Prototype vs. Exemplar Theory

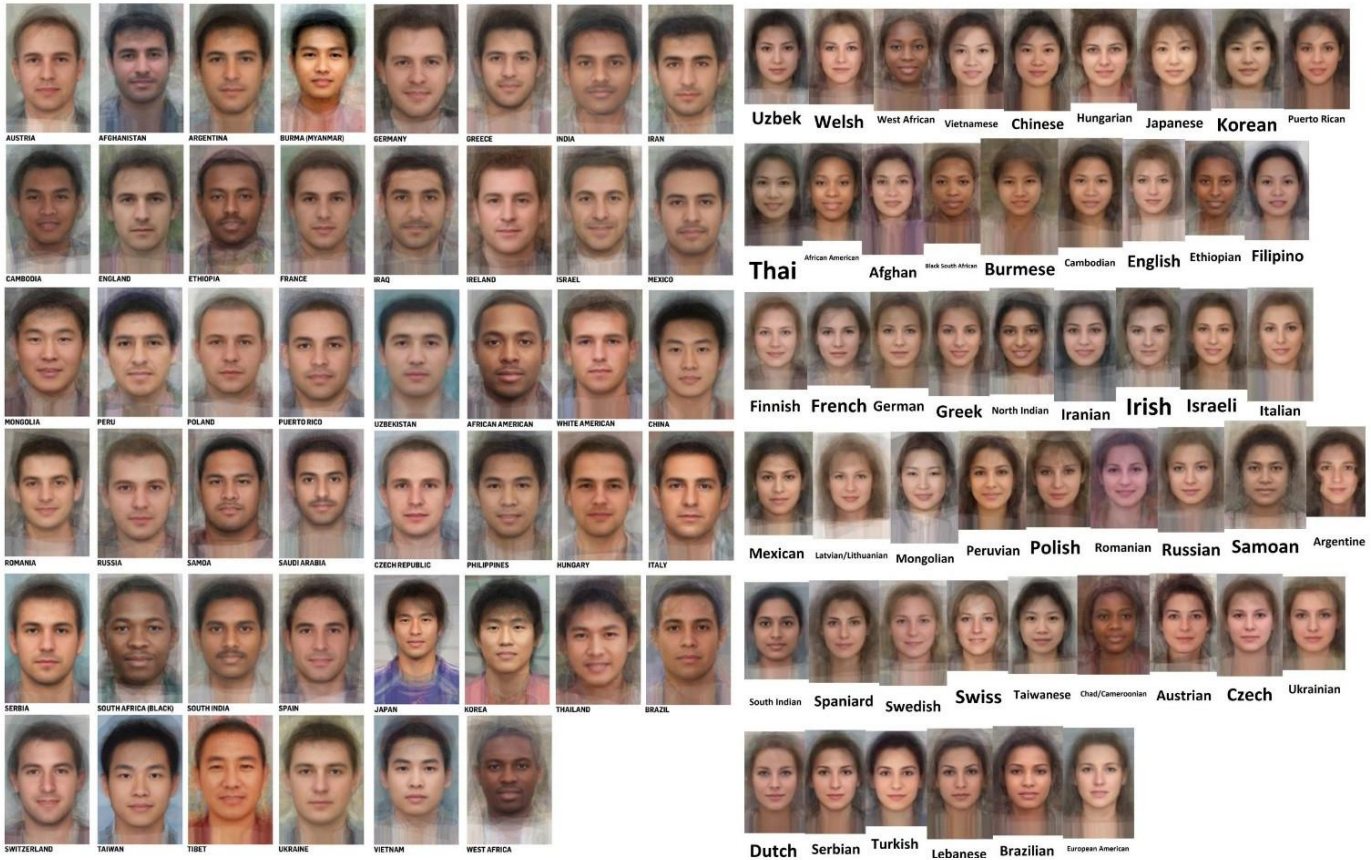
And some experiment design stuff

Prototype/exemplar models

Prototype
Store an averaged representation as a conceptual reference point.

