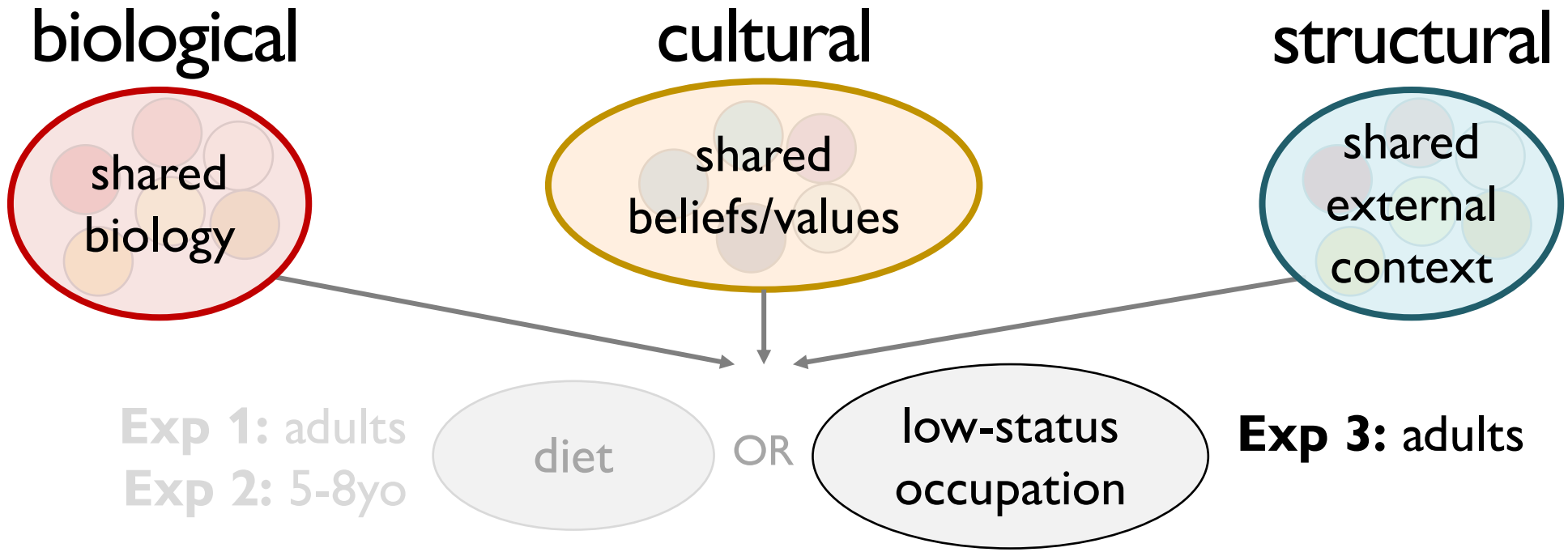
how to change what is the case

interventions on structural context

group
low-status occupation

adults

induce one of these construals…



look at their different consequences…

what is the case

generalize based on group vs context

how to change what is the case

intervene on group vs structural conditions

what should be the case

attitudes towards non-conformity

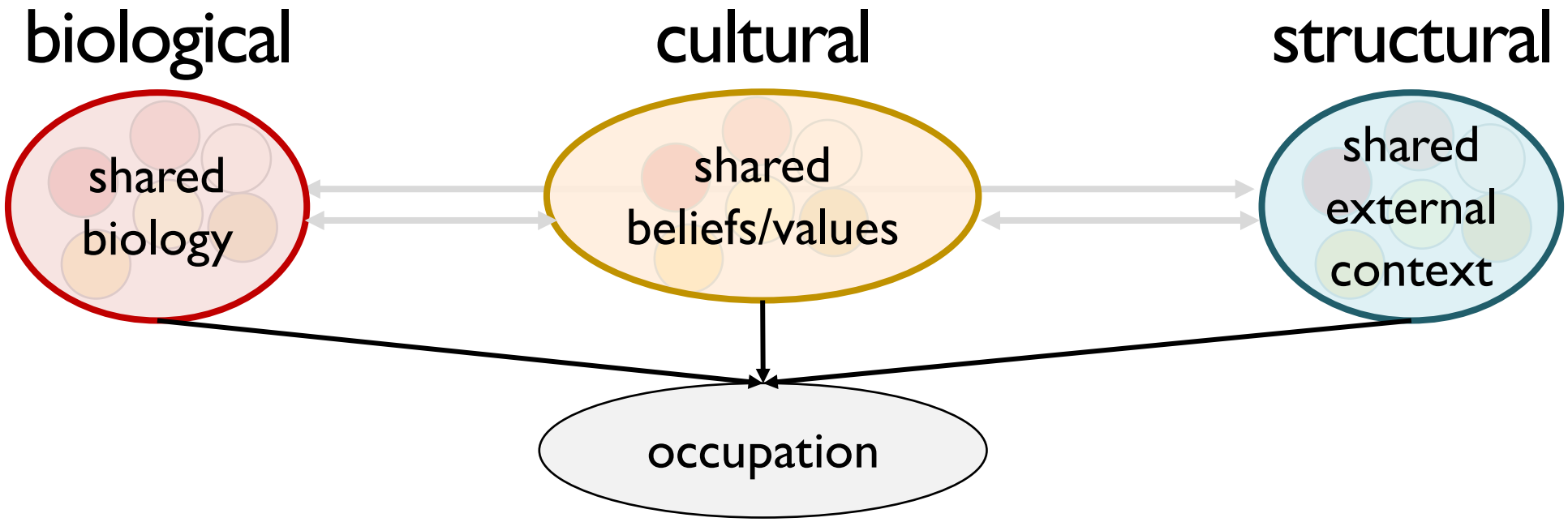
attitudes towards present disparities

Why does a group have a certain occupation?

women & factory work
("nimble fingers",
also "detail-oriented", "docile")

Jews & banking
("stingy", "greedy",
"materialistic")

Chinese-Americans & restaurants (language barrier, limited resources, stereotyping, economic discrimination)

