

General Principles of Human and Machine Learning



Tutorial 6: Social learning

Update on the quizzes overlapping

First, please give them my apologies for any inconsistencies in quiz content.

The mistake is that quiz #1 shouldn't have included content from the same week. But in spacing out the quizzes more evenly, there didn't end up being enough content from only the week 2 lecture, so I included some from week 3.

I would give students a choice for how to fix this:

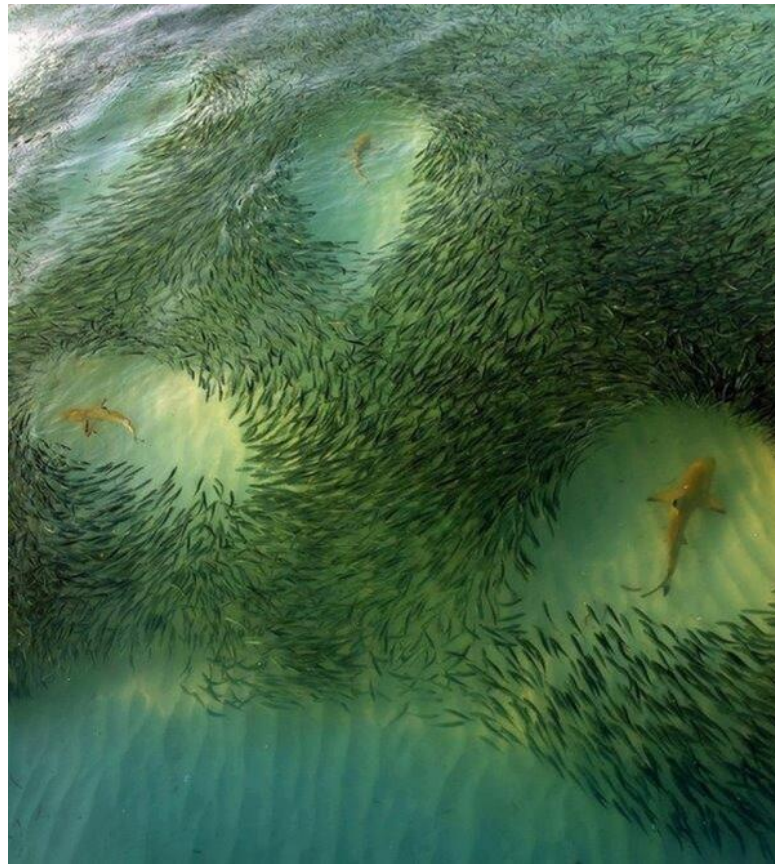
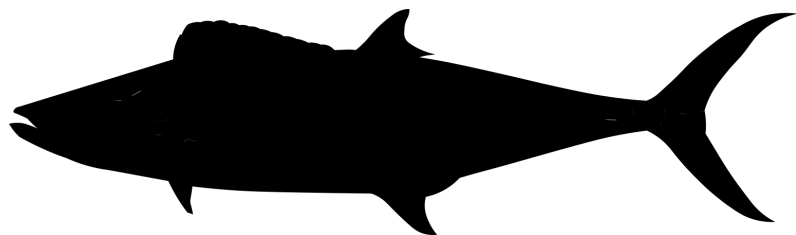
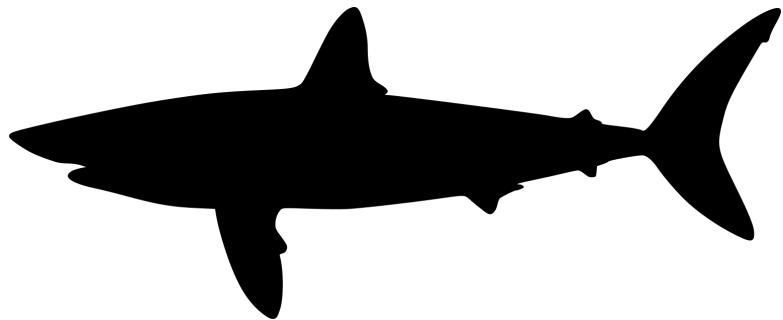
I can further reduce Quiz #2 to be out of 16 instead of 18. But then all same week content is fair game in future quizzes

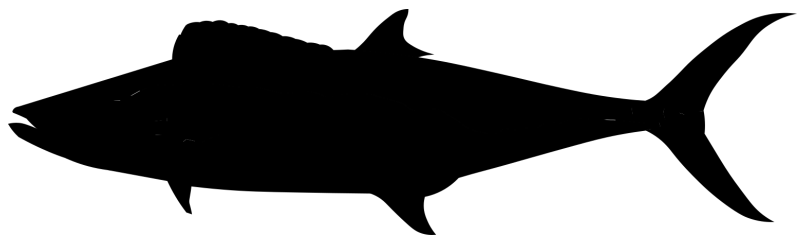
Leave Quiz #2 as it is, and we can stick to the rule as outlined in your nice visualization going forward

Do we know why the children (and adults) overimitate?

Nope, ecologists tend to not ask their subject questions :/ (I checked a few of the big and a few of the recent papers, but I might've missed something)

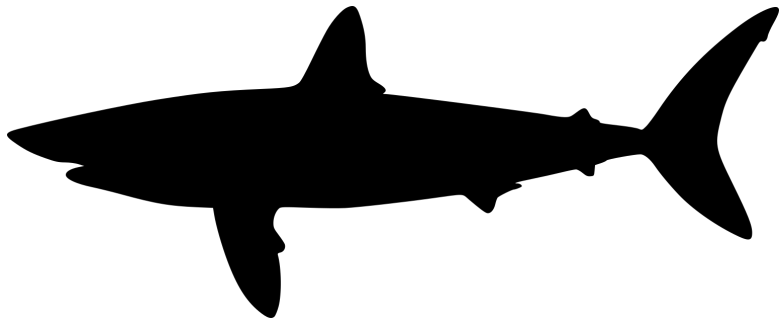
Introducing the shark-tuna game



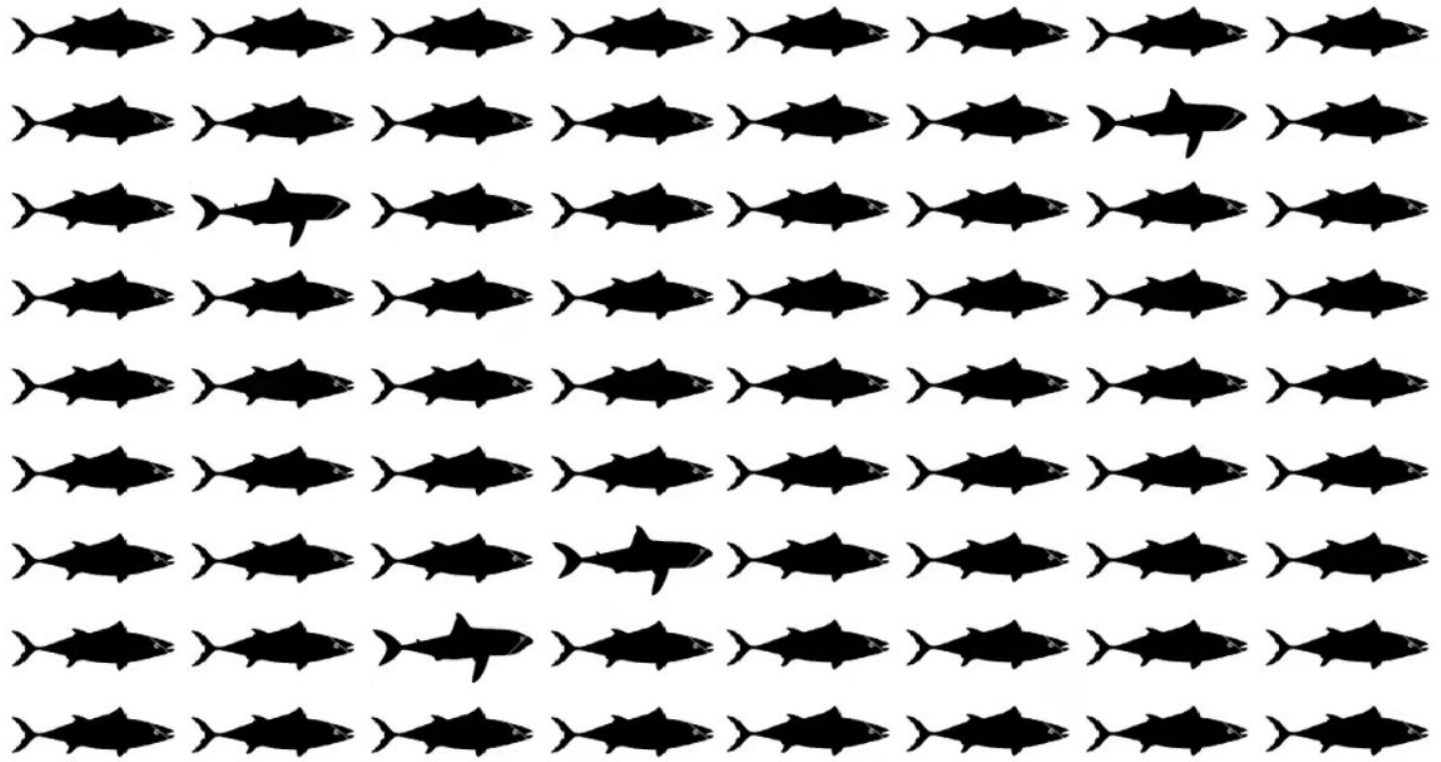


You are a tuna!

