

Modeling Identity as Behavior

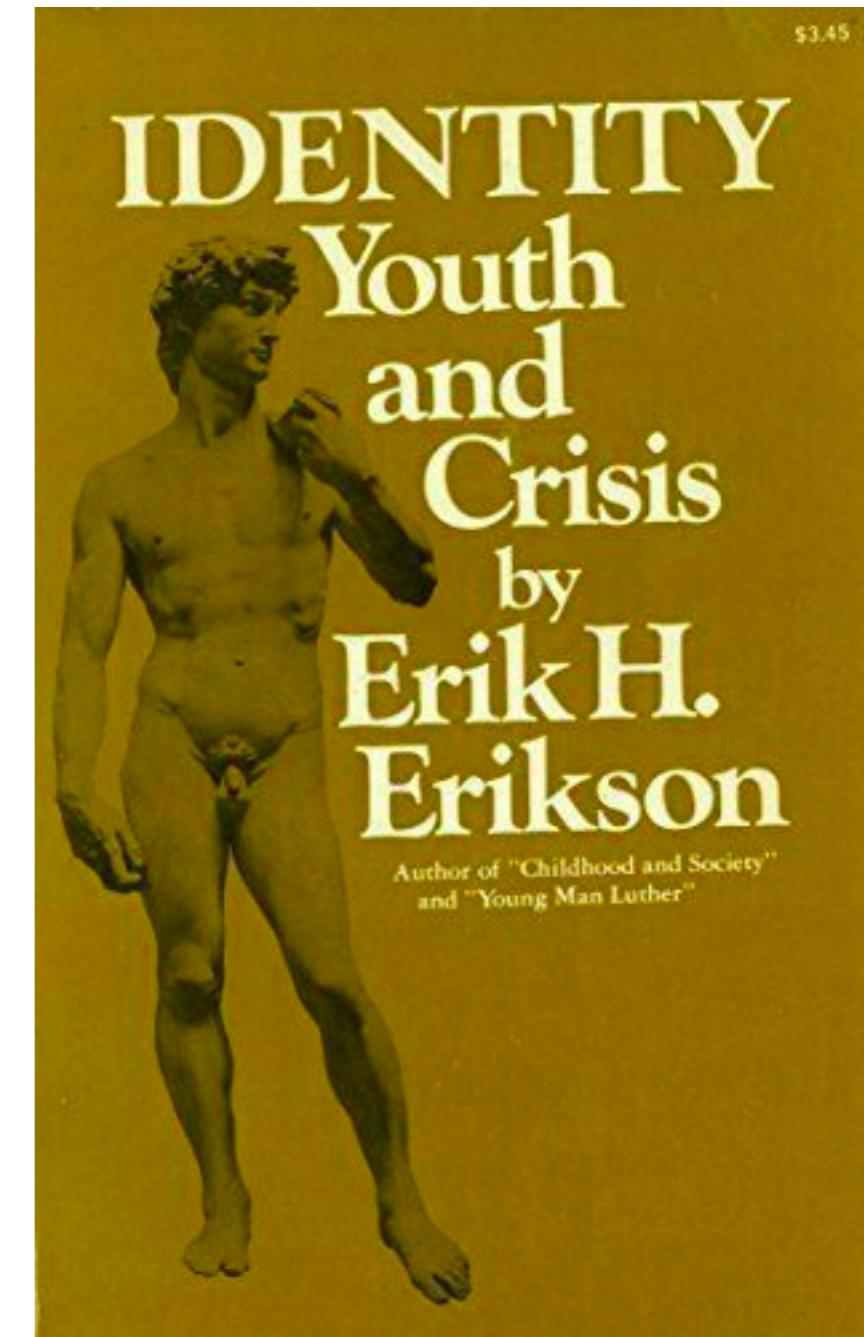
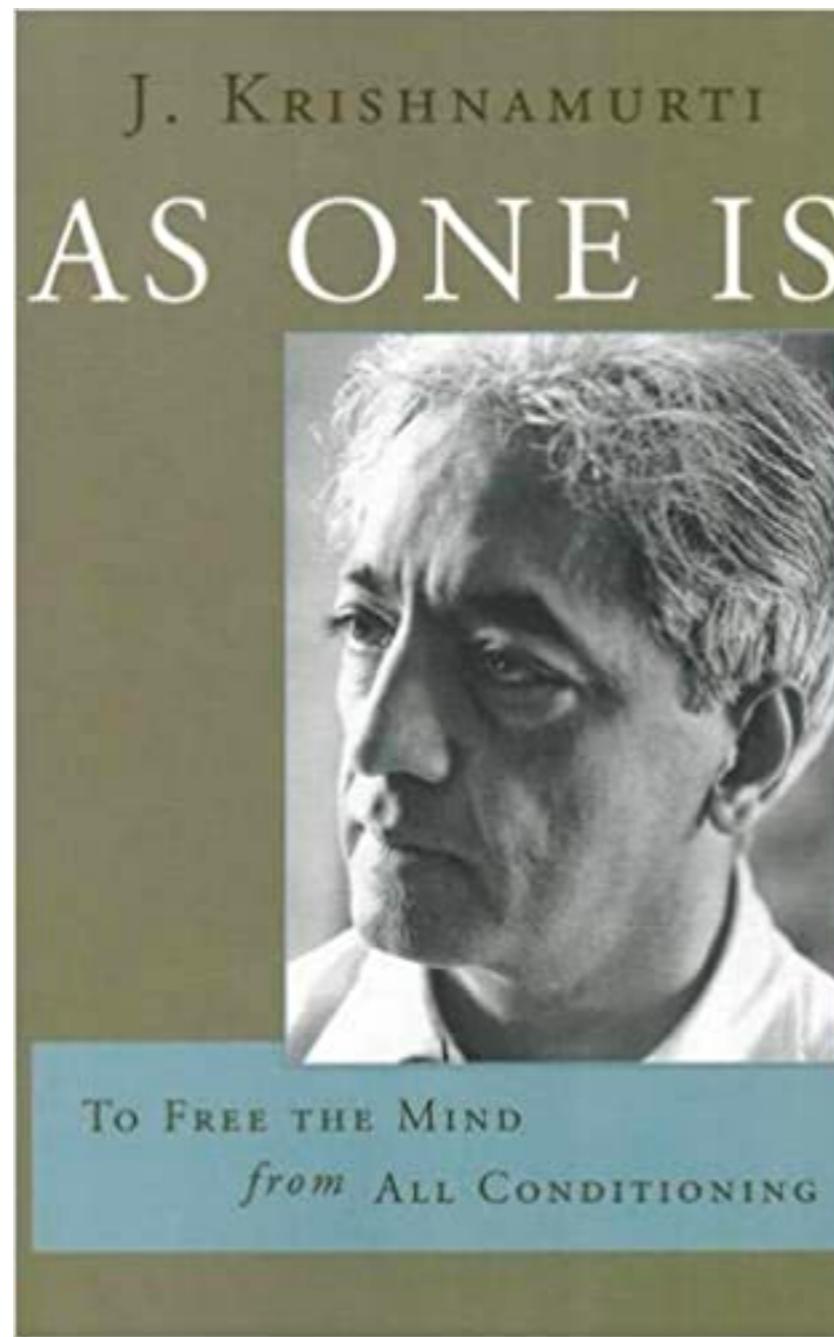
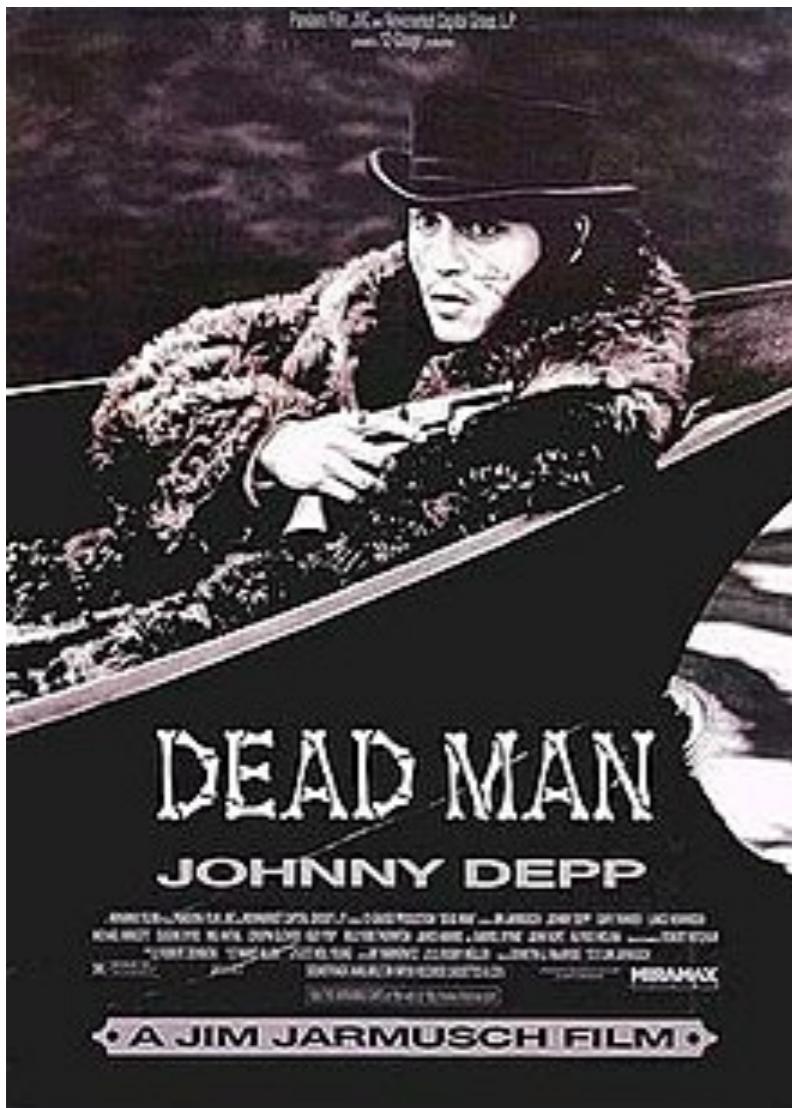
Paul E. Smaldino