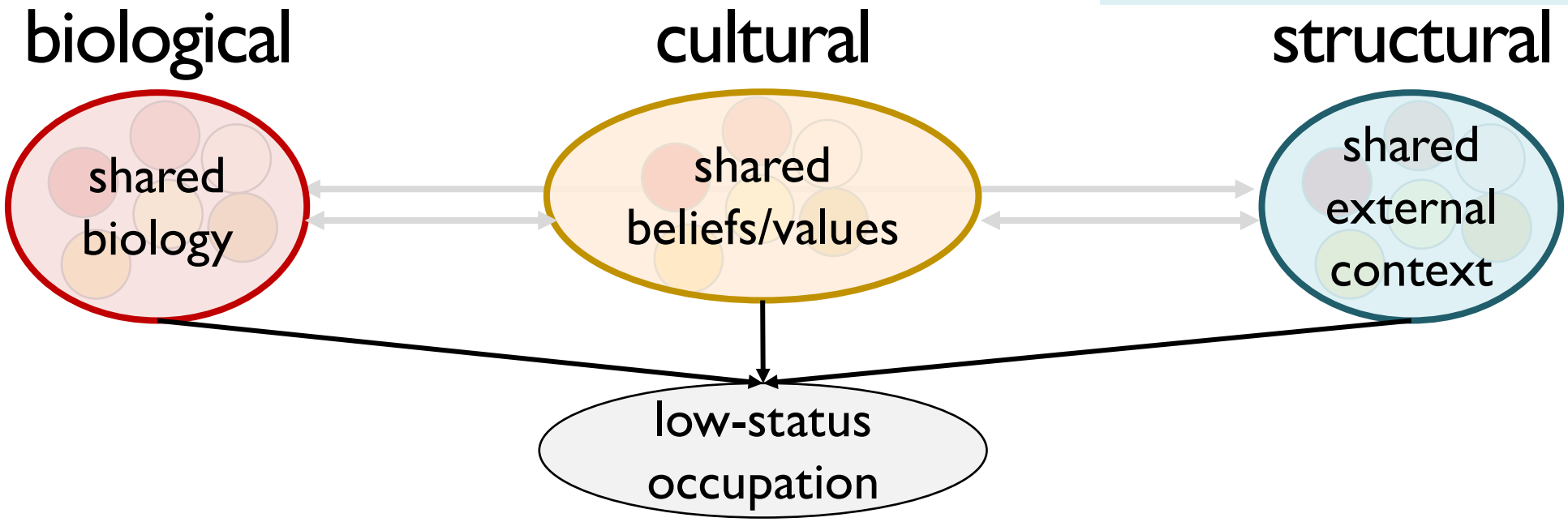


Why does a group have a certain occupation?

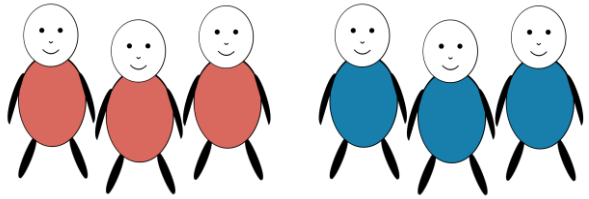
group has characteristic **physiology or biological traits** that make them suited to the job

group has characteristic **shared beliefs, values, traditions** that match the job

group faces **barriers, constraints, economic discrimination** that leaves them with few other options than the job



N = 90 adults on MTurk
30/condition



Vawns work as managers at a food distributing company.
Vawns sell and ship a variety of food grown on the island, including aquafruit and many other kinds of fruit and foods.

Vawns earn a **comfortable wage** working as distribution managers. Working as a distribution manager is a relatively **low risk** job.

occupation

Zarpies work as aquafruit farmers.

Aquafruit are fruit that grow underwater off the coast of islands in this area.

Zarpies dive into the ocean near the island to harvest aquafruit. Zarpies are **paid very little** for harvesting aquafruit. Harvesting aquafruit can also be **dangerous**, because there are many sharks in the water.

low-status occupation

Zarpies work as aquafruit farmers, and don't often work other jobs.

This is because Zarpies see better in the water than on land, their bodies are streamlined and powerfully built, and they have big hands and feet that are good for swimming, from even early in childhood. **Zarpies' bodies are well-suited to farming aquafruit.**

shared biology

This is because Zarpies grow aquafruit by tradition, have passed down knowledge of how to farm aquafruit to their children for generations, and feel a special attachment to the ocean.

Zarpies' traditions and values are well-suited to farming aquafruit.

shared beliefs/values

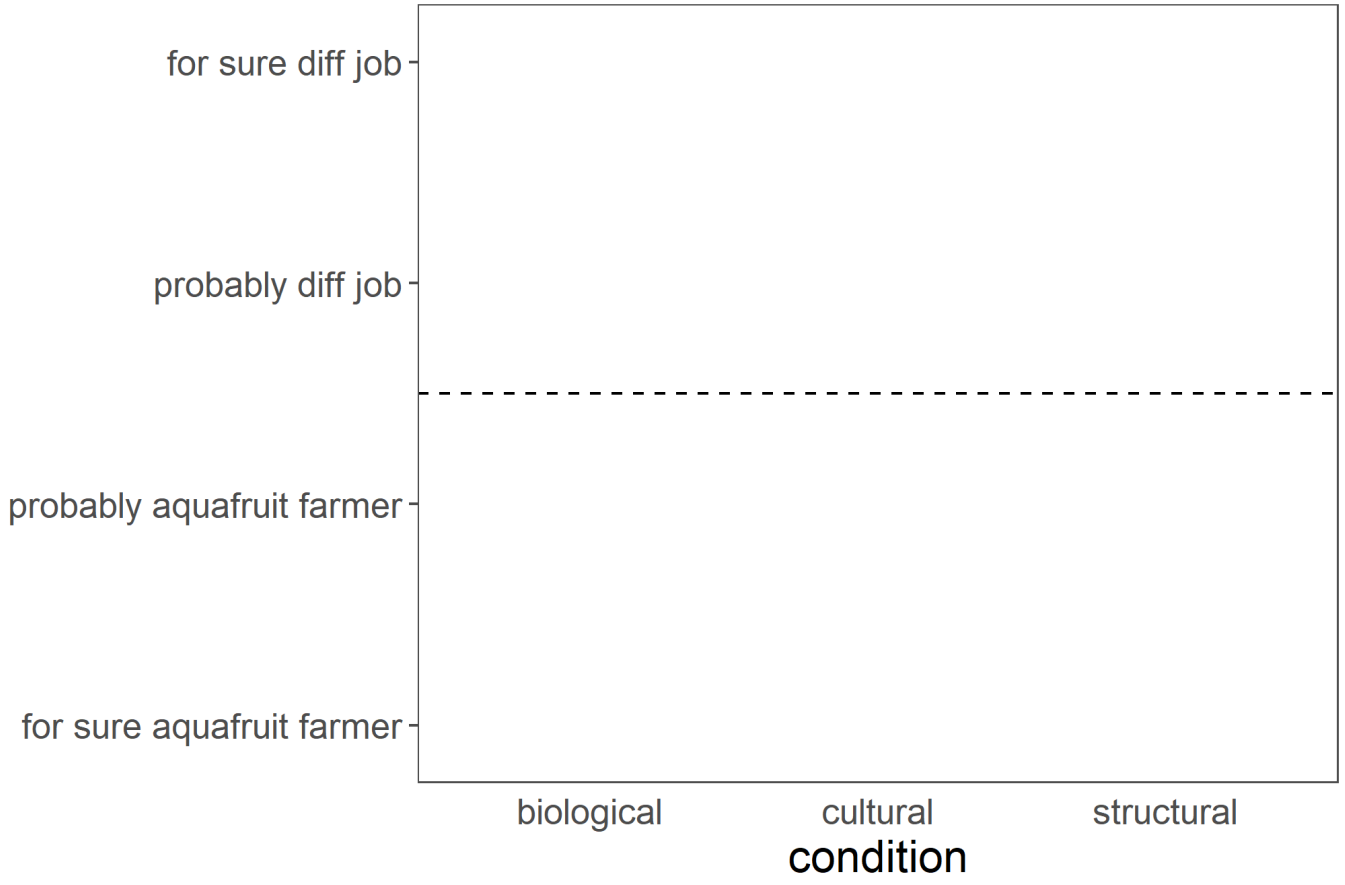
This is because Zarpies are required by this island's government to fill out complex and expensive paperwork to be hired in other jobs, which limits economic opportunities for Zarpies. **This situation leads Zarpies with little other choice than to farm aquafruit.**