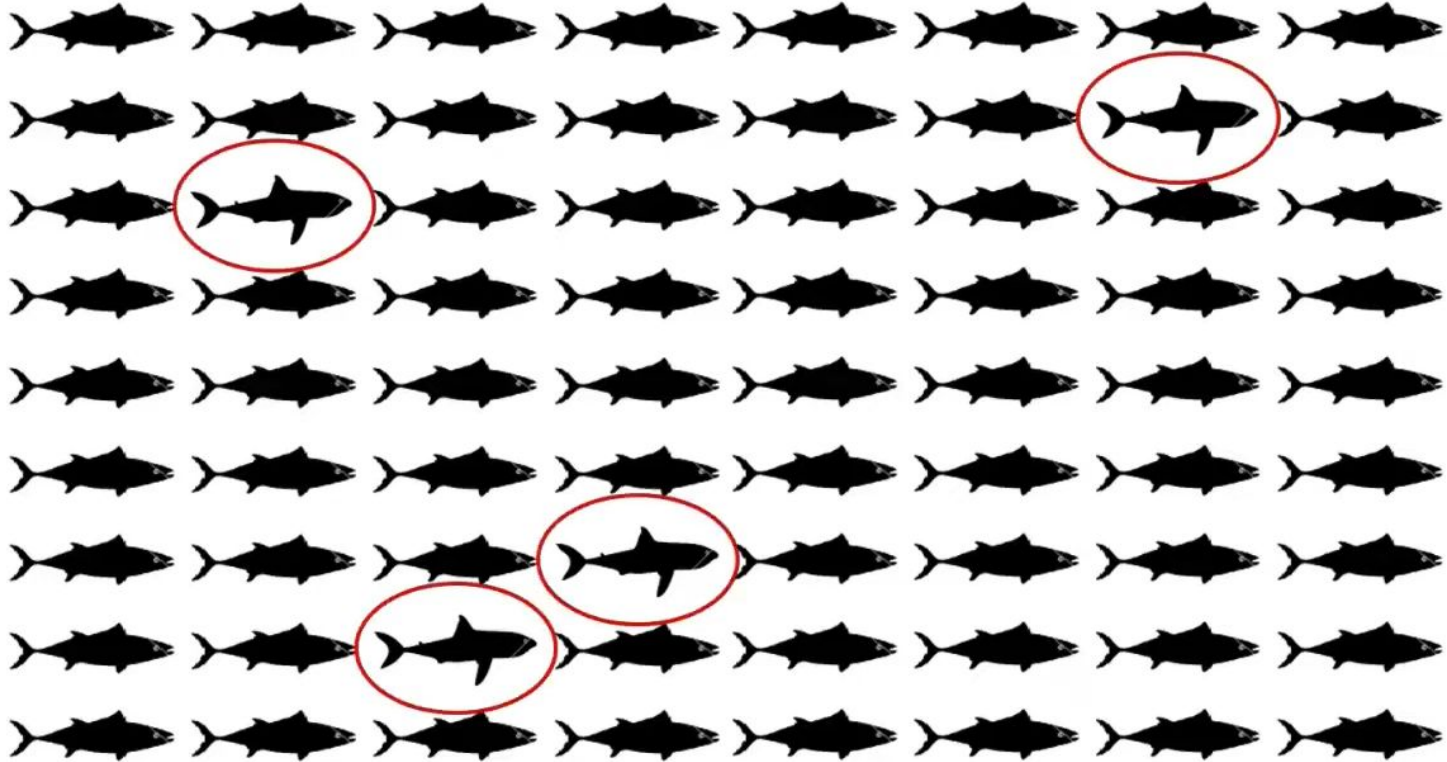
You'd like to forage, but if there's too many sharks, you must escape.



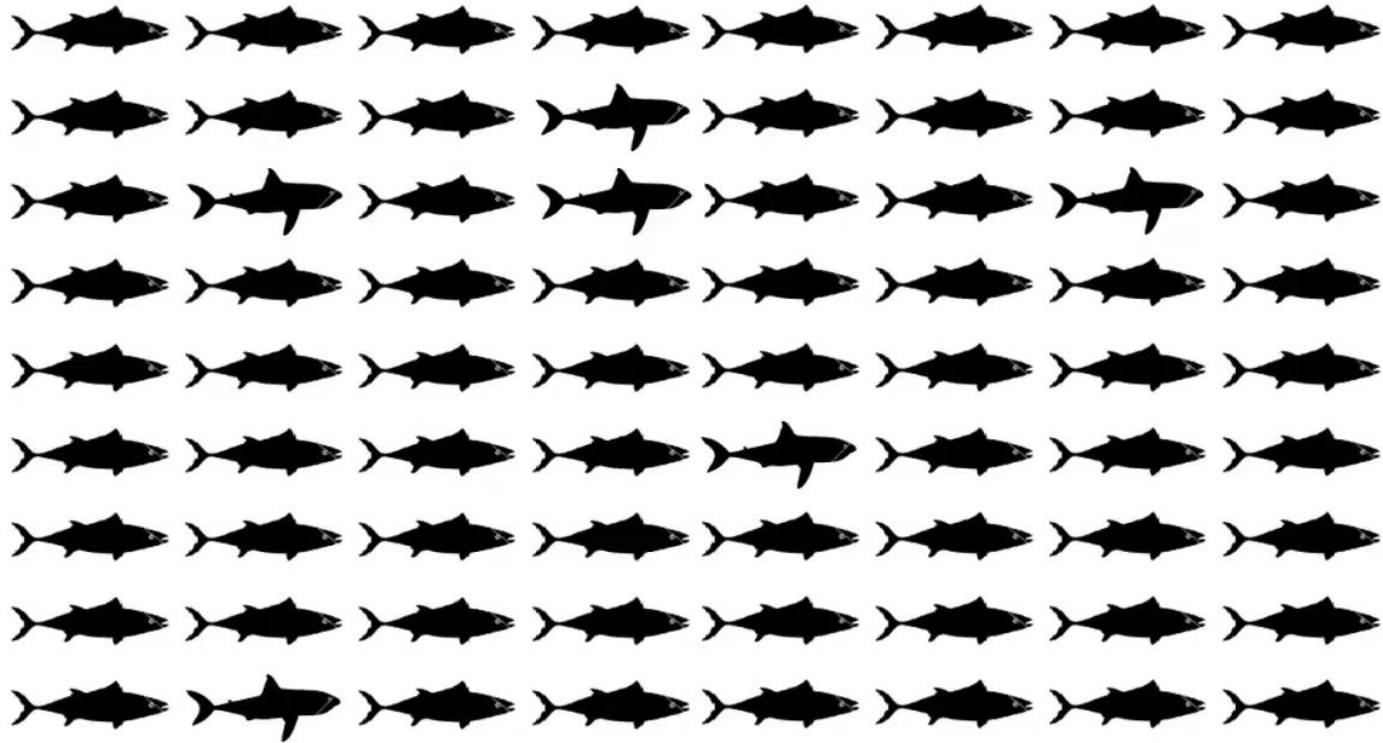
4 or less sharks: stay



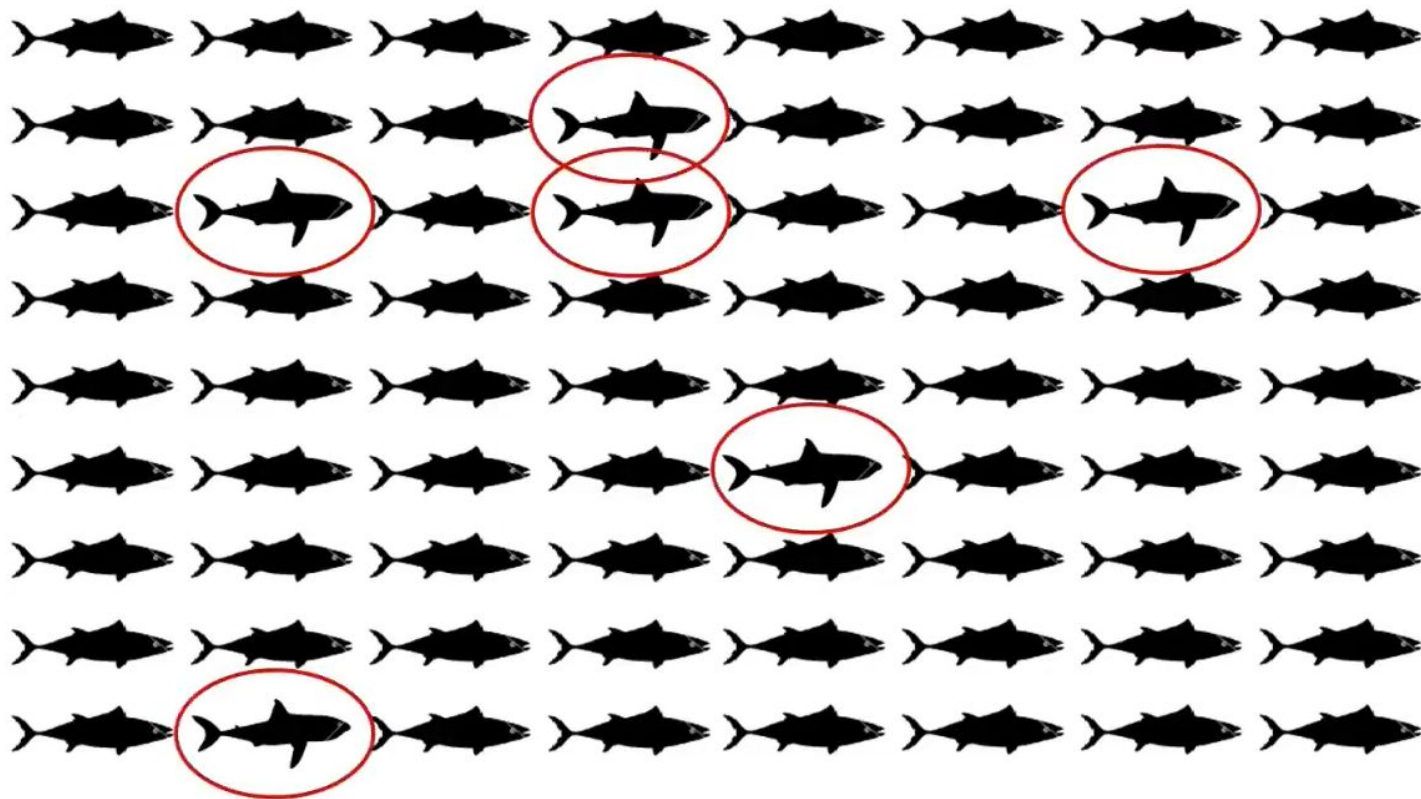
4 or less sharks: stay



5 or more sharks: escape



5 or more sharks: escape

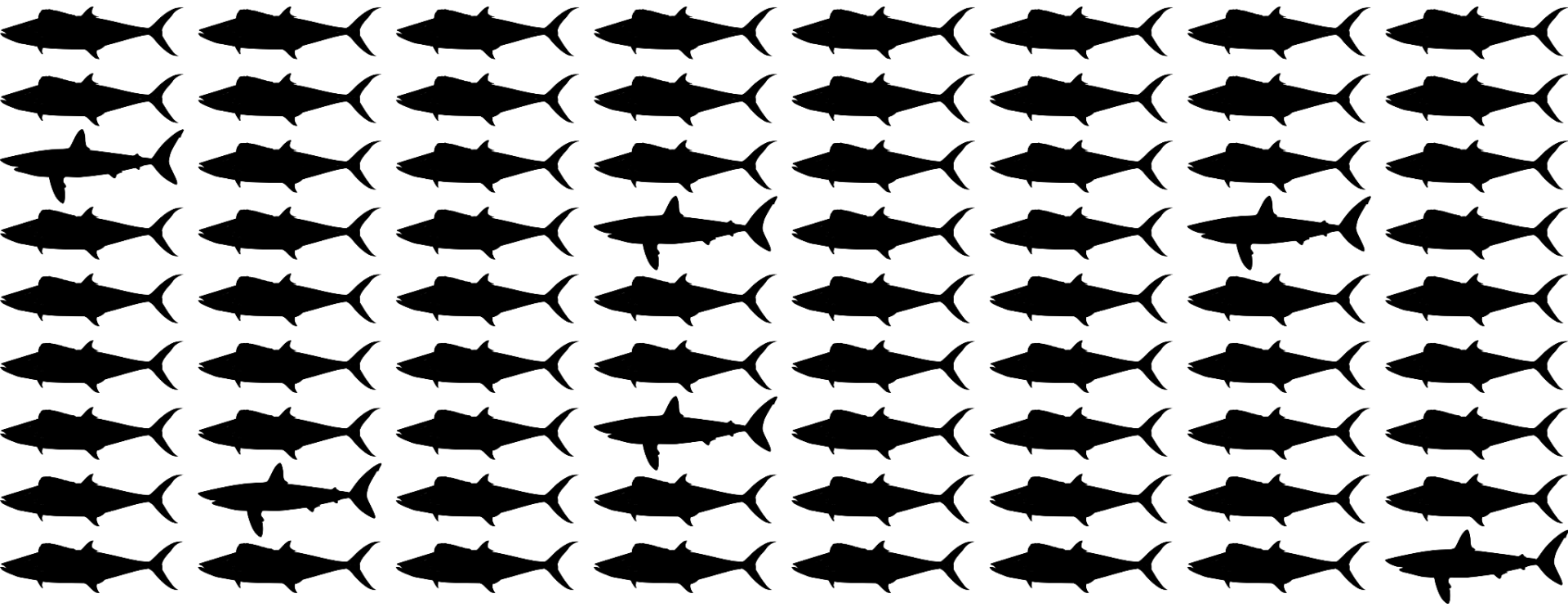


We'll do 5 solo, and 5 group rounds – in group rounds, you'll get to see everyone's choices as they come in

You'll get to see the fish for 3 seconds only!

Ready?
Solo round 1



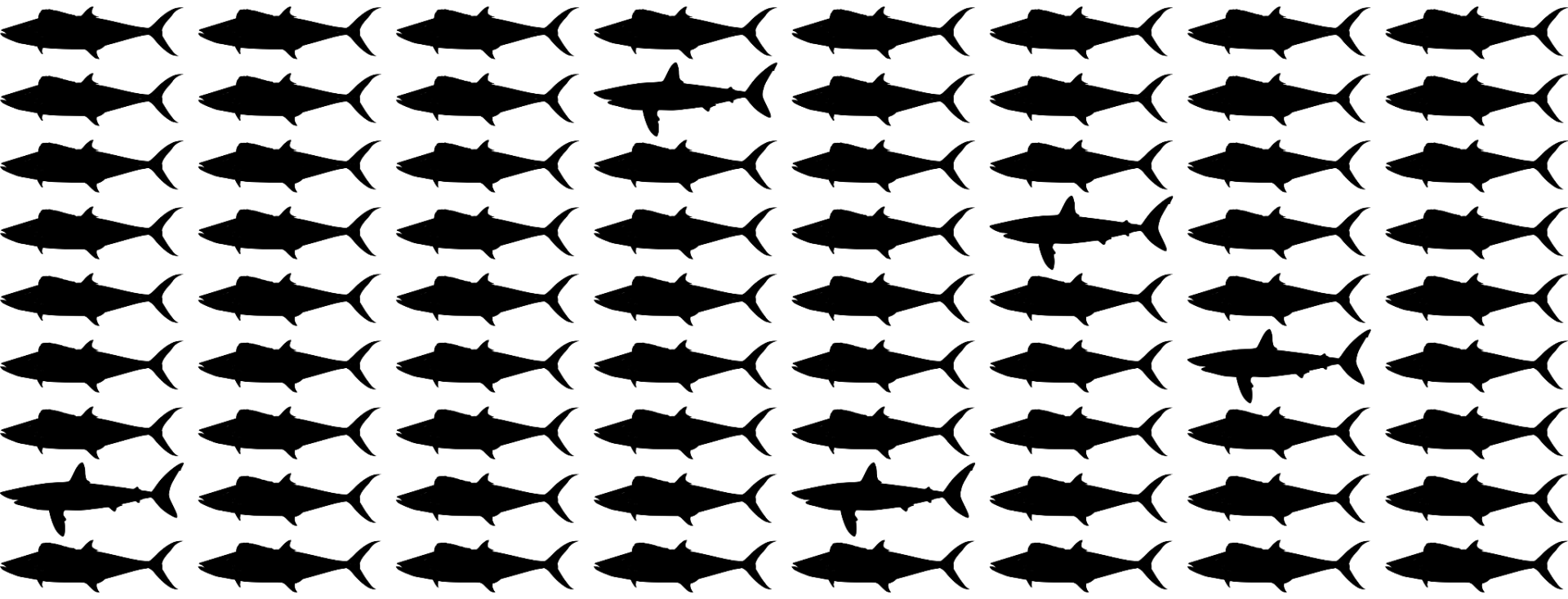


Time to choose!

Correct choice was: escape!

Ready?
Solo round 2



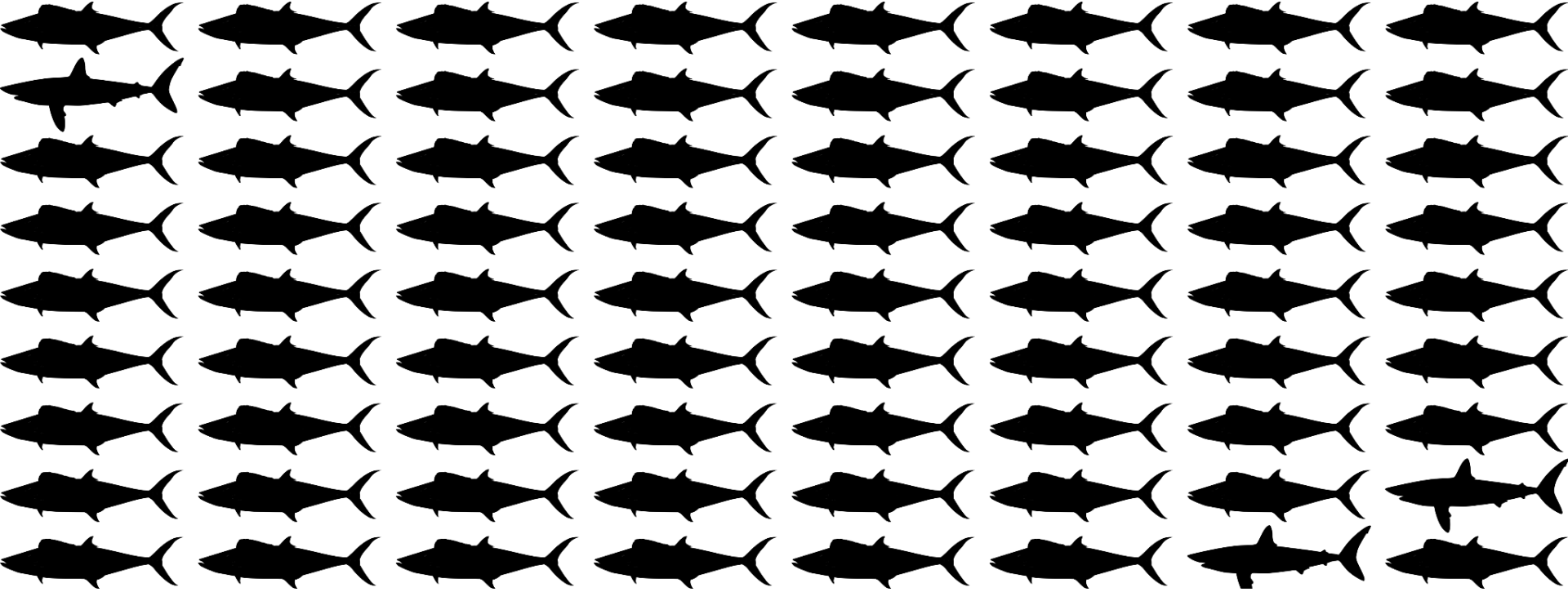


Time to choose!

Correct choice was: escape!

Ready?
Solo round 3



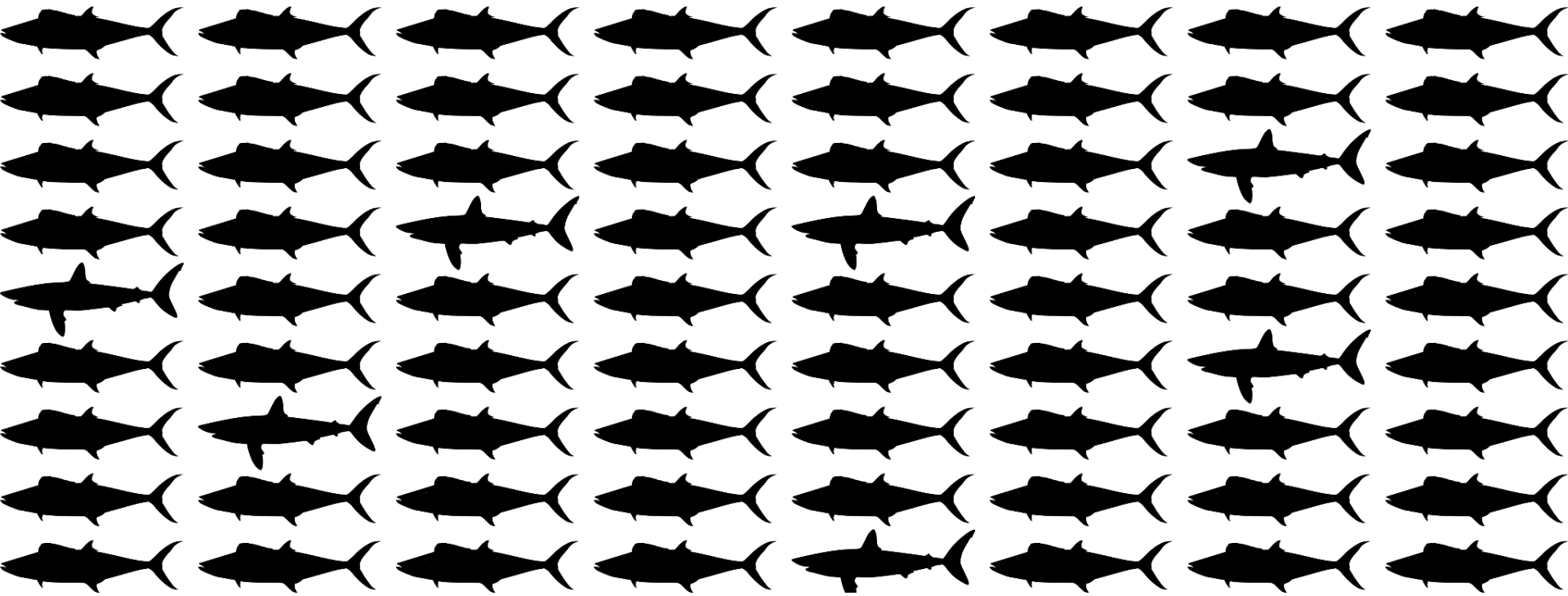


Time to choose!

Correct choice was: stay!

Ready?
Solo round 4



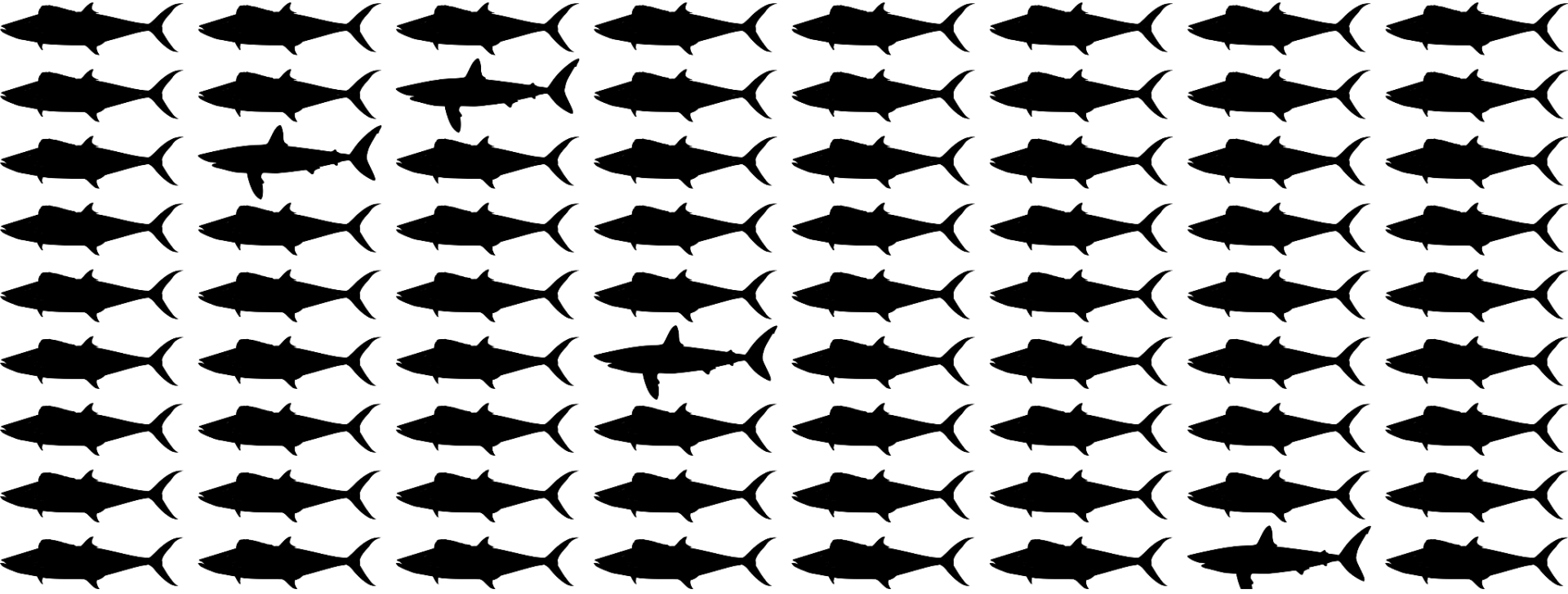


Time to choose!