University of California, Merced

 @psmaldino



Identity is super interesting



Identity is also squishy



The Social Self: On Being the Same and Different at the Same Time

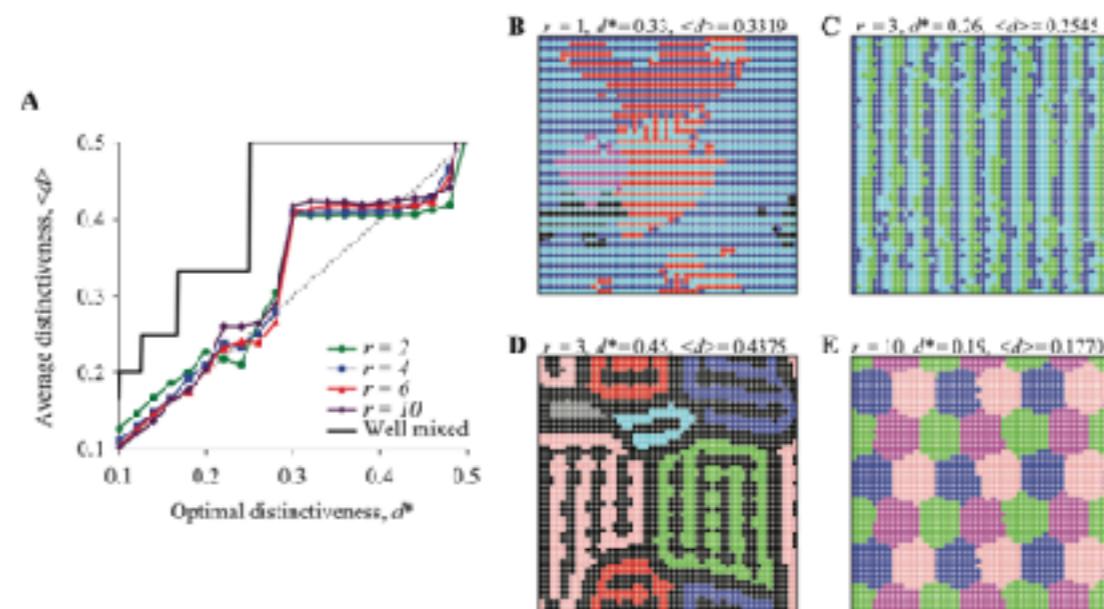
Marilynn B. Brewer
University of California, Los Angeles

 **JASSS**

Paul Smaldino, Cynthia Pickett, Jeffrey Sherman and Jeffrey Schank (2012)
<http://jasss.soc.surrey.ac.uk/15/4/7/smaldino.html>

An Agent-Based Model of Social Identity Dynamics

Journal of Artificial Societies and Social Simulation 15 (4) 7
[<http://jasss.soc.surrey.ac.uk/15/4/7.html>](http://jasss.soc.surrey.ac.uk/15/4/7.html)



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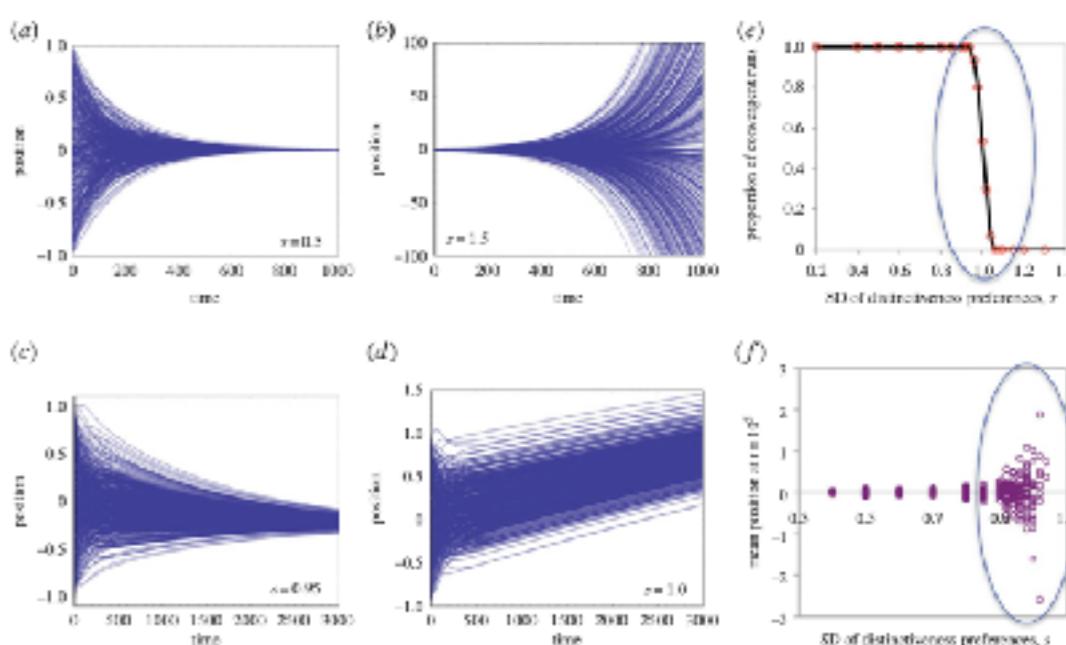
Cite this article: Smaldino PE, Epstein JM. 2015 Social conformity despite individual preferences for distinctiveness. *R. Soc. open sci.*

Social conformity despite individual preferences for distinctiveness

Paul E. Smaldino^{1,2} and Joshua M. Epstein²

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What is identity for?

**Cooperation:
a foundation of social life.**



**But, not all cooperators are equal.
Partner choice matters.**



Once an individual is willing to cooperate, they must find a partner or group ***with whom to cooperate.***

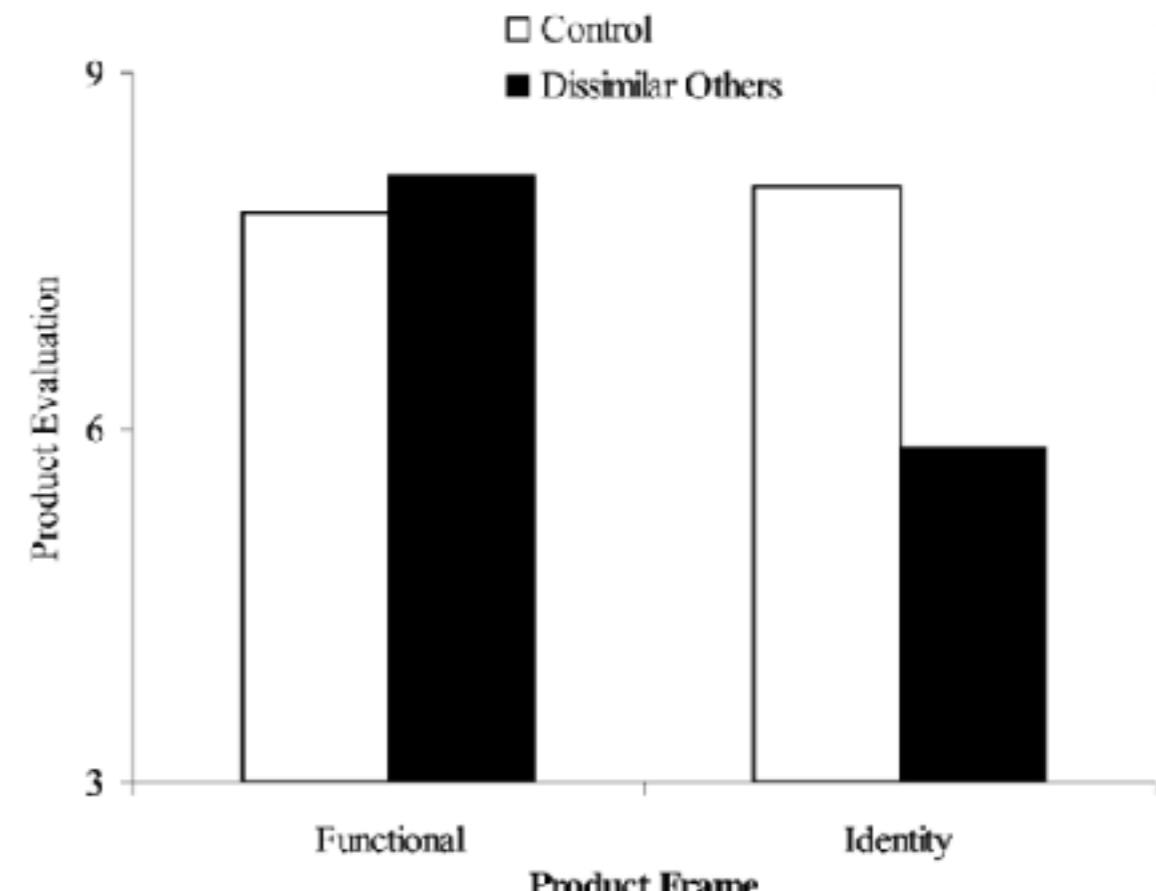
Important considerations:

- ▶ Common ground for communication
- ▶ Similar background, experiences, and traditions/norms help to coordinate interests
- ▶ Shared intentionality and a group mindset.
- ▶ Empathizing with others' feelings and experiences
- ▶ Appropriate task-related personality and skills

These are all related to **identity**

Identity as a signal

- Primed to think about product adoption in terms of identity, Stanford undergrads were told a product (MP3 player) was rated highly by either “individuals” or “business executives” (who students found dissimilar but did not dislike).



Identity as a signal



Man accused of pointing gun over bumper stickers to be tried

Originally published January 26, 2018 at 10:13 am | Updated January 26, 2018 at 10:45 am

By The Associated Press

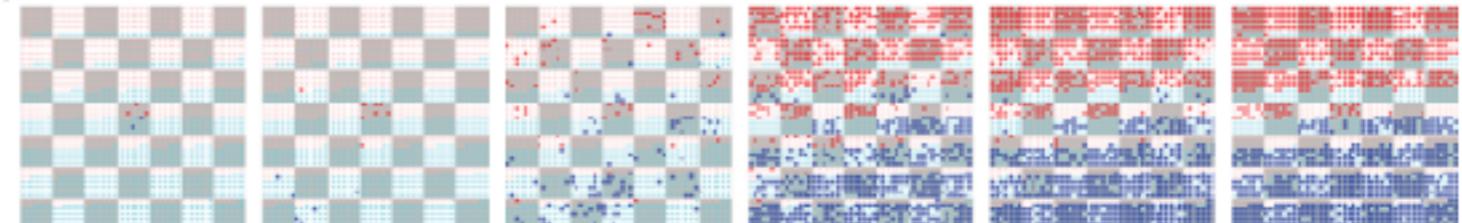
Adoption as a social marker: Innovation diffusion with outgroup aversion

Paul E. Smaldino^a, Marco A. Janssen^b, Vicki Hillis^c, and Jenna Bednar^d

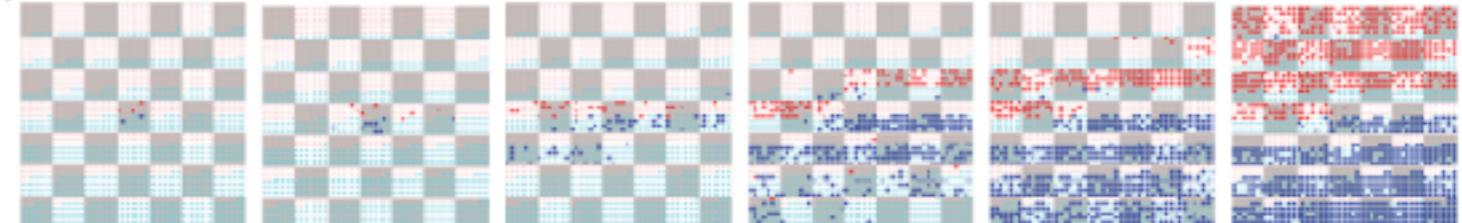
$$\frac{dN_1}{dt} = (a_1 + b_1 N_1 + c_1 N_2)(m_1 - N_1),$$

$$\frac{dN_2}{dt} = (a_2 + b_2 N_2 + c_2 N_1)(m_2 - N_2),$$

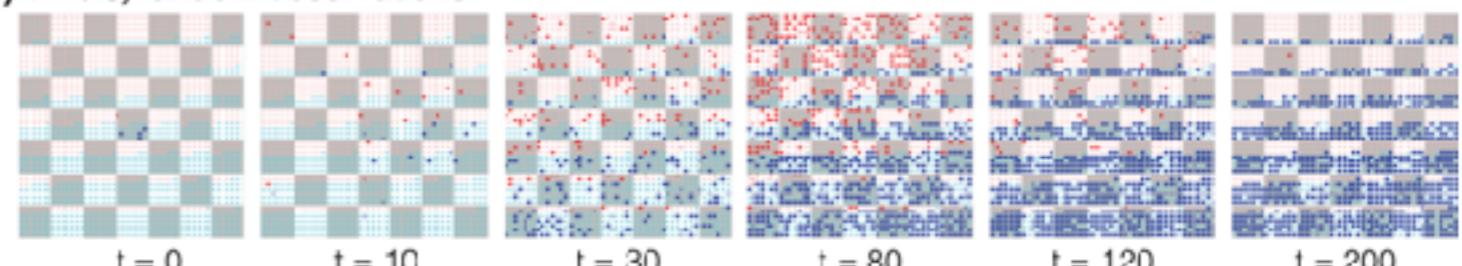
(a) $f = 0.7$, random observations



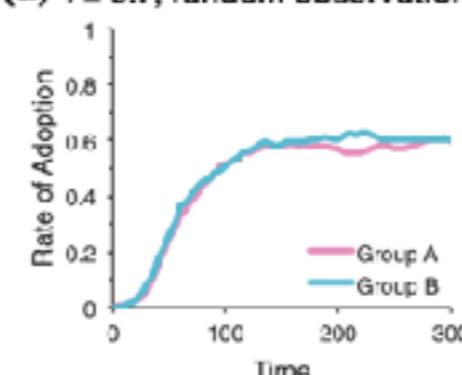
(b) $f = 0.3$, local observations



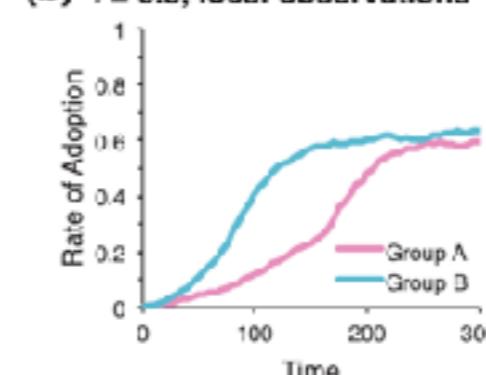
(c) $f = 0.3$, random observations



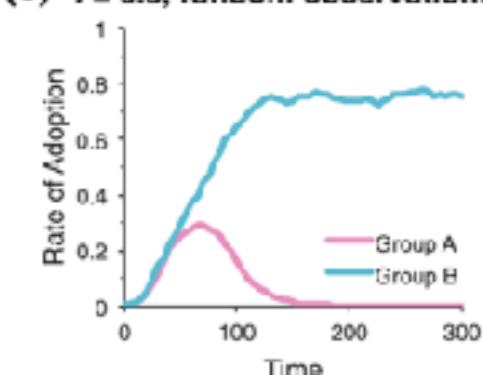
(a) $f = 0.7$, random observations



(b) $f = 0.3$, local observations



(c) $f = 0.3$, random observations



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OCTOBER 29, 2020

Both Republicans and Democrats cite masks as a negative effect of COVID-19, but for very different reasons

BY PATRICK VAN KESSEL AND DENNIS QUINN



Outgroup aversion in behavior adoption can dramatically worsen epidemics, exacerbated by within-group homophily.