shared external context

what is the case: generalization

Look, here's another Zarpie! This Zarpie does not live on the island of Zarpies and Vawns. This Zarpie was born and raised in a different island country, with a different government, different employment policies, and different groups of people. They live and work in that different island country.

What job do you think this Zarpie works in their country?



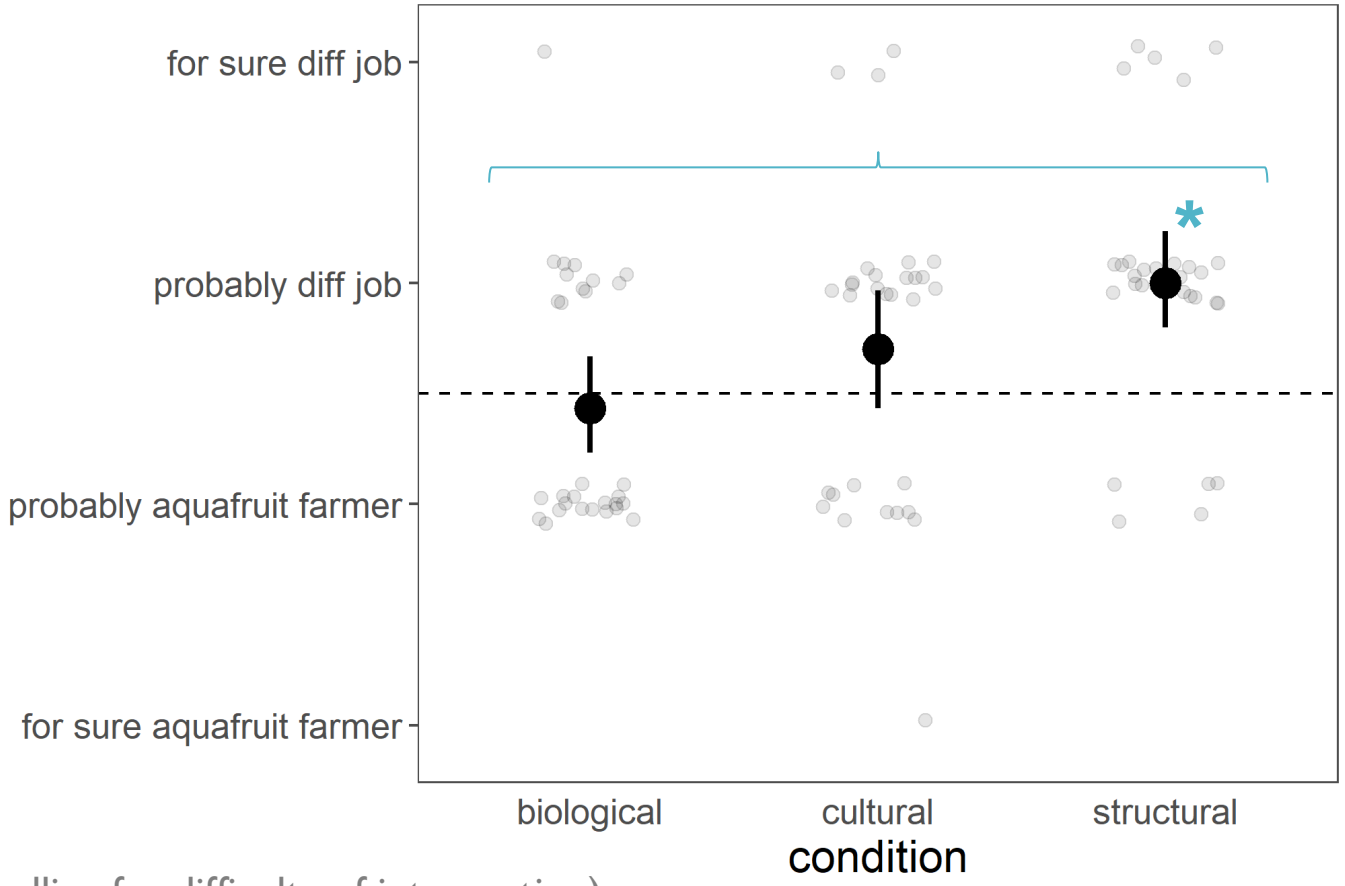
= 95% bootstrap CIs

N = 90 adults on MTurk

30/condition

structural reps: more context-sensitive generalization

Look, here's another Zarpie! This Zarpie does not live on the island of Zarpies and Vawns. This Zarpie was born and raised in a different island country, with a different government, different employment policies, and different groups of people. They live and work in that different island country.
What job do you think this Zarpie works in their country?