Correct choice was: escape!

Ready?
Solo round 5



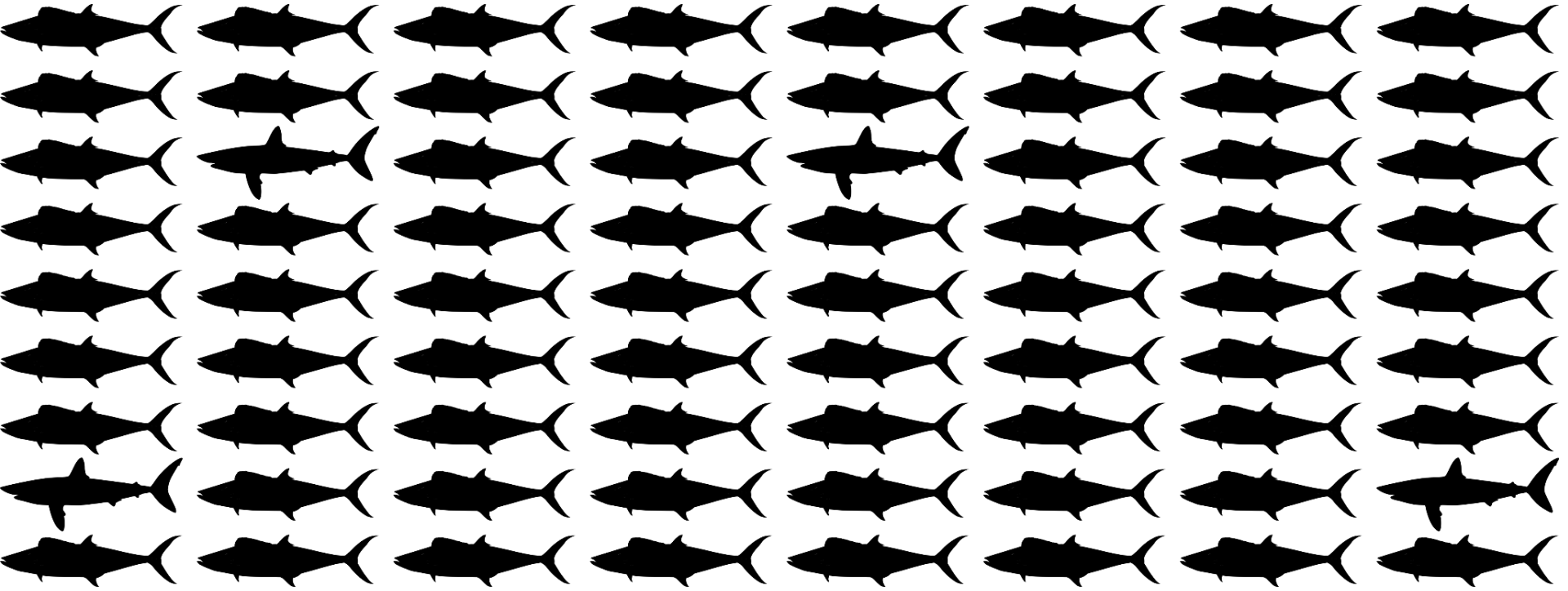


Time to choose!

Correct choice was: stay!

Ready?
Group round 1



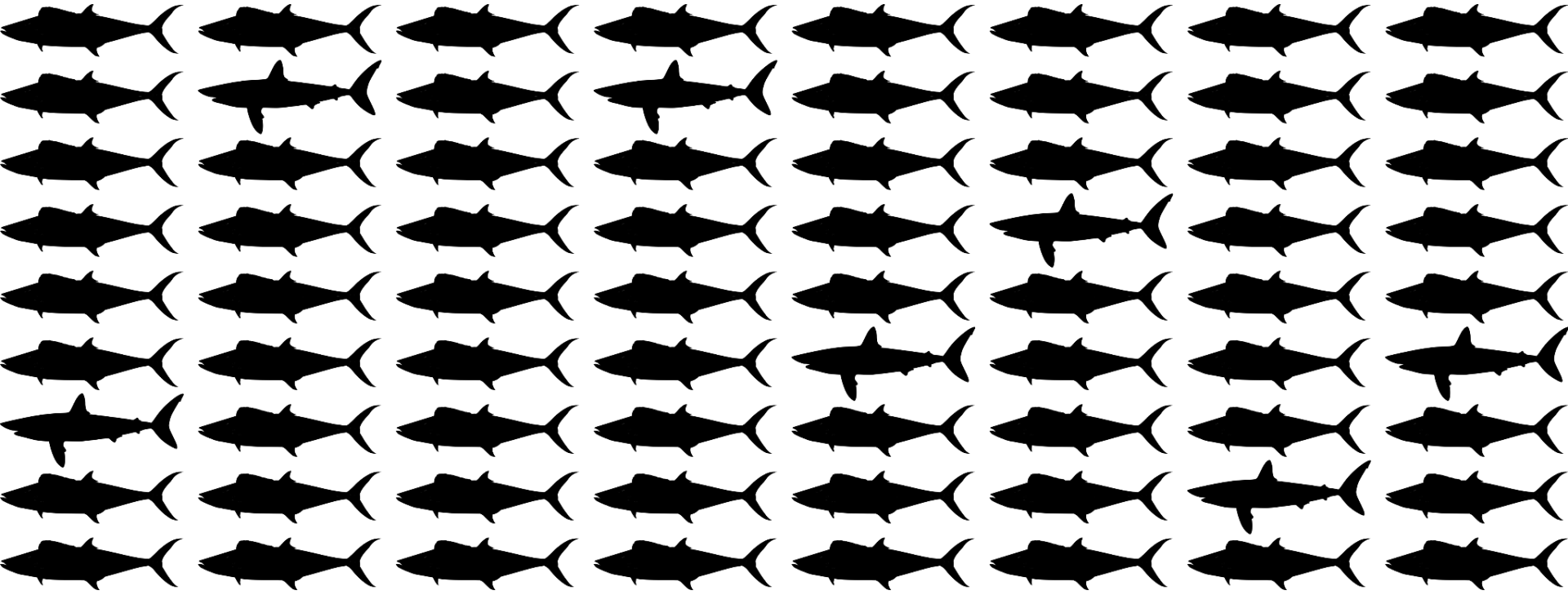


Time to choose!

Correct choice was: stay!

Ready?
Group round 2



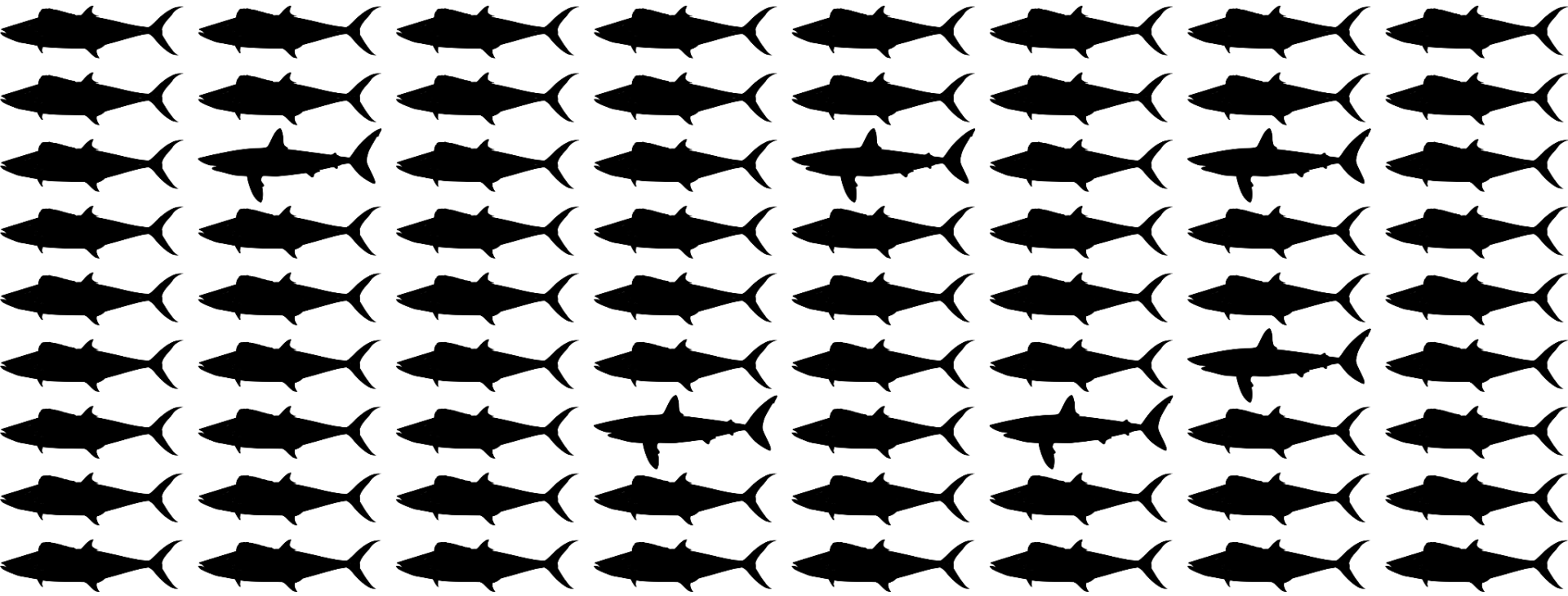


Time to choose!

Correct choice was: escape!

Ready?
Group round 3



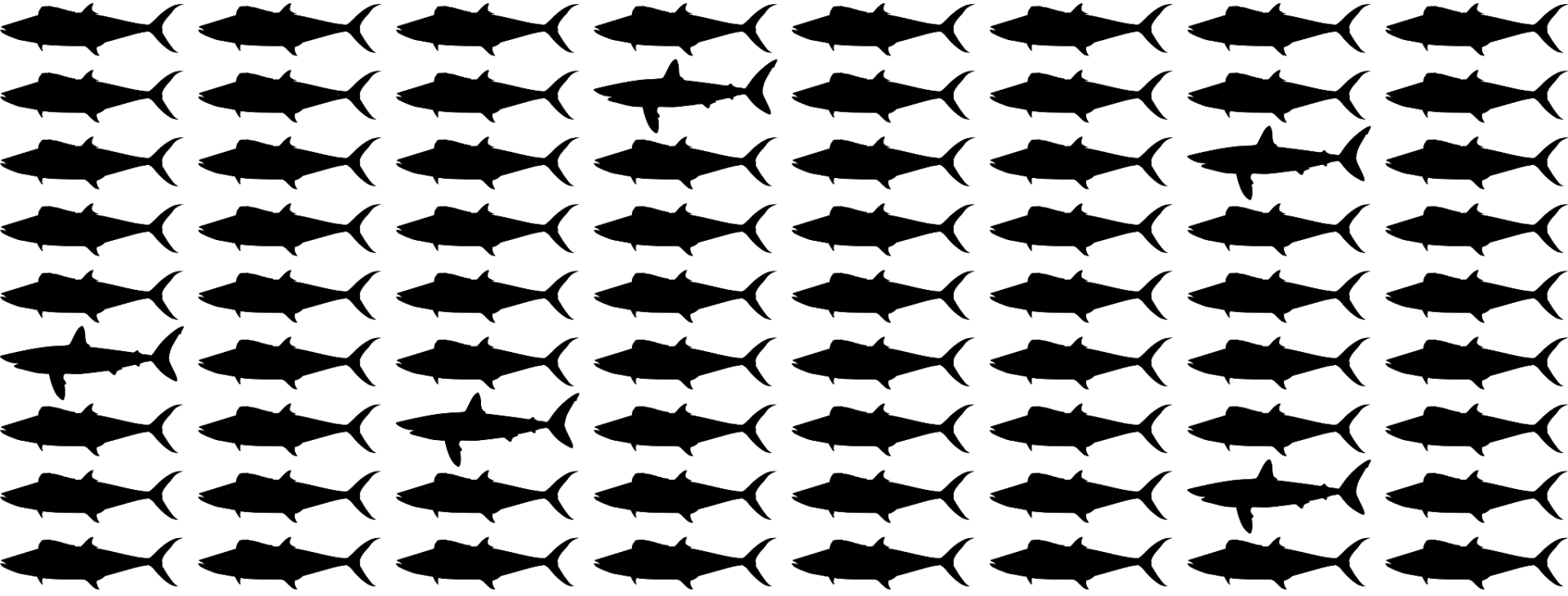


Time to choose!

Correct choice was: escape!

Ready?
Group round 4



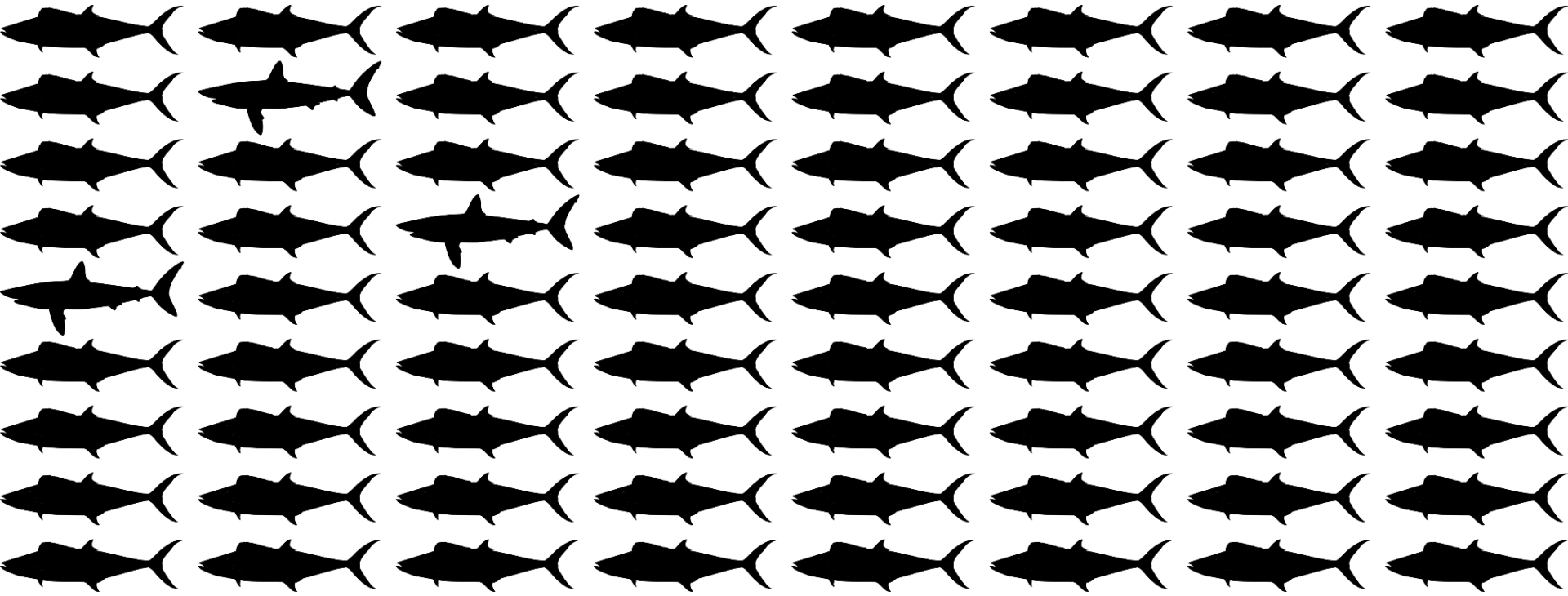


Time to choose!

Correct choice was: escape!