COUPLED DYNAMICS OF BEHAVIOR AND DISEASE CONTAGION AMONG ANTAGONISTIC GROUPS

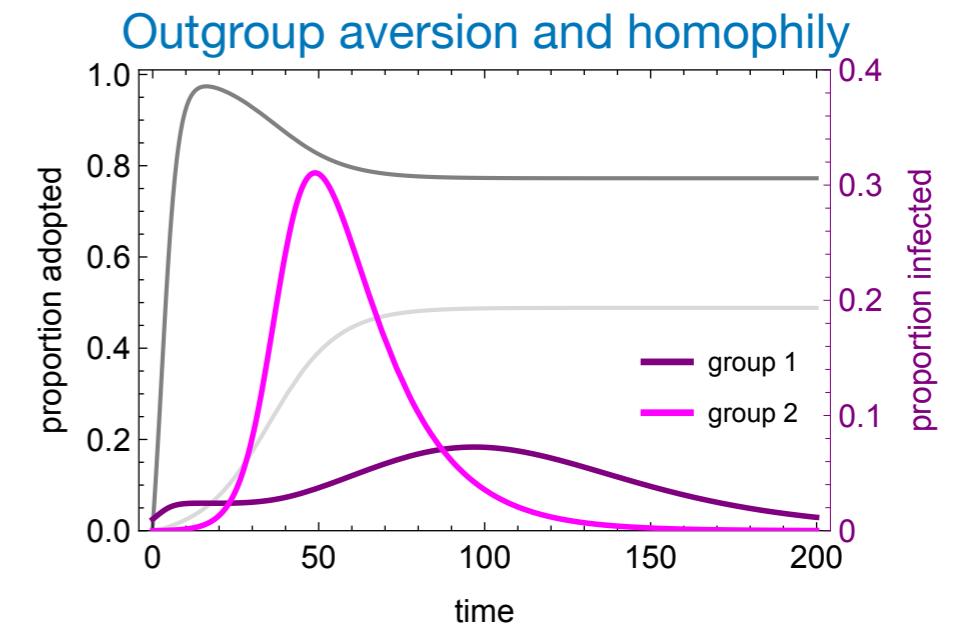
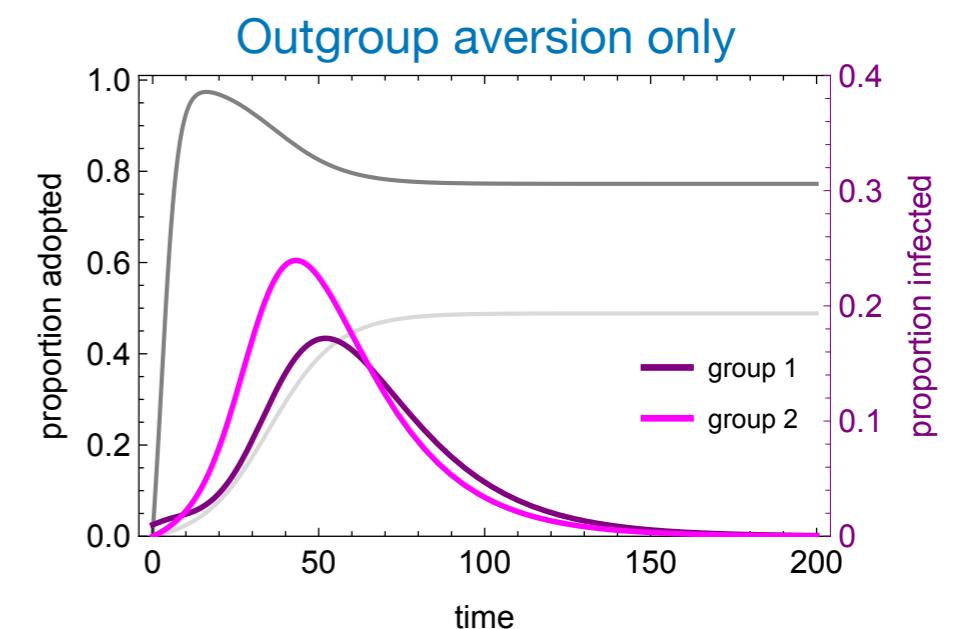
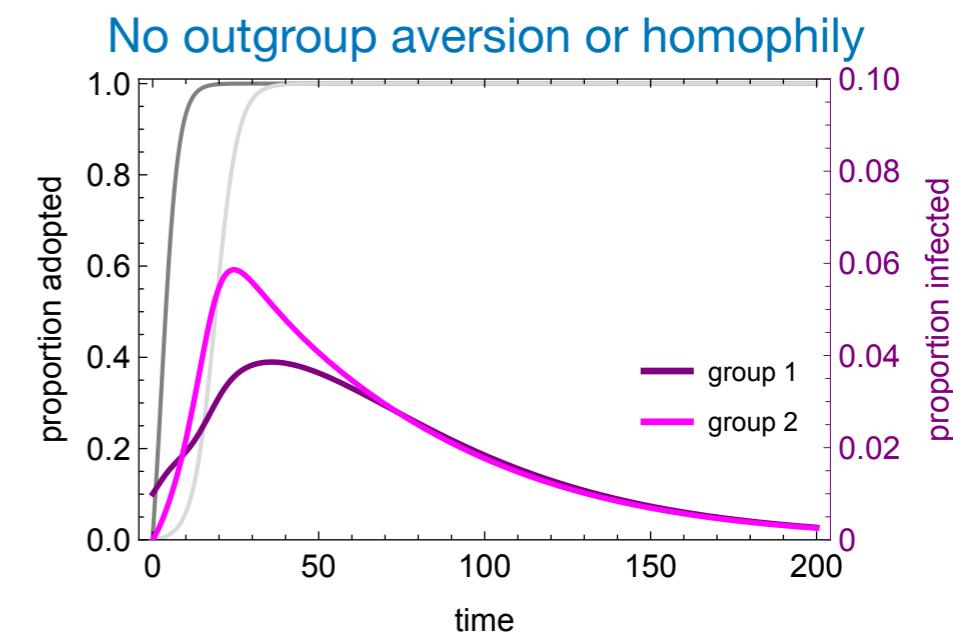
PAUL E. SMALDINO^{1,*} AND JAMES HOLLAND JONES²

The New York Times

Outbreak | **LIVE** Latest Updates Maps and Cases Vaccine Follow See Your Local Risk New

Who's Wearing a Mask? Women, Democrats and City Dwellers

A Gallup poll found that only a third of Americans said they always wore a mask outside the home. Gender, political party and education level may play roles in the decision.