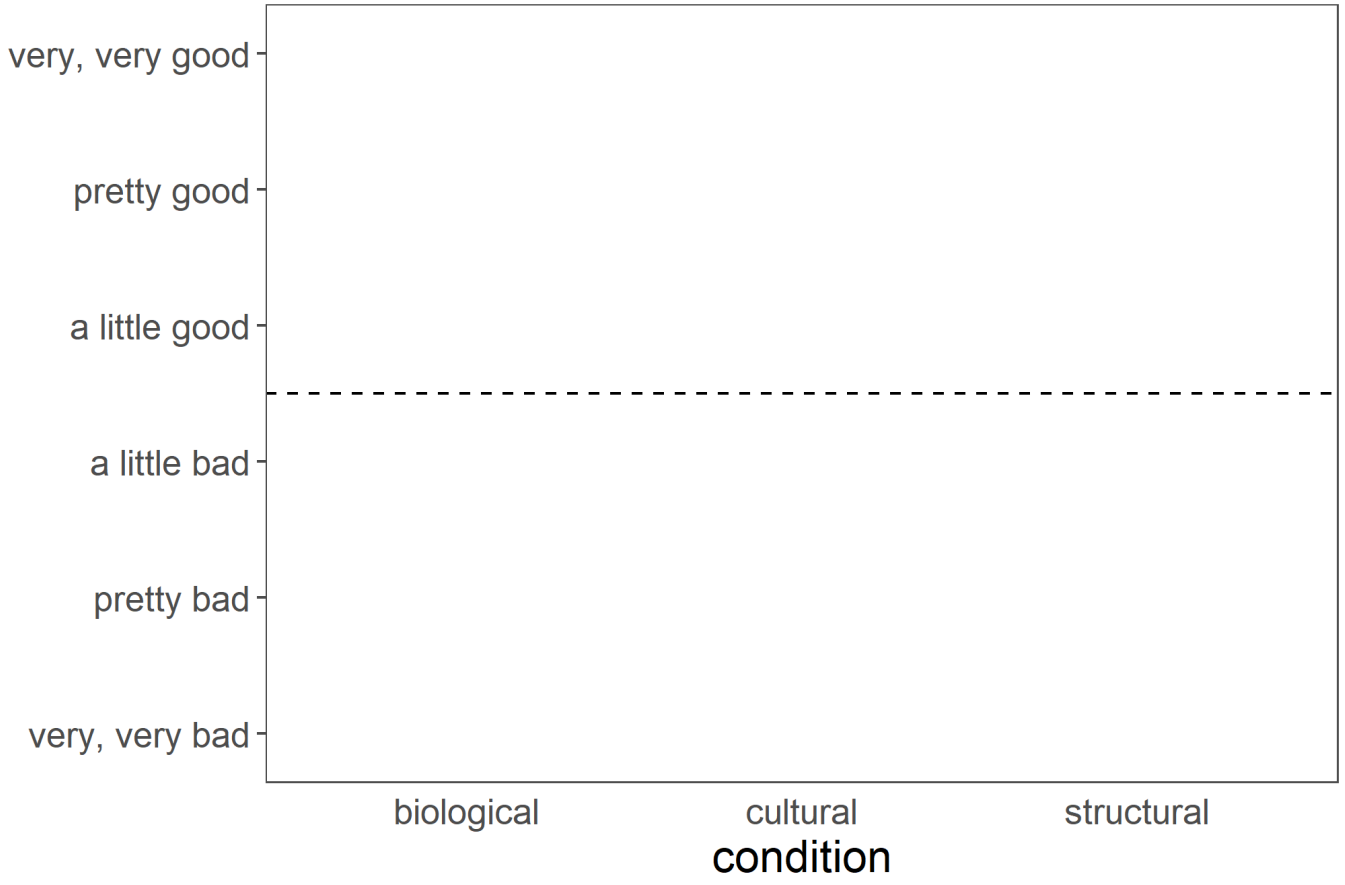
main effect of condition (controlling for difficulty of intervention)
⌐¬ = statistically significant diff (FDR-corrected)
* = statistically significant diff. from midpoint (one-sample t-test)

= 95% bootstrap CIs
N = 90 adults on MTurk
30/condition

what should be the case: attitudes about present disparities

Is it okay or not okay that Zarpies mostly work as aquafruit farmers and Vawns mostly work as distribution managers?

(okay/not okay → a little/pretty/very, very good or bad)



= 95% bootstrap CIs

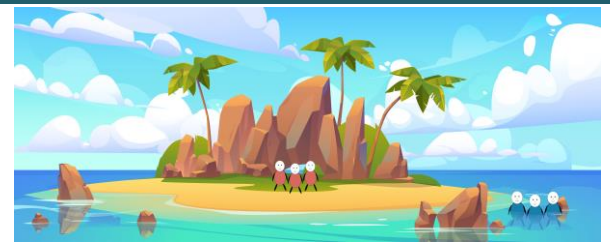
N = 90 adults on MTurk

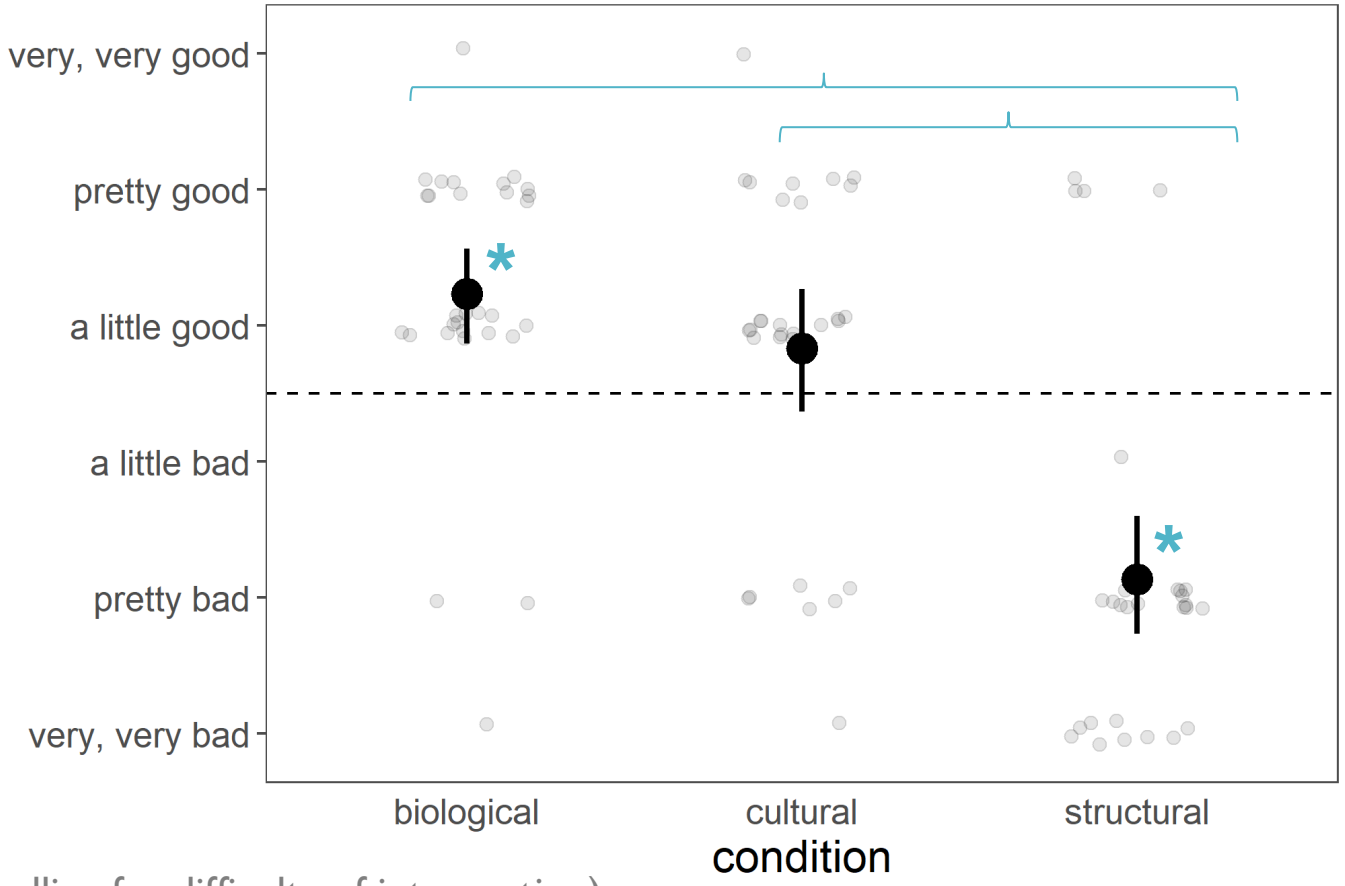
30/condition

structural reps: more negative attitudes about group disparities

Is it okay or not okay that Zarpies mostly work as aquafruit farmers and Vawns mostly work as distribution managers?