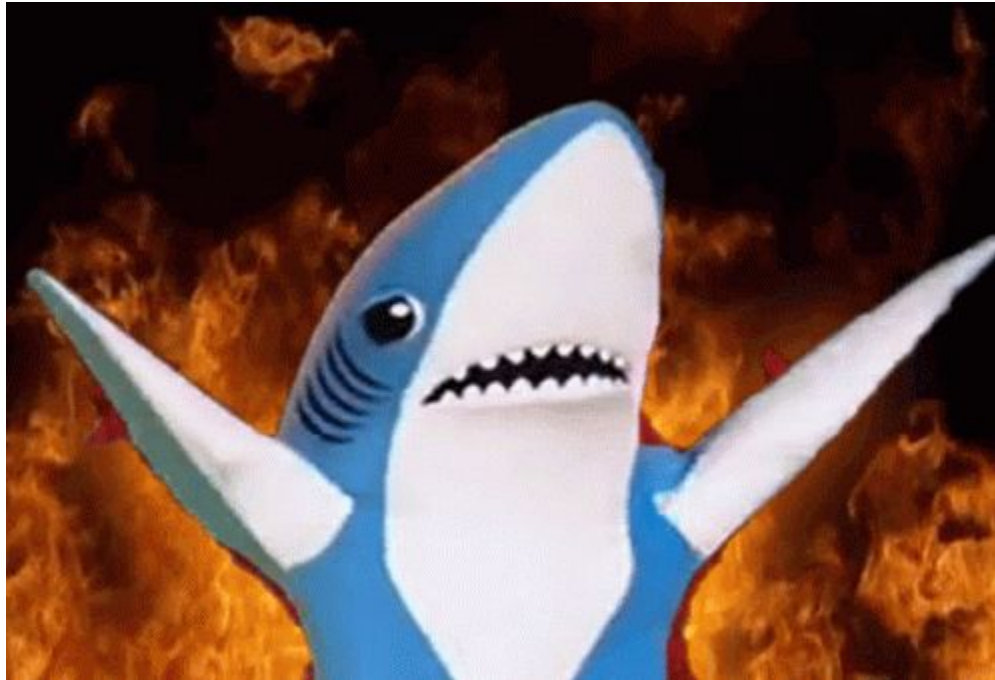
Ready?
Group round 5





Time to choose!

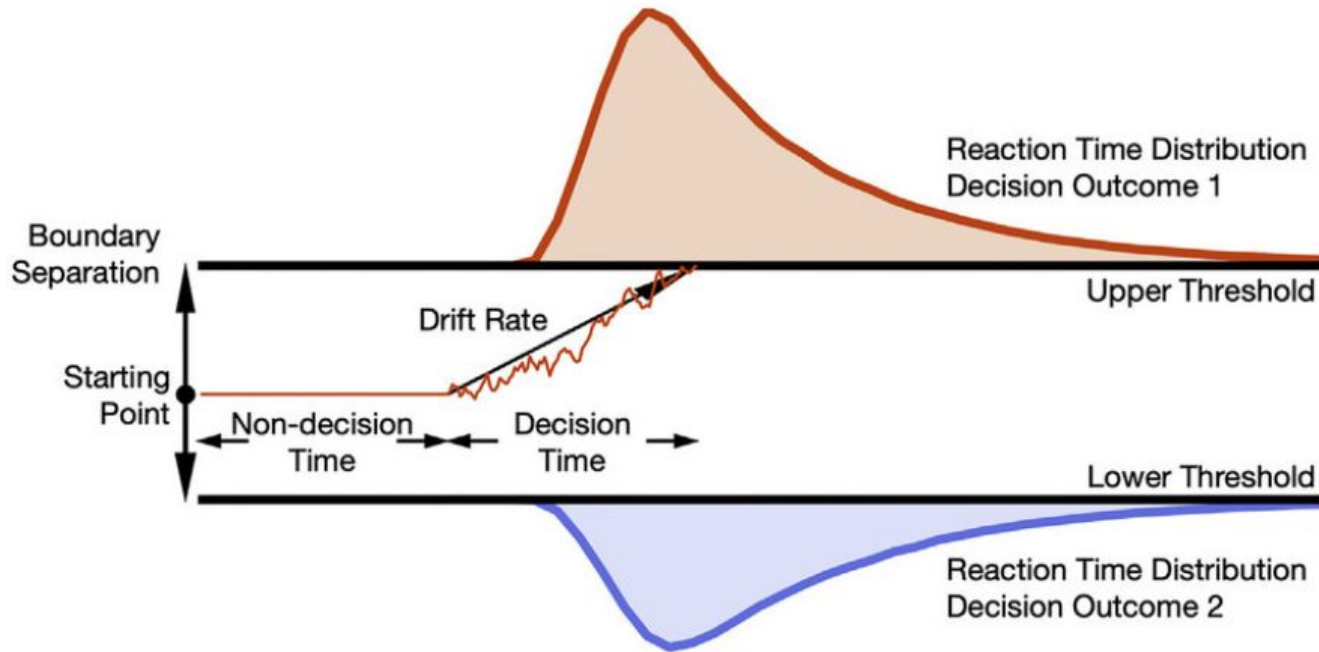
Correct choice was: stay!



Ideally performance was better in the group rounds!

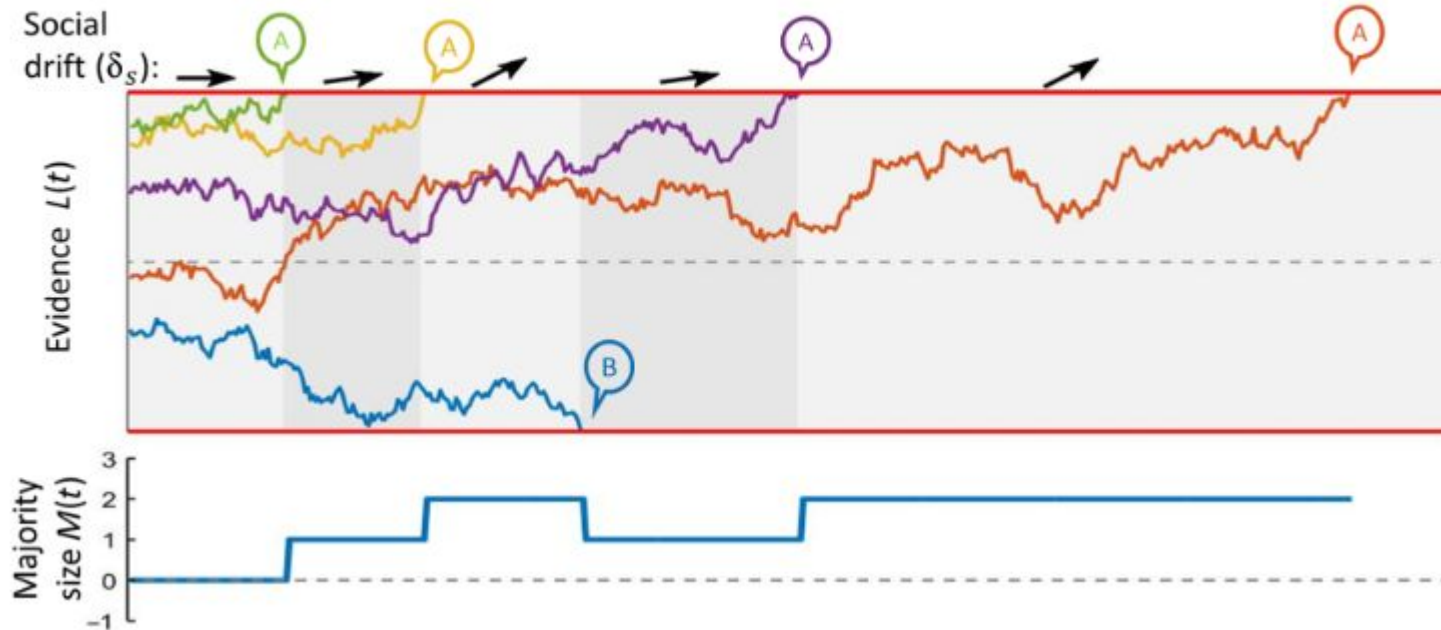
Why might that be?

Individual decision-making based on a noisy signal – the drift diffusion model

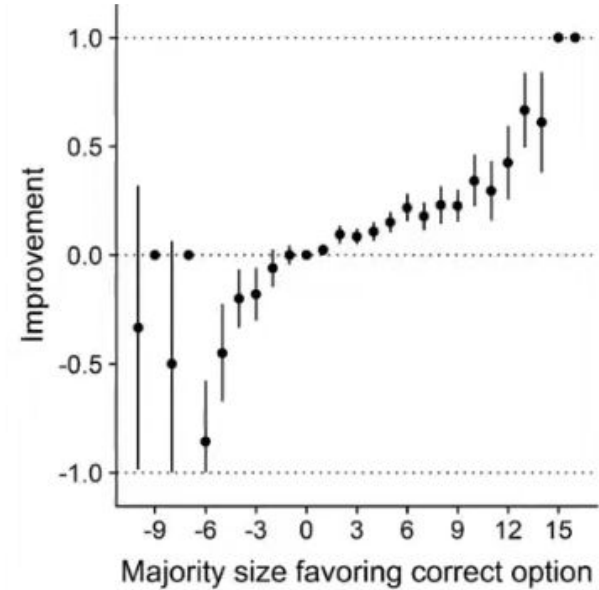
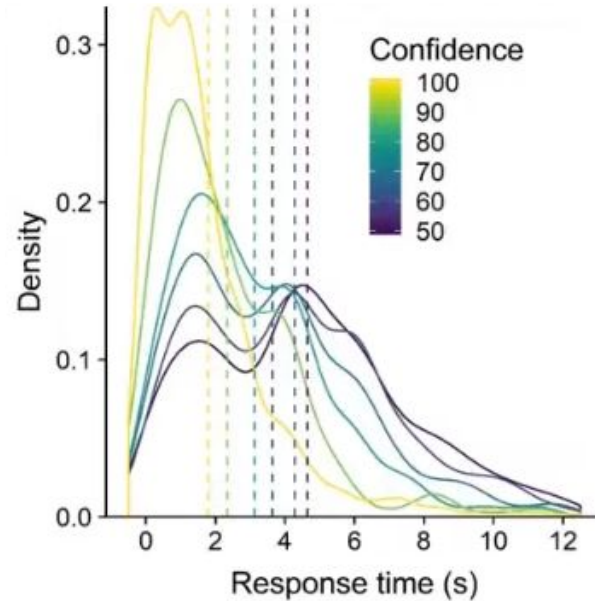
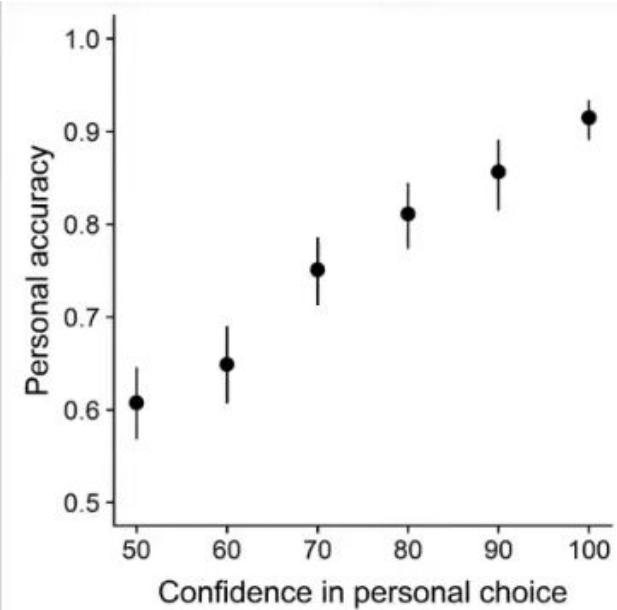


In social settings, we can add a social drift rate based on others' opinions

A The social DDM



So *ideally*, competent individuals will be confident, choose early, and benefit the group decision-making



Next up, pub quiz time!

3 stages:

1. Individual round – you just answer the questions (5 minutes)
2. Group round – you'll discuss some of the questions in groups. Per group, one person should submit the answers for the entire group. (10-15 minutes?)
3. Individual round II – you just answer the questions (5 minutes?)

Round 1 – individual



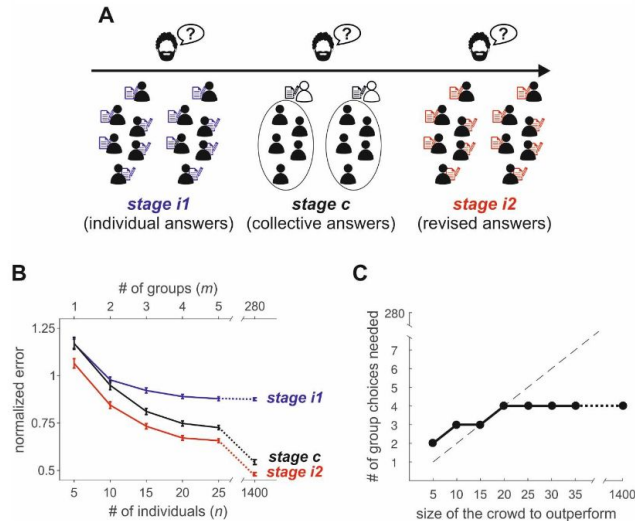
Round 2 – social
(check the form first to see which questions
you'll discuss!)



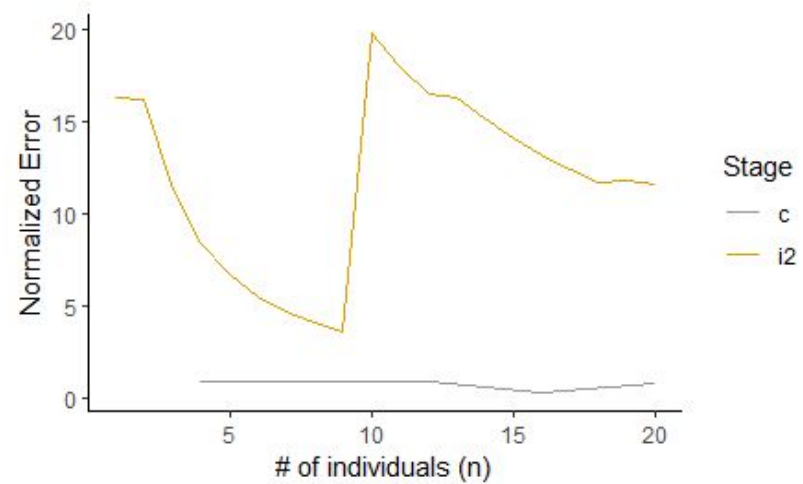
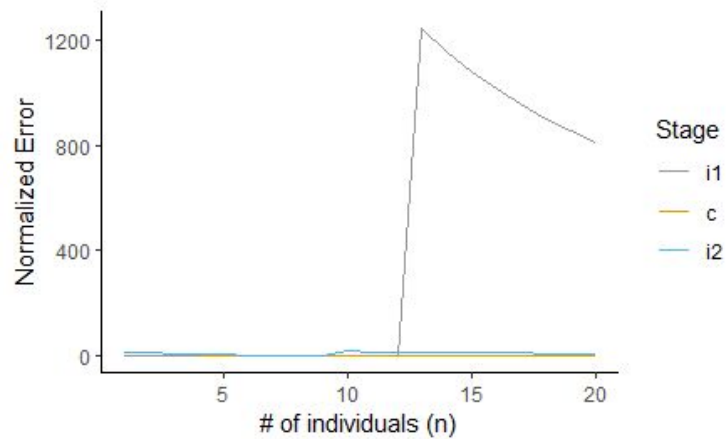
Round 3 – individual again!



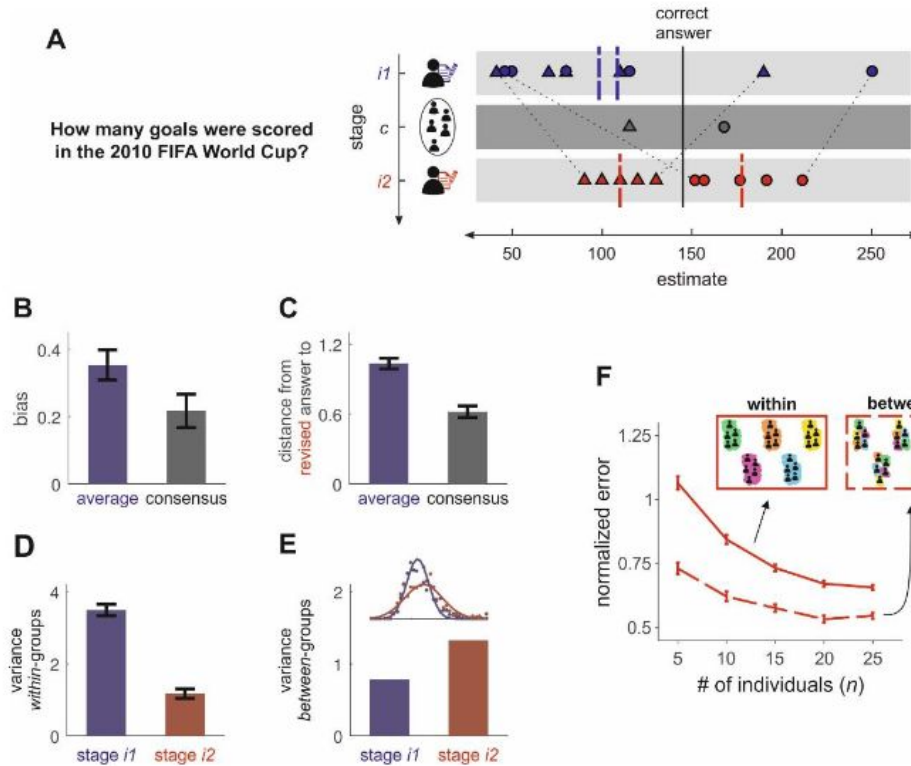
Ideally, average groups were better than the best individual, group choices were better than the group averages, and revised individual choices were best



Oh no



Mechanism?



Consensus choices are less biased on average, and revised choices are closer to consensus choices

Post group discussion, within group variance decreased, while between group variance increased

Wisdom of crowds – do we see it in real life?
Why? Why not? How could it work?