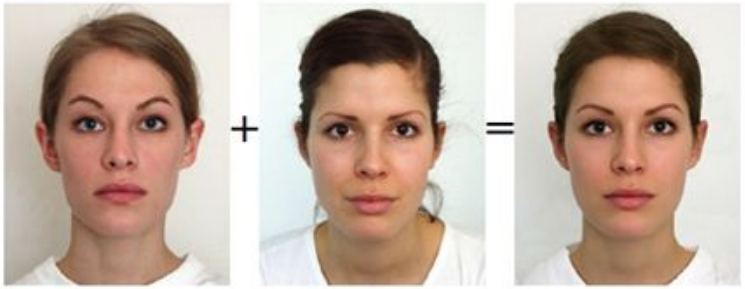
Exemplar
Store a specific (set of) remembered instance(s) as conceptual reference point for concept.
The more you encounter a specific item, the stronger representation you store in memory, leading to faster recall.

The most attractive faces you'll ever see (prototypical faces)



Prototype Theory

Data Stored Face Representation

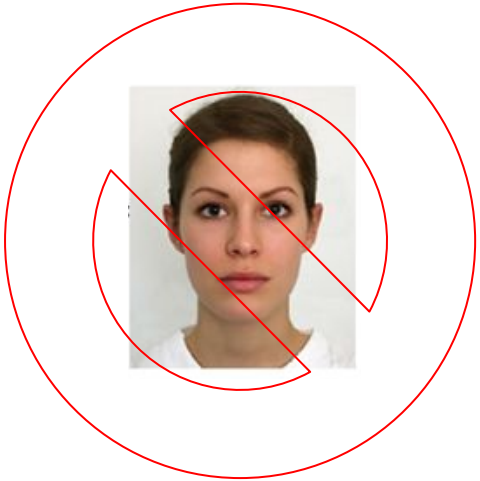


Prototype theory predicts that you store one averaged representation for a concept

Exemplar Theory

Data Set

Stored Face Representation



Exemplar theory predicts you store exact, frequent representation for a concept

Designing an Experiment

1) Identify the two theories you are interested in.
2) Think of differing prediction that they might make.
3) Design Task (to test the predictions)
    a) Create Stimuli
4) Consider results
    a) Outline 1st and 2nd hypotheses - what results would support each?
    b) Are the predictions for each hypothesis supported?
        i) If both, you’re doing it wrong

Forming good predictions

Good predictions identify ways to disambiguate between alternatives

Evidence: Lawn is Wet. Why??

	Prediction: Lawn conditions	Prediction: Humidity
Hypothesis A - It rained last night	All of lawn should be moist	The humidity is high (above average)
Hypothesis B - My sprinklers went off this morning	All of lawn should be moist	The humidity is average

Which is a good prediction to test? Which is a bad prediction to test?

Do you entertain multiple hypotheses or just one?

Hypothesis 1: You entertain one hypothesis at a time

Prediction: When you find out that your hypothesis is wrong, you should choose a new one at random.

Hypothesis 2: You entertain multiple hypotheses at a time

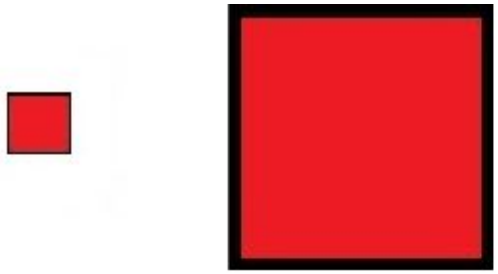
Prediction: When you find out that your hypothesis is wrong, you should have one clear runner up.

Design a Task

Teach a very broad concept in a concept learning task, but don’t give data that explains the full concept (i.e., appeal to simplicity of the concept).

Then give a data point that is inconsistent with the concept but consistent with a slightly more complex concept that is consistent with all the data.

Ask participants to define the concept at the end of the task.

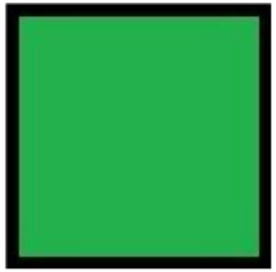


It’s Blicky!

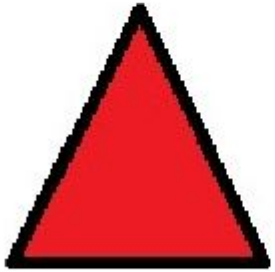
It’s Blicky!

It’s Blicky!

It’s Not Blicky.



It’s Not Blicky.



It’s Blicky!

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Outline the possible results, addressing predictions

One Hypothesis Only:

If participants define a hypothesis at random, this would support Hypothesis 1, that people track a single hypothesis at one time.

Multiple Hypotheses:

If participants have a clear runner-up hypothesis, this would support Hypothesis 2, that people track multiple hypotheses at one time.