(okay/not okay → a little/pretty/very, very good or bad)





main effect of condition (controlling for difficulty of intervention)

= statistically significant diff (FDR-corrected)

* = statistically significant diff. from midpoint (one-sample t-test)

= 95% bootstrap CIs

N = 90 adults on MTurk

30/condition

how to change what is the case: intervention

The island government would like to get more Zarpies to work as distribution managers, rather than aquafruit farmers. **If you could make anything happen, what would you do to get the Zarpies to work as distribution managers?** Please list 1 specific action you would do, and please be as specific as possible. The more specific you can be, the better. What would you do/change and how?

N = 90 adults on MTurk
30/condition

intervention coding

If you could make anything happen, what would you do to get the Zarpies to work as distribution managers? (open-ended → 2 independent coders blind to condition)

adults

(79% agreement, κ = 0.72)

targeting group:

- change group biology
  - give them goggles to see on land
- change group beliefs/culture
  - persuade them by saying it's lower risk
  - tell them it's a more desirable job

targeting structural context:

- provide job training to group
  - provide free training, education
  - equip them with needed knowledge and skills
- create more jobs or access to jobs
  - remove paperwork requirement, legal barriers
  - enact affirmative action hiring policy

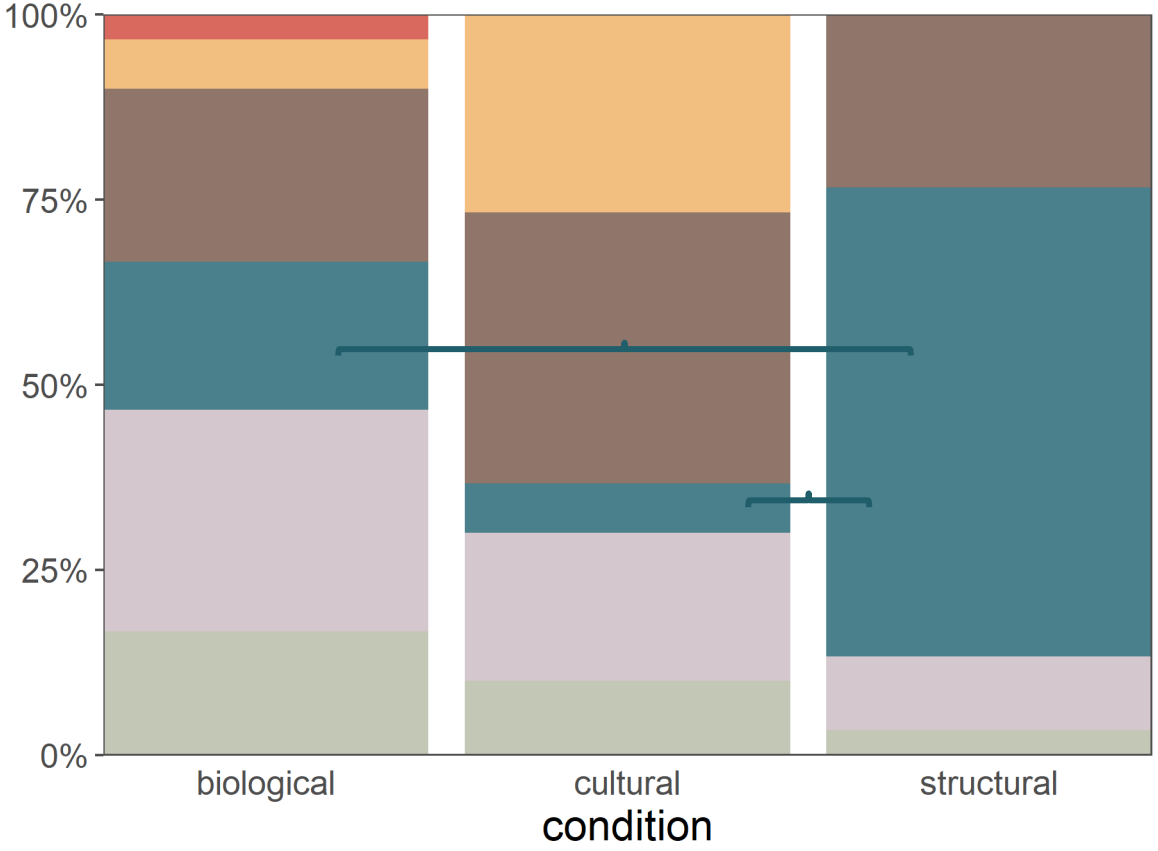
not analyzed:

- change job wages, value, hours, work
  - provide incentives for taking the job
  - increase the pay rate of jobs
  - let them work less
- other
  - switch jobs with Vawns
  - wouldn't change anything

N = 90 adults on MTurk
30/condition

structural reps: interventions on structural conditions

The island government would like to get more Zarpies to work as distribution managers, rather than aquafruit farmers. **If you could make anything happen, what would you do to get the Zarpies to work as distribution managers?** Please list 1 specific action you would do, and please be as specific as possible. The more specific you can be, the better. What would you do/change and how?



targeting group:*
- change group biology
- change group beliefs/culture*

targeting structural context:*
- provide job training to group
- create more jobs or access to jobs*

not analyzed:
- change job wages, value, hours, work
- other

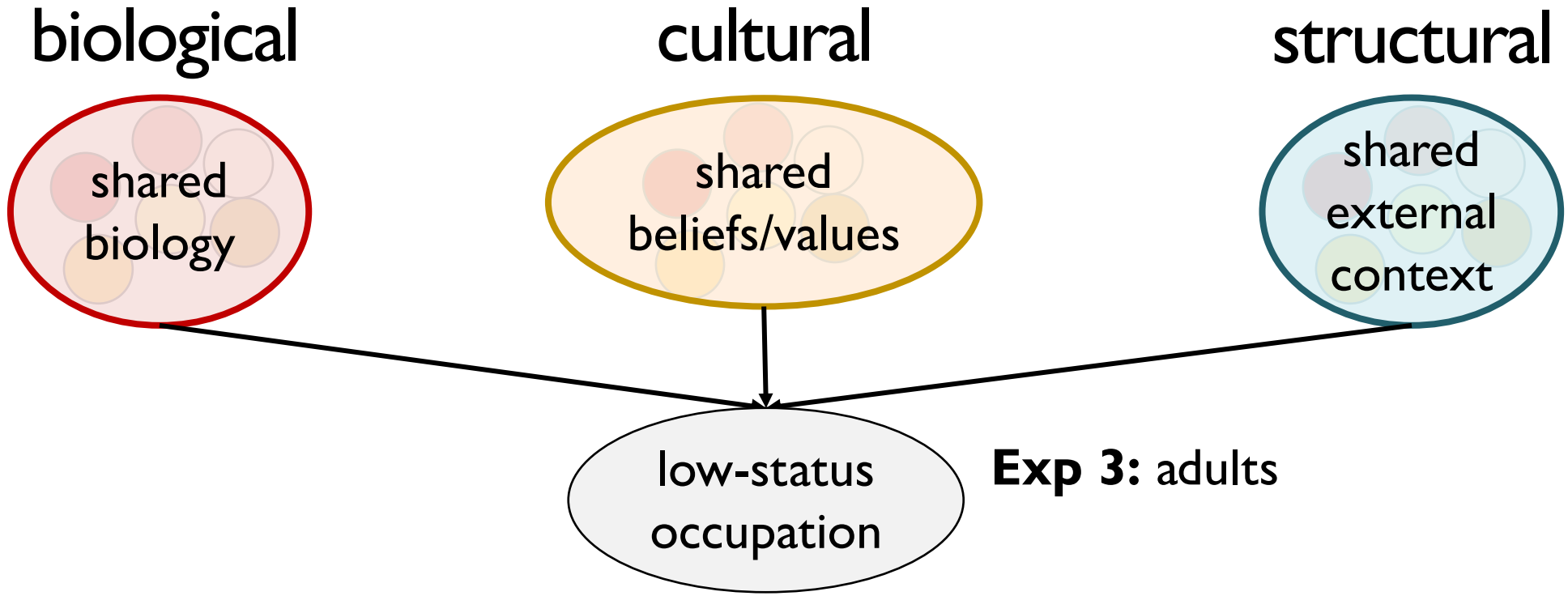
target of intervention differs across conditions (Fisher's exact test)

* = main effect of condition on __ interventions, controlling for difficulty of intervention

= statistically significant difference (FDR-corrected)

N = 90 adults on MTurk

30/condition



Exp 3: adults

structural representations lead to:

what is the case

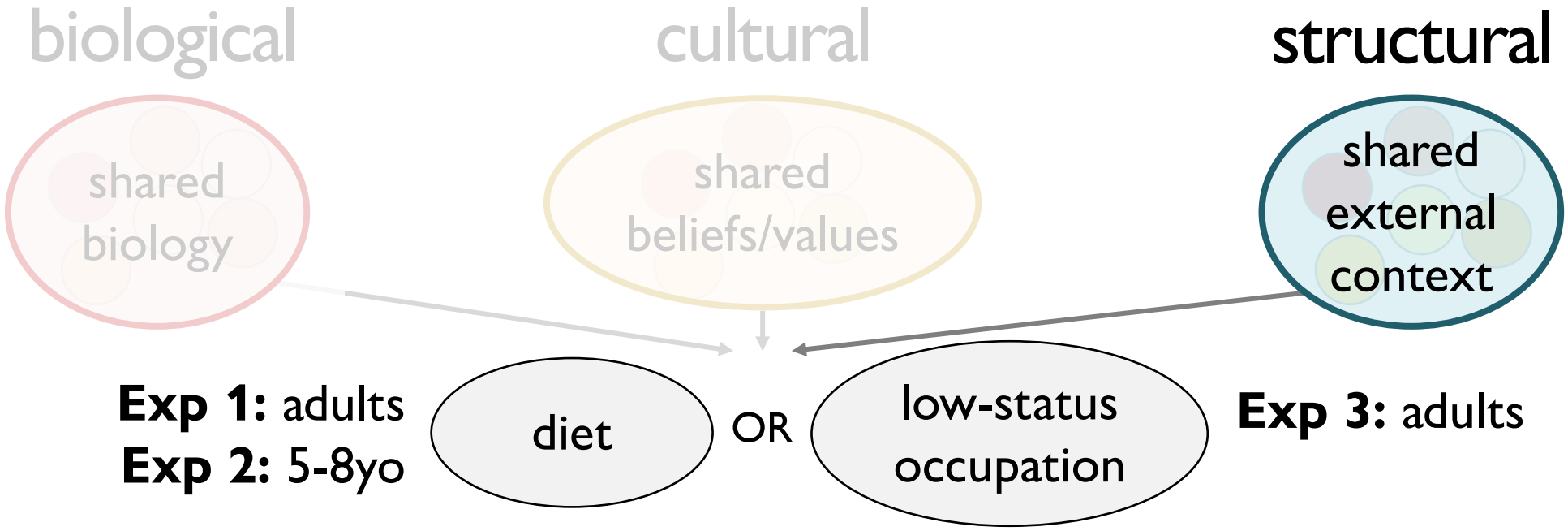
context-sensitive generalization

how to change what is the case

interventions on structural context

what should be the case

more negative attitudes about present disparities



structural representations as a positive alternative to essentialism

what is the case

context-sensitive generalization (adults)

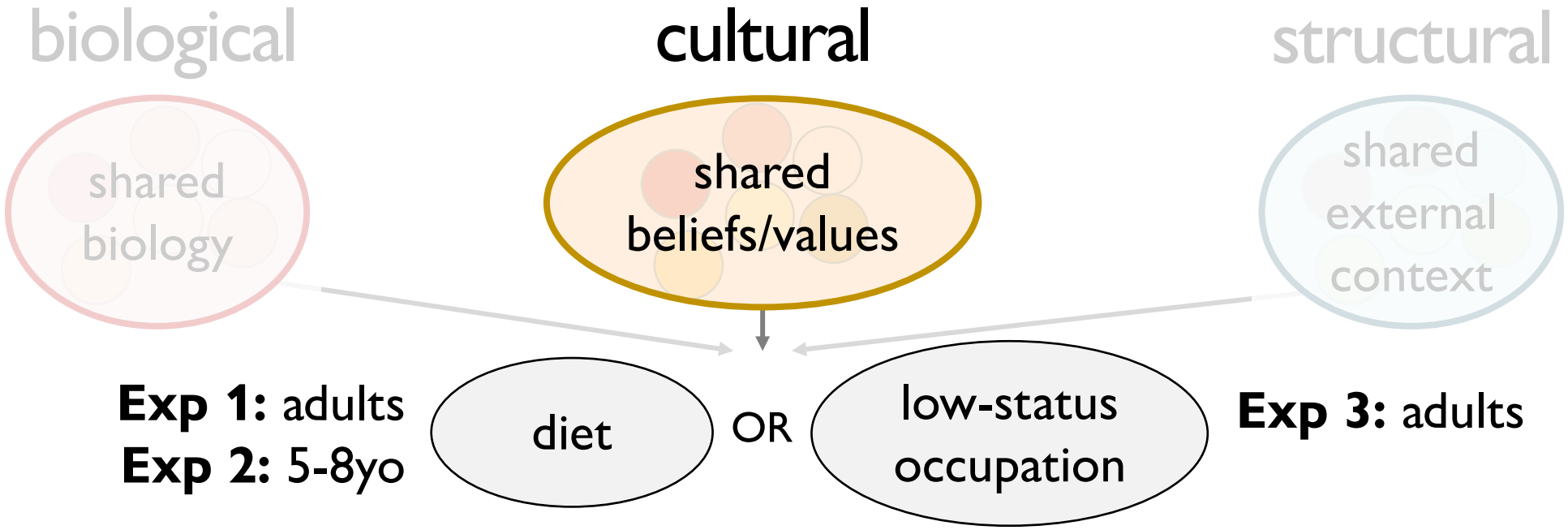
how to change what is the case

interventions on structural context

what should be the case

less negative attitudes about non-conformity (diet)

more negative attitudes about present disparities (low-status occupation)



cultural representations as between biological and structural representations

what is the case

context-sensitive generalization (adults)

how to change what is the case

interventions on structural context

what should be the case

less negative attitudes about non-conformity (diet)

more negative attitudes about present disparities (low-status occupation)

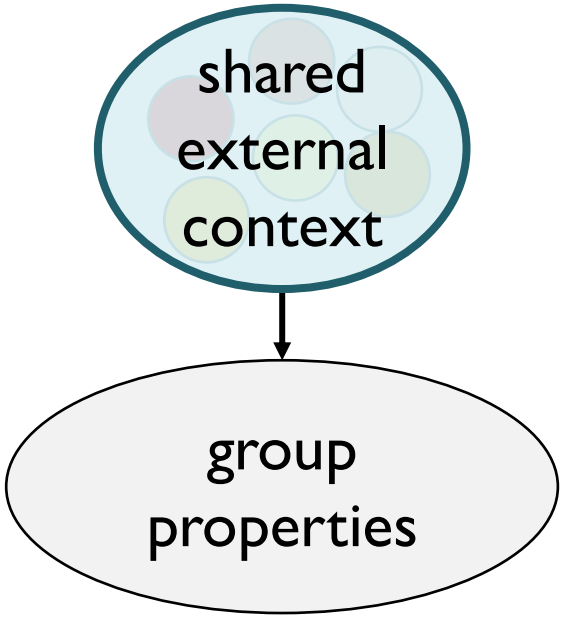
how *should* we represent social categories?

essentialism

biological

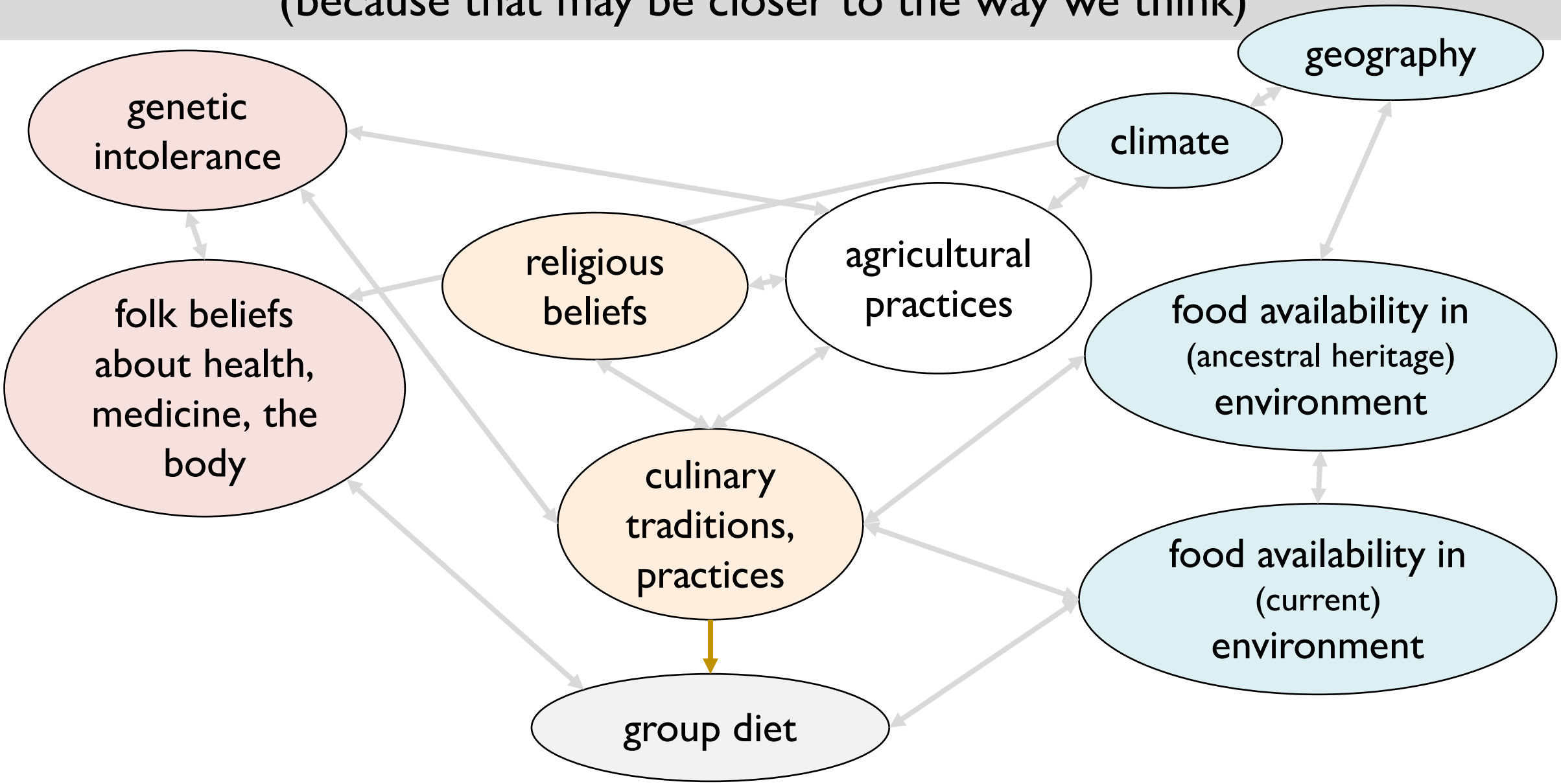
Category members share a **stable external context**.

structural



Haslanger (2000), Scott (1986)

from simple to complex causal systems with interacting causes
(because that may be closer to the way we think)

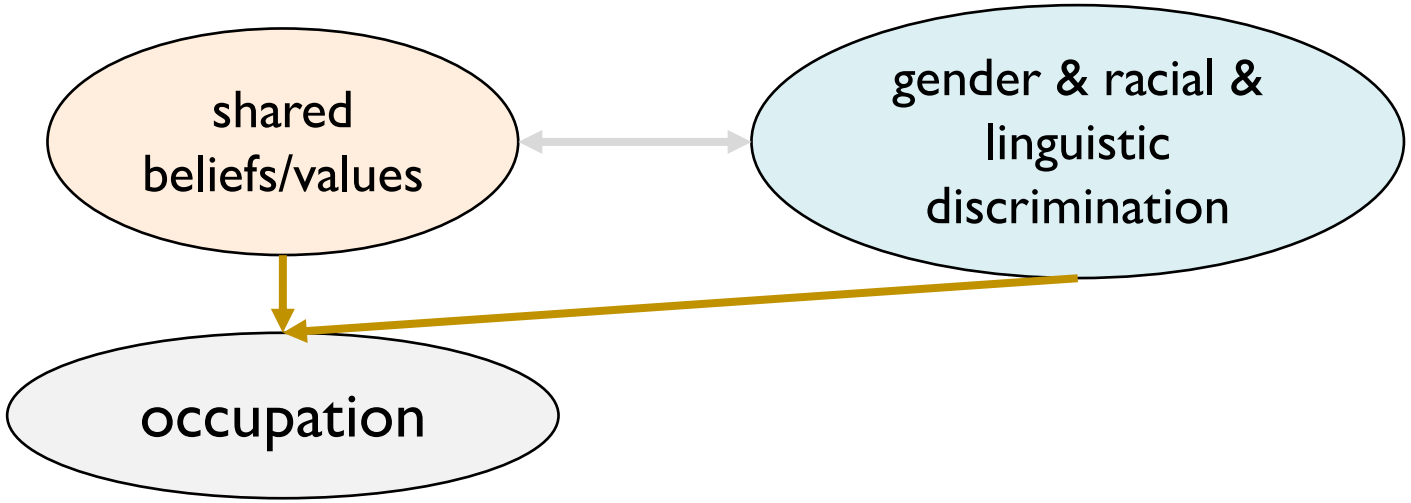


from simple to complex causal systems with interacting causes
(because that may be closer to the ground truth)

...the most common occupations among Indian women are software developers and physicians—two typically high-wage occupations—while the top occupations among Vietnamese women are manicurists and hairdressers, which are typically low-wage occupations.

Some factors driving these differences among subpopulations may include cultural differences, differences in immigration patterns and generational wealth, and persistent biases around gender, race, ethnicity, nationality, and language.

Center for American Progress (2021). *The Economic Status of Asian American and Pacific Islander Women*.



feedback & support (+& intervention coding)

Ellen Markman

Aarthi Popat+
Cai Guo+
Aaron Chuey
David Rose
Kayla Good
Melissa Santos
Mercedes Muñoz
Mika Asaba
Nicky Sullivan
& you!

prereg, materials, data osf.io/hz76n

funding

Regina Casper Stanford Graduate Fellowship (SGF) in Science & Technology

MTurk

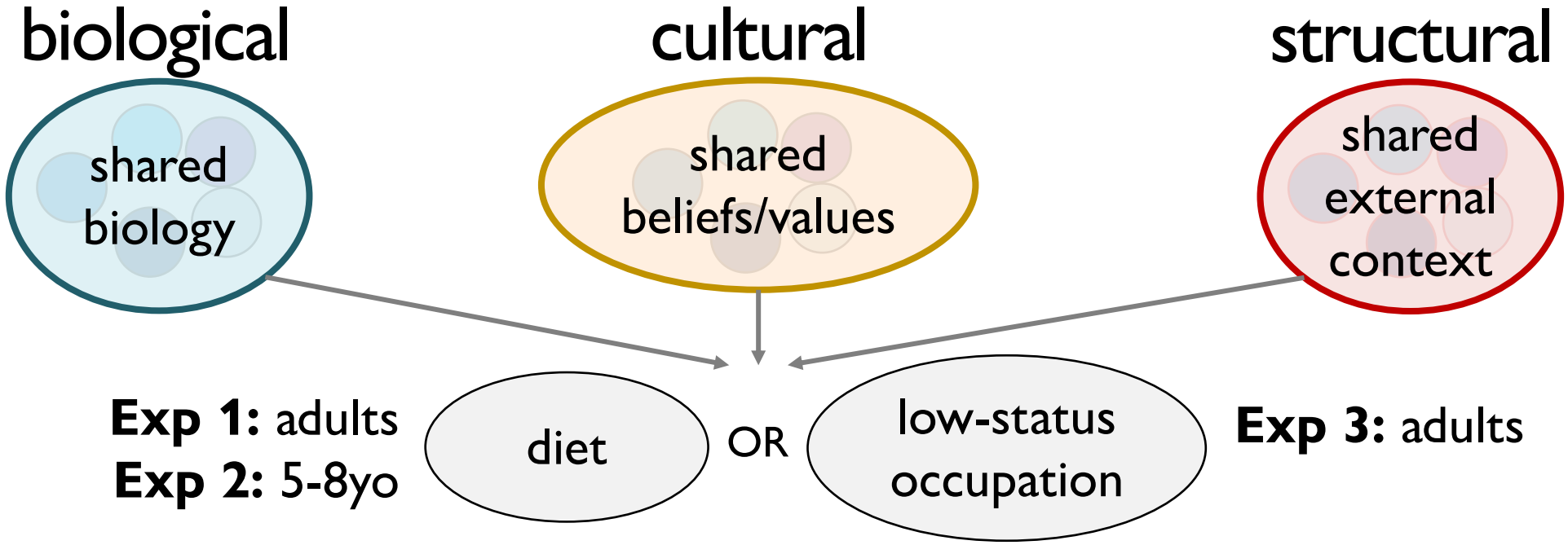
adult participants

Stanford Developmental Psychology

CHS ChildrenHelpingScience.com

online testing

Hyo Gweon
Teresa Garcia
Jessa Stegall
Brandon Carrillo
families & children who participated



structural representations as a positive alternative to essentialism

feel free to email me too!

marianna.zhang@stanford.edu

prereg, materials, data

osf.io/hz76n

Questions?