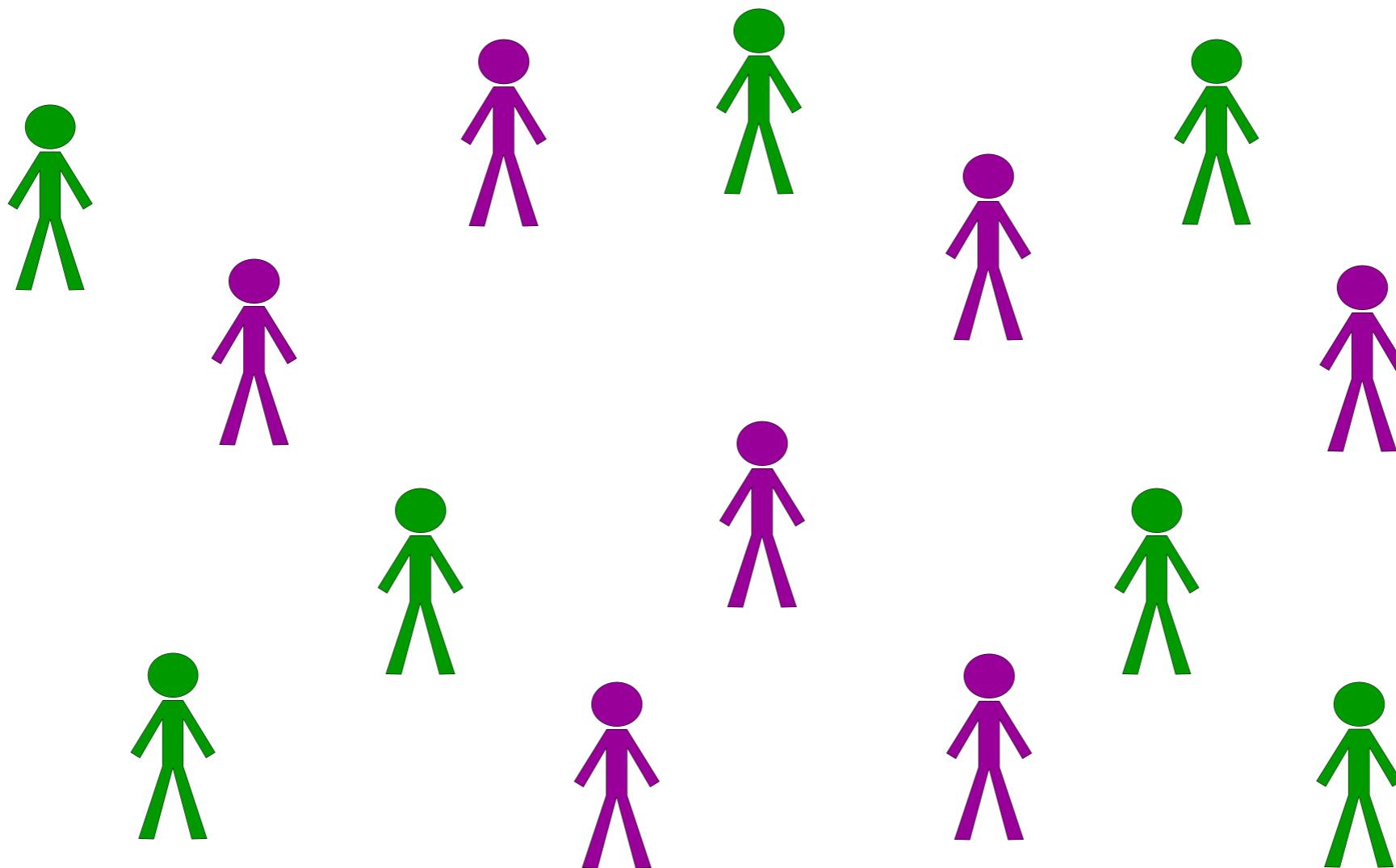


Instrumental function of identity: a signal for assortment

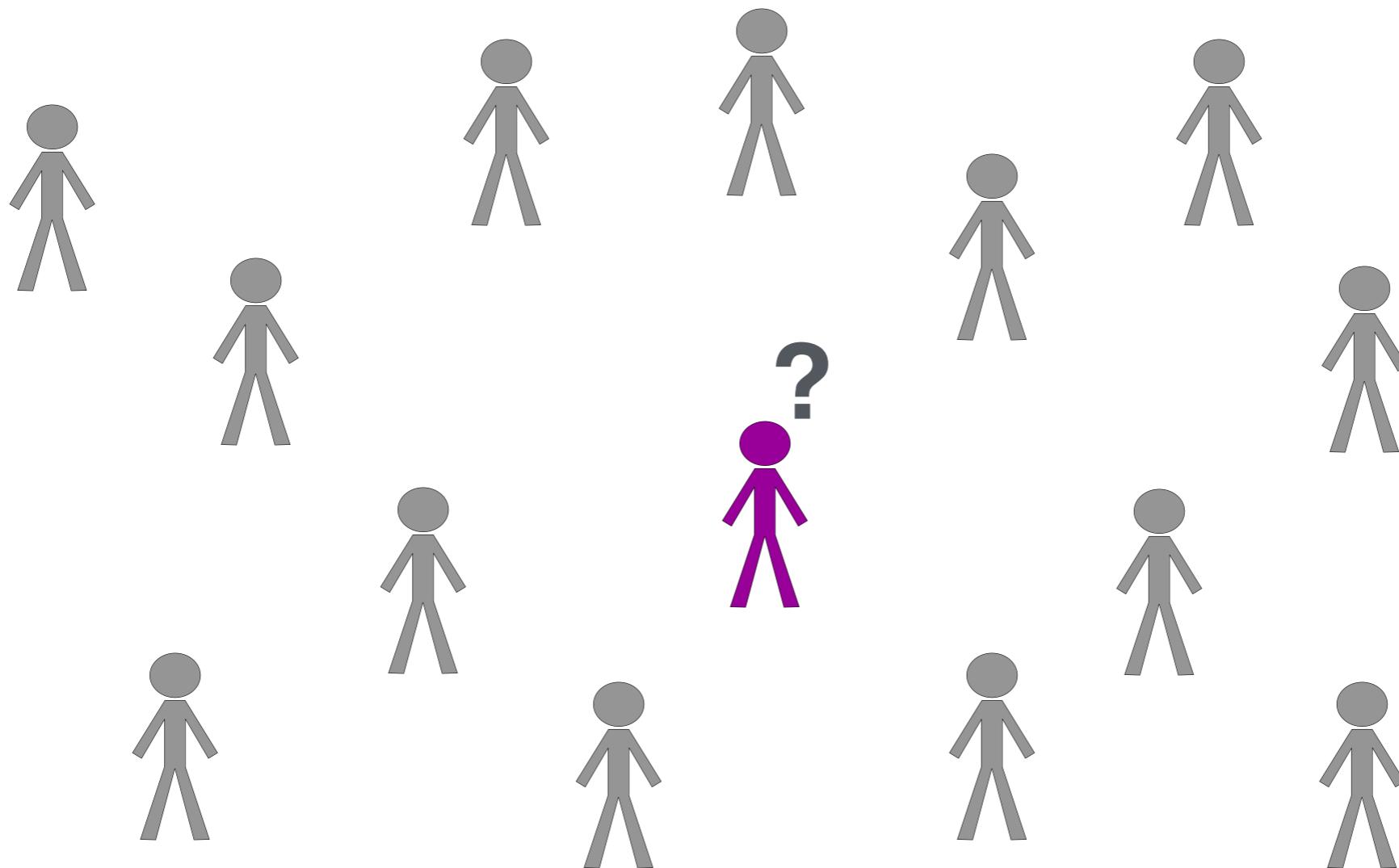


Different social structures, different strategic needs

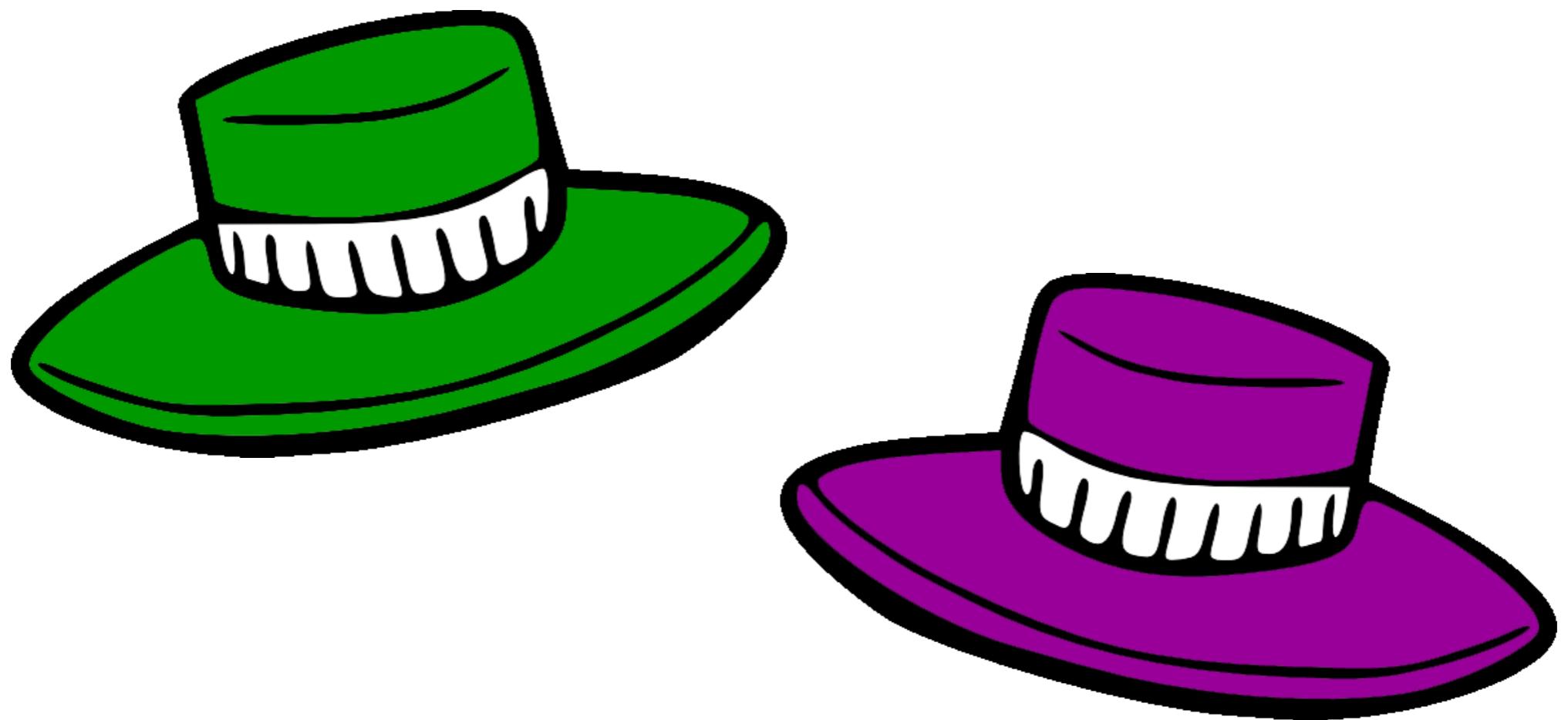
Variation and Assortment



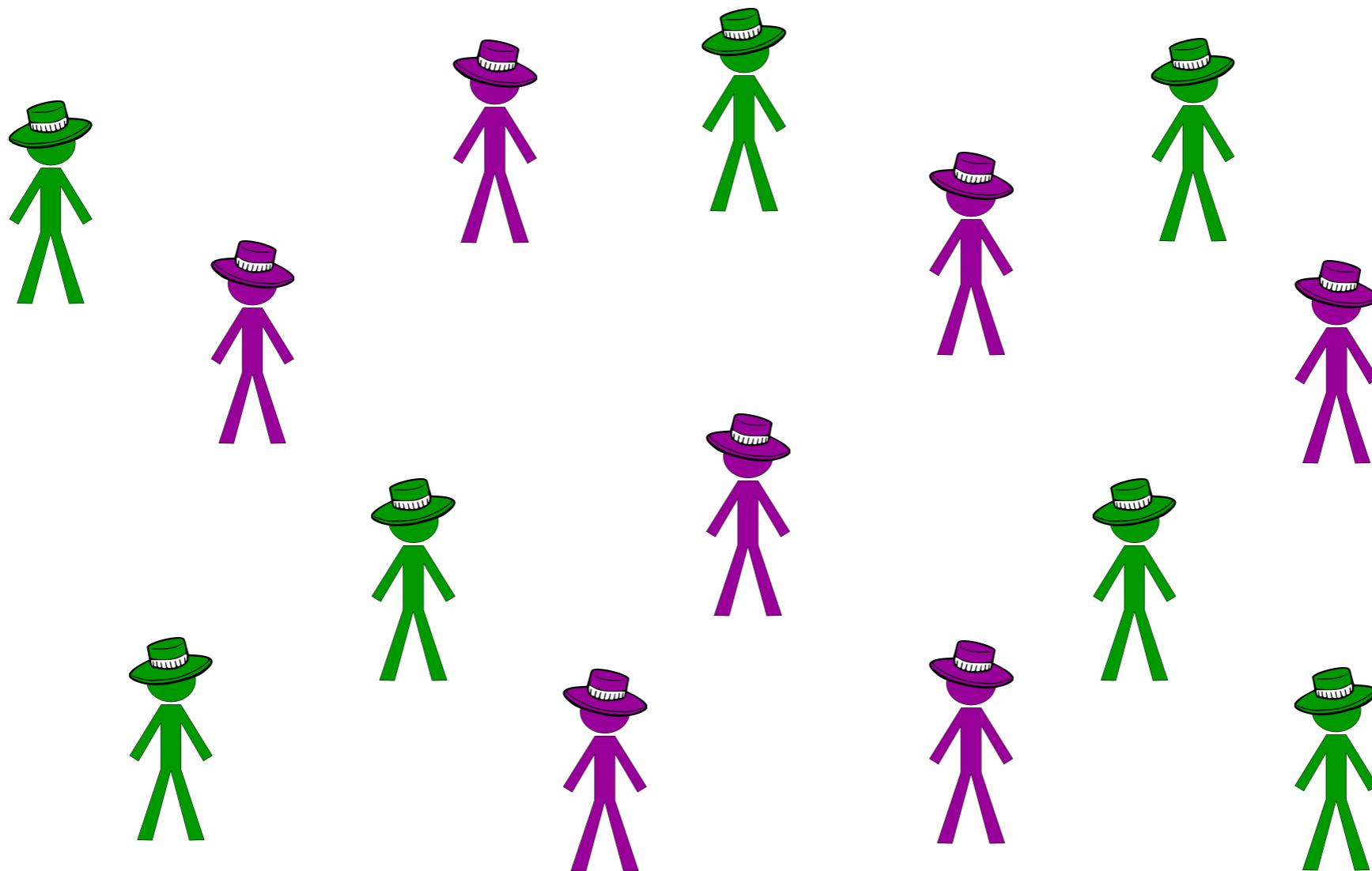
Variation and Assortment



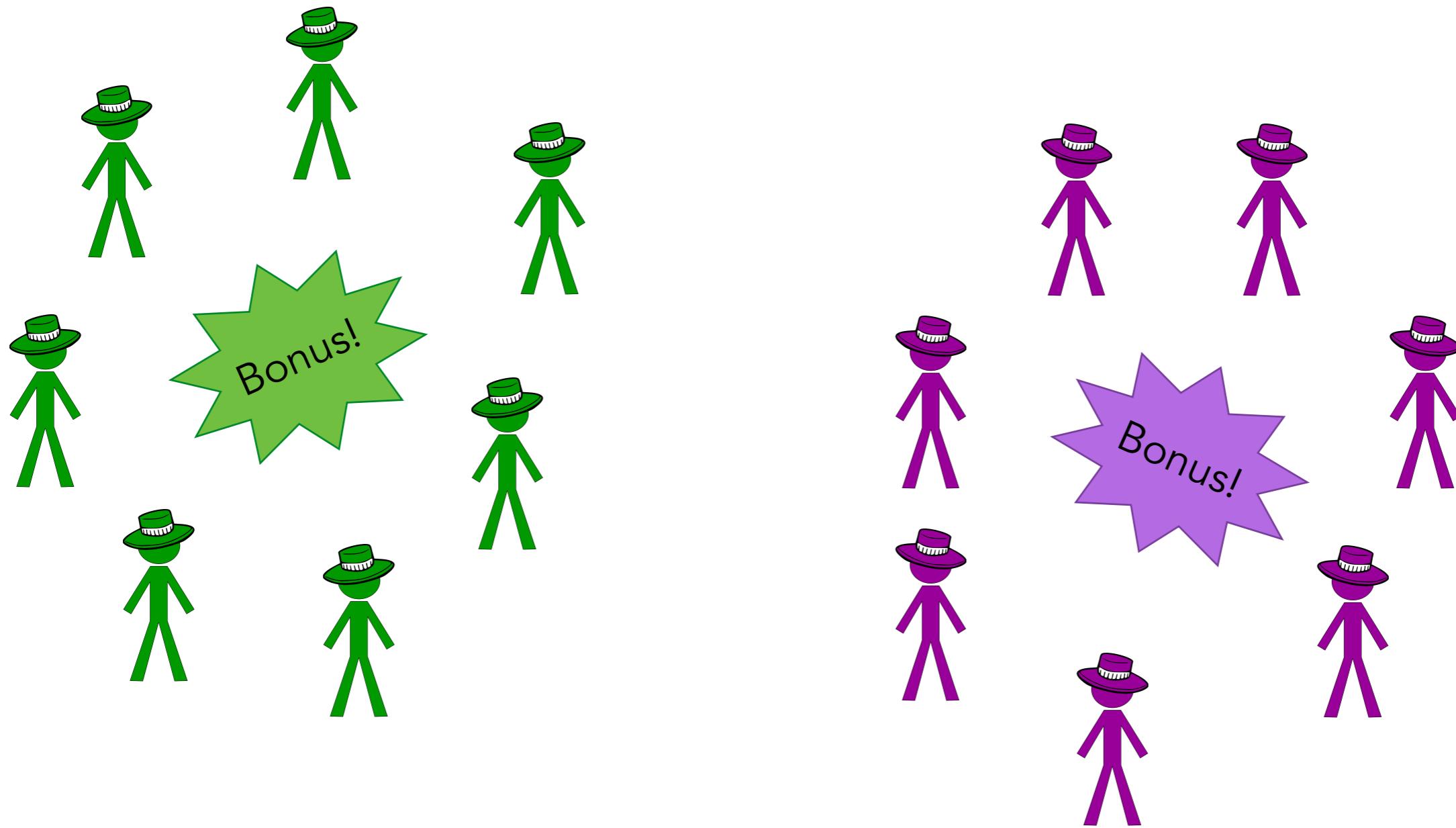
Ethnic/Social Markers



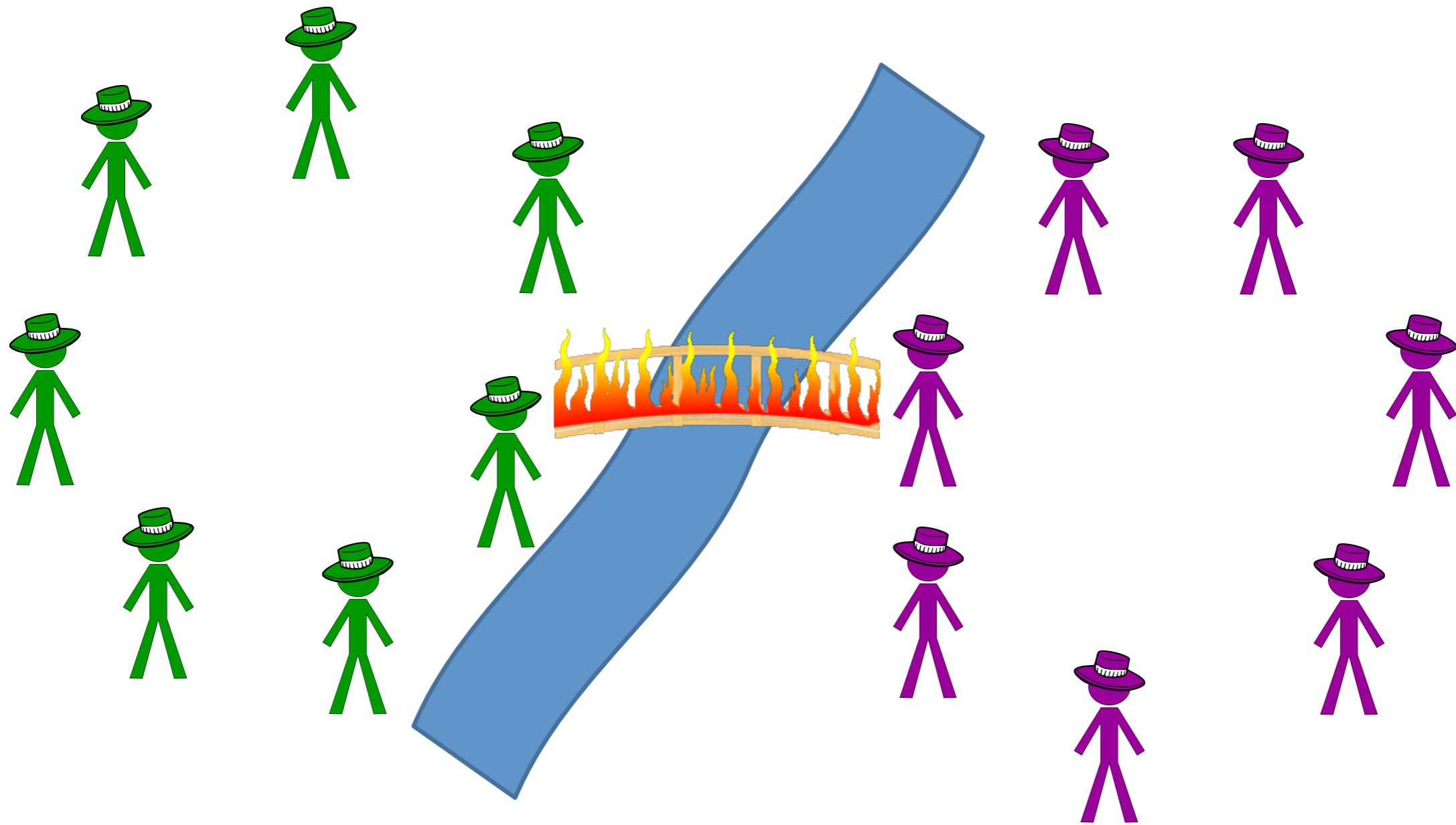
Between-group assortment



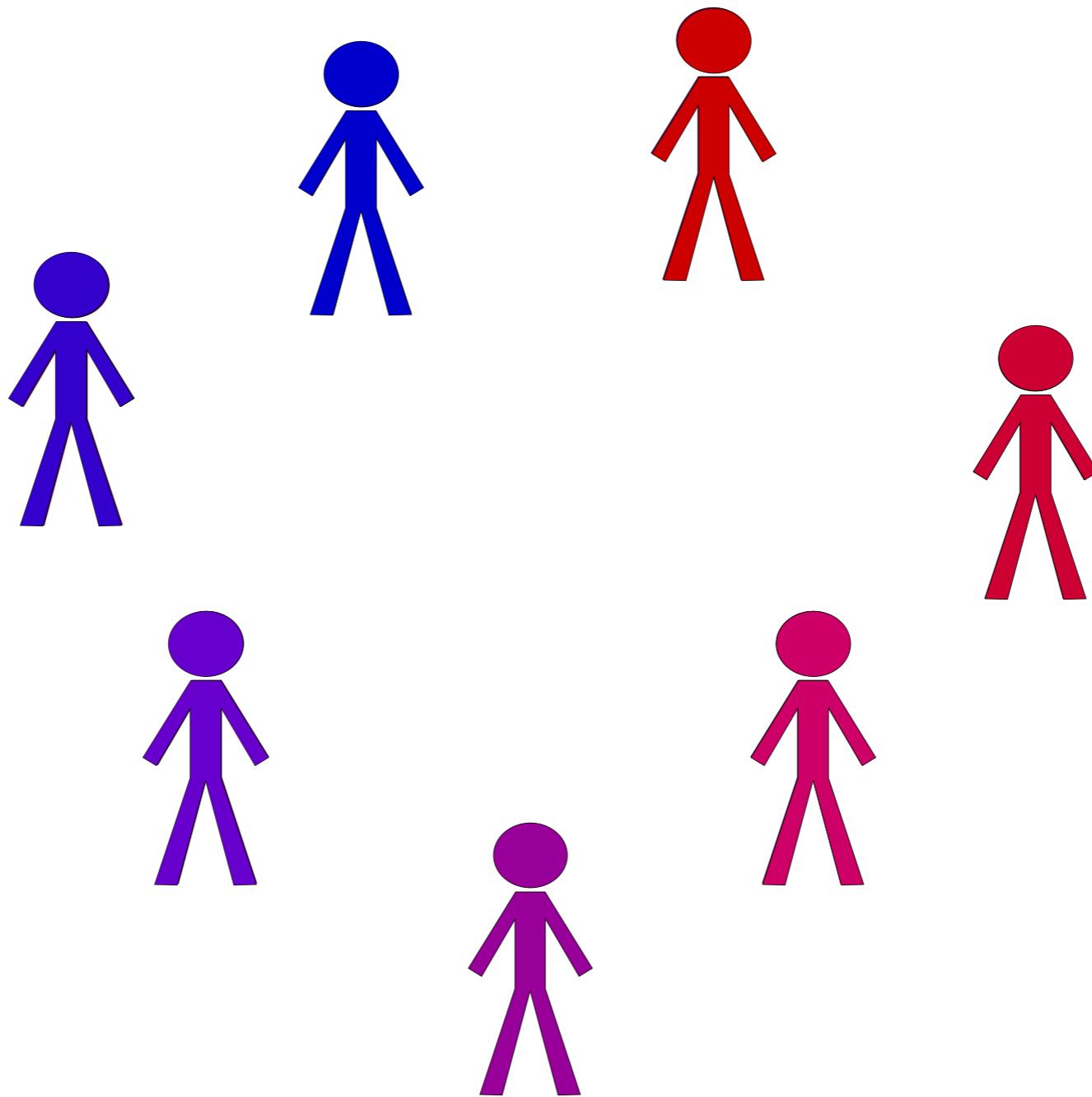
Between-group assortment



Between-group assortment

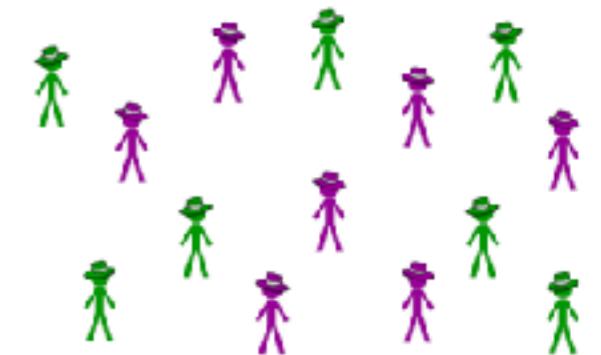


Within-group assortment



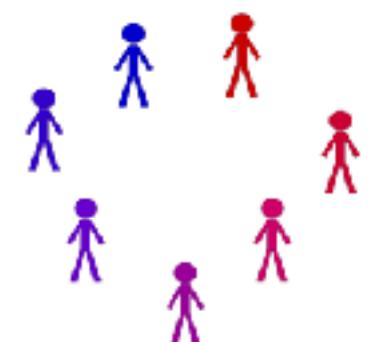
Between groups: Ethnic markers

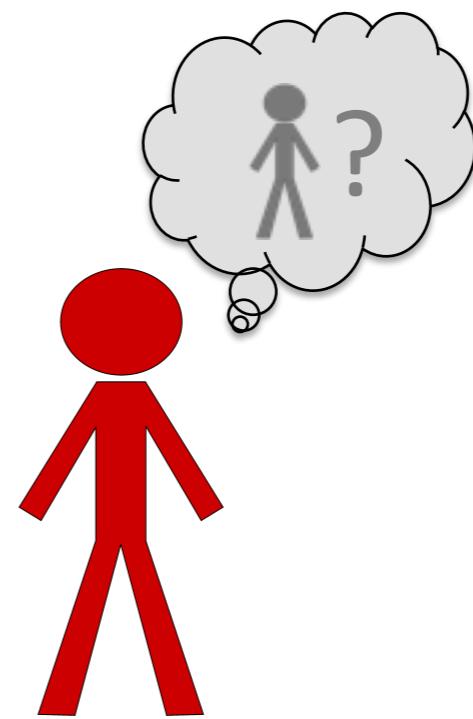
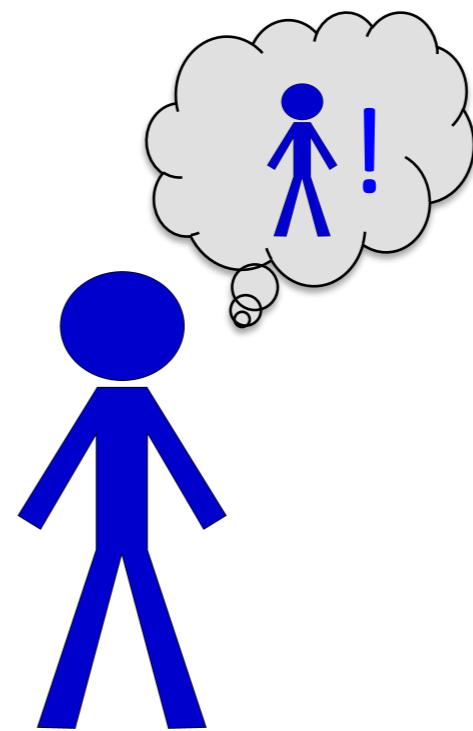
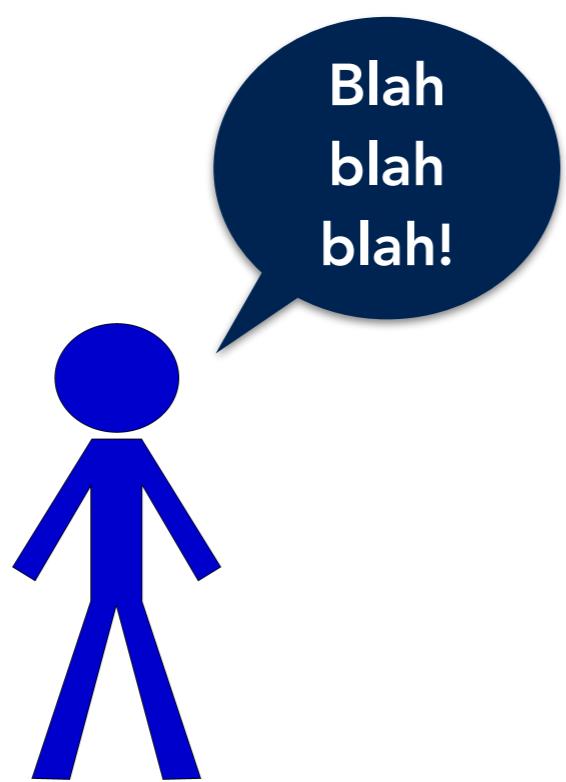
Assort on norms. Eliminates ANY cooperation.



Within groups: ???

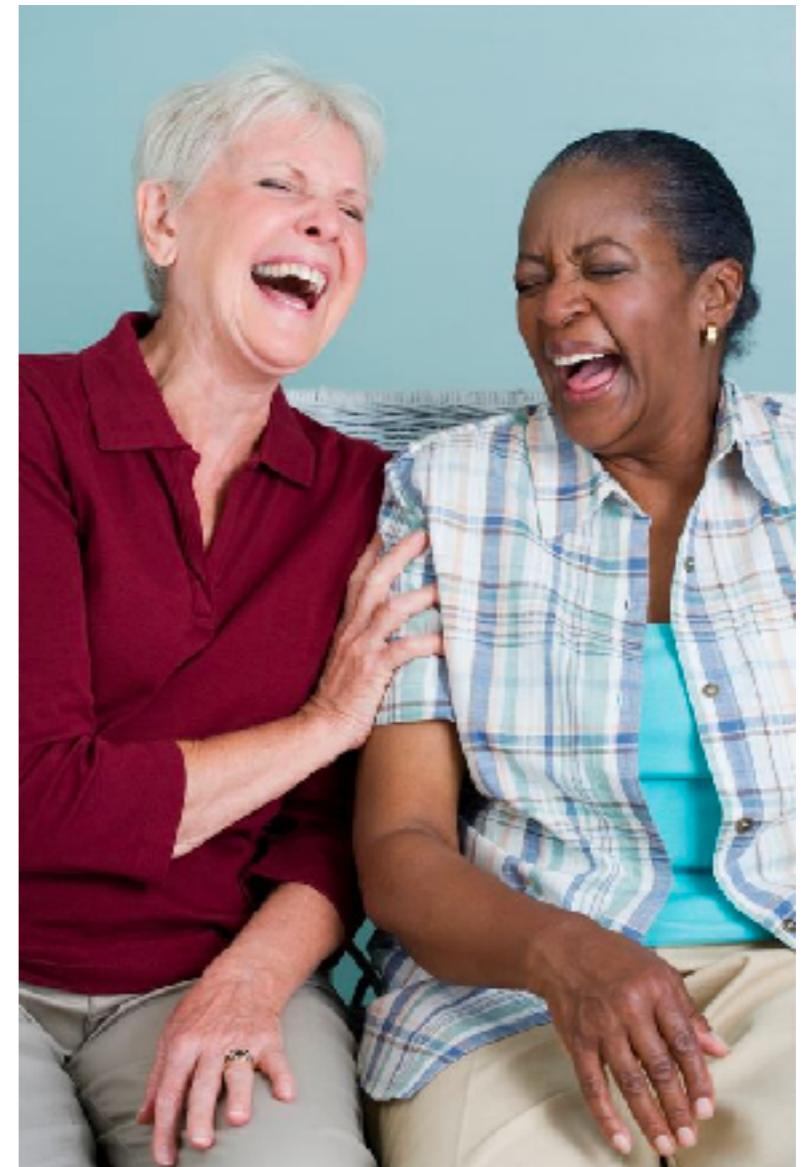
Assort on norms when possible, allow cooperation with imperfect partners when necessary.





Humor as a covert signal

- 'Encryption theory of humor'
- Having prior knowledge increases rating of joke as funny (US and rural Brazil samples)
- Brazilian collective farmers (social network data): social closeness predicts similarity in joke ratings



Consumer choice as a covert signal

While subtly marked products are misrecognized by most observers and thus seem like less effective signals in general, people with domain-specific cultural capital (i.e., insiders) actually prefer them because they provide differentiation from the mainstream and should facilitate interaction with others “in the know.”

—Berger & Ward (2010)

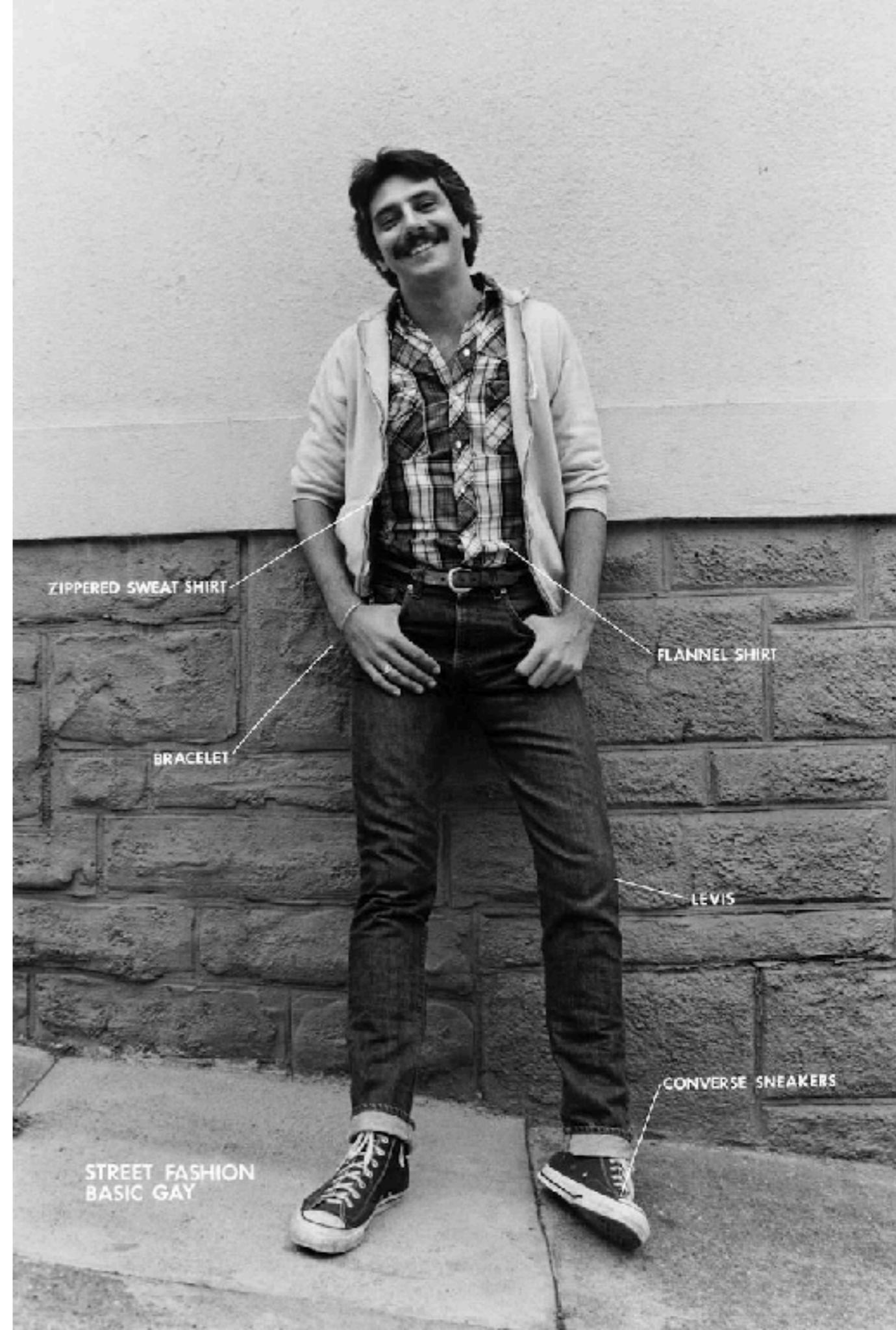


Covert signaling for 'invisible' minorities

"Your basic gay look, was really adopting certain masculine signifiers, like flannel shirts and jeans. Out of context, maybe if you wore that in Billings, Montana, it wouldn't necessarily have read as gay."

—Fischer 1977, *Gay Semiotics*

Gay men more accurate than straight men in identifying gay vs. straight men in muted video tapes (Shelp 2003)



Covert signaling for political dissidents



Identifying like-minded individuals is highly beneficial.

Being identified by non-sympathetic individuals can be highly costly.

A Theory of Covert Signaling

Covert Signaling: The transmission of information that is accurately received by its intended audience but obscured when perceived by others.

Contrasted with **overt signaling**, in which honest signals of identity are widely broadcast

Examples of covert signals:

- Humor
- Flirting
- Fashion
- Shibboleths
- Political dog whistles
- "Gaydar"



Tom Flamson



Richard McElreath

Under what conditions will (cultural)
selection favor the evolution of covert
signaling?

Model

Four stages:

