

Reverse Correlation:

A data-driven approach to the content
of mental representations

A picture is worth a couple hundred trials

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SICSS 2019

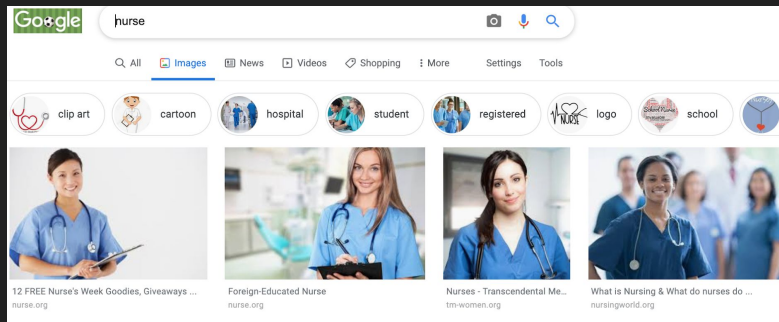




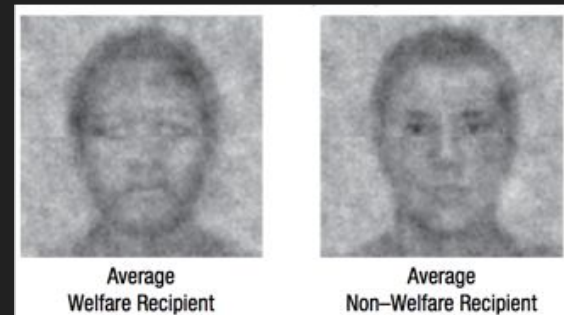
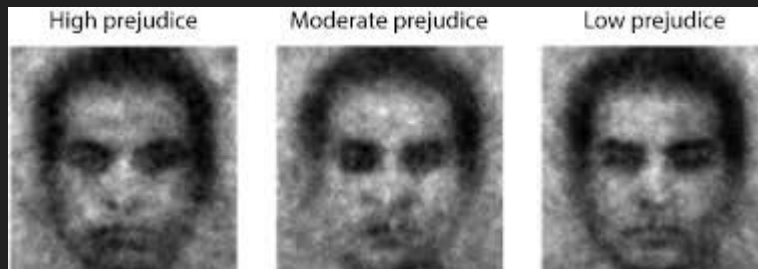
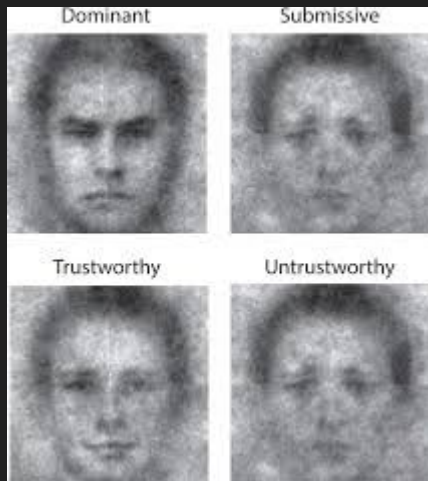
What are the contents of people's mental representations?



How do people represent the same stimulus differently?



What are the cooccurrences between categories?



How are personality characteristics represented in faces?

How does individual prejudice shape the representation of outgroup members?

How are representations of welfare recipients racialized?

Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological and Personality Science*, 3(5), 562-571.

Dotsch, R., Wigboldus, D. H., Langner, O., & van Knippenberg, A. (2008). Ethnic out-group faces are biased in the prejudiced mind. *Psychological science*, 19(10), 978-980.

Brown-Iannuzzi, J. L., Dotsch, R., Cooley, E., & Payne, B. K. (2017). The relationship between mental representations of welfare recipients and attitudes toward welfare. *Psychological science*, 28(1), 92-103.



What is this person's expression?



Who looks happier?



How do I do it?

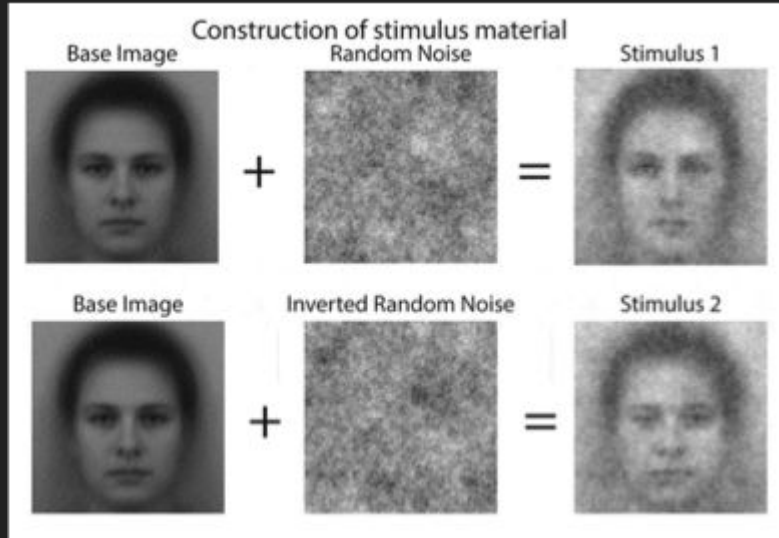
1. Start with a base image
2. Add noise
3. Get participant choices
4. Make a composite
5. Analyze your composite

Start with a base image



Make your own: <https://webmorph.org/>

Add noise



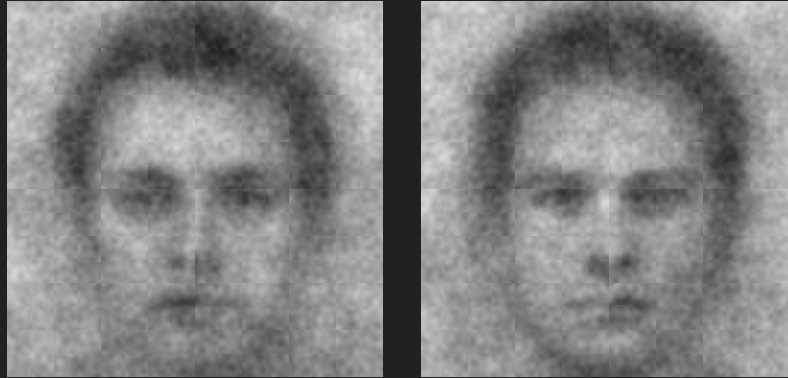
```
# Load reverse correlation package ("rcicr")  
library(rcicr)  
set.seed(12111986)  
base_face_files <- list('my_face'='face.jpg')  
generateStimuli2IFC(base_face_files, n_trials = 400)
```

Brinkman, L., Todorov, A., & Dotsch, R. (2017). Visualising mental representations: A primer on noise-based reverse correlation in social psychology. *European Review of Social Psychology*, 28(1), 333-361.

Tutorial: <http://www.rondotsch.nl/rcicr/>



Get participant choices



Who looks more competent?

Who would you vote for?

Who looks like John Travolta?

Make a composite

Grouping
variable for
composite

Participant
choice
(-1 or 1)

Parameters
generated
by rcicr

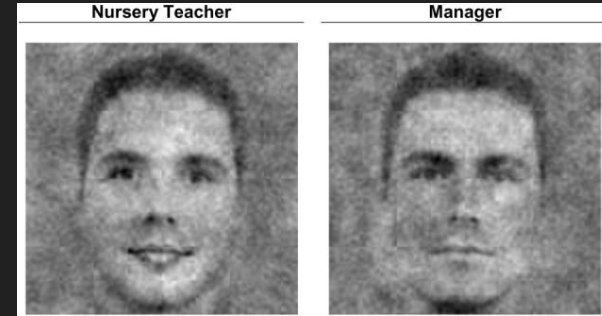
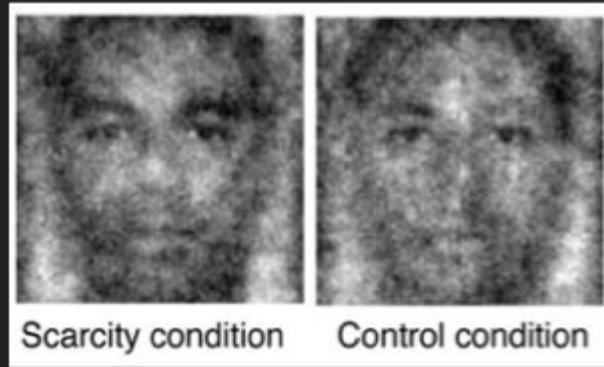
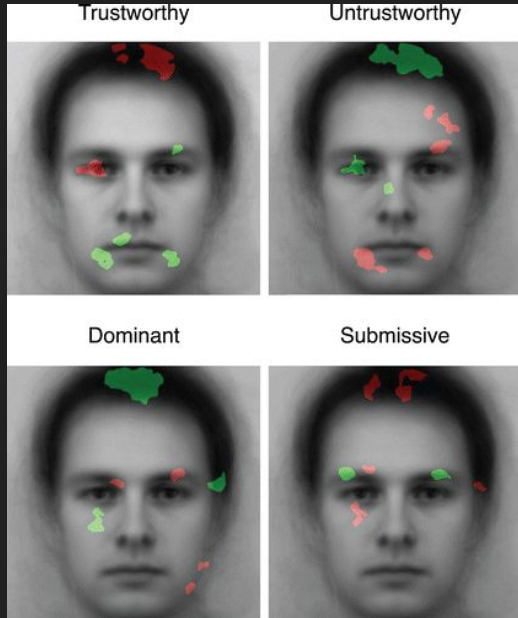
```
rcis <- batchGenerateCI2IFC(responsedata2, 'Cond', 'Trial', 'choice', baseimage, rdata)
```

Dataframe of
participant
choices

Index for
stimulus
pair

Your
base image

Analyze your composite



Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological and Personality Science*, 3(5), 562-571.

Krosch, A. R., & Amodio, D. M. (2014). Economic scarcity alters the perception of race. *Proceedings of the National Academy of Sciences*, 111(25), 9079-9084.

Imhoff, R., Woelki, J., Hanke, S., & Dotsch, R. (2013). Warmth and competence in your face! Visual encoding of stereotype content. *Frontiers in psychology*, 4, 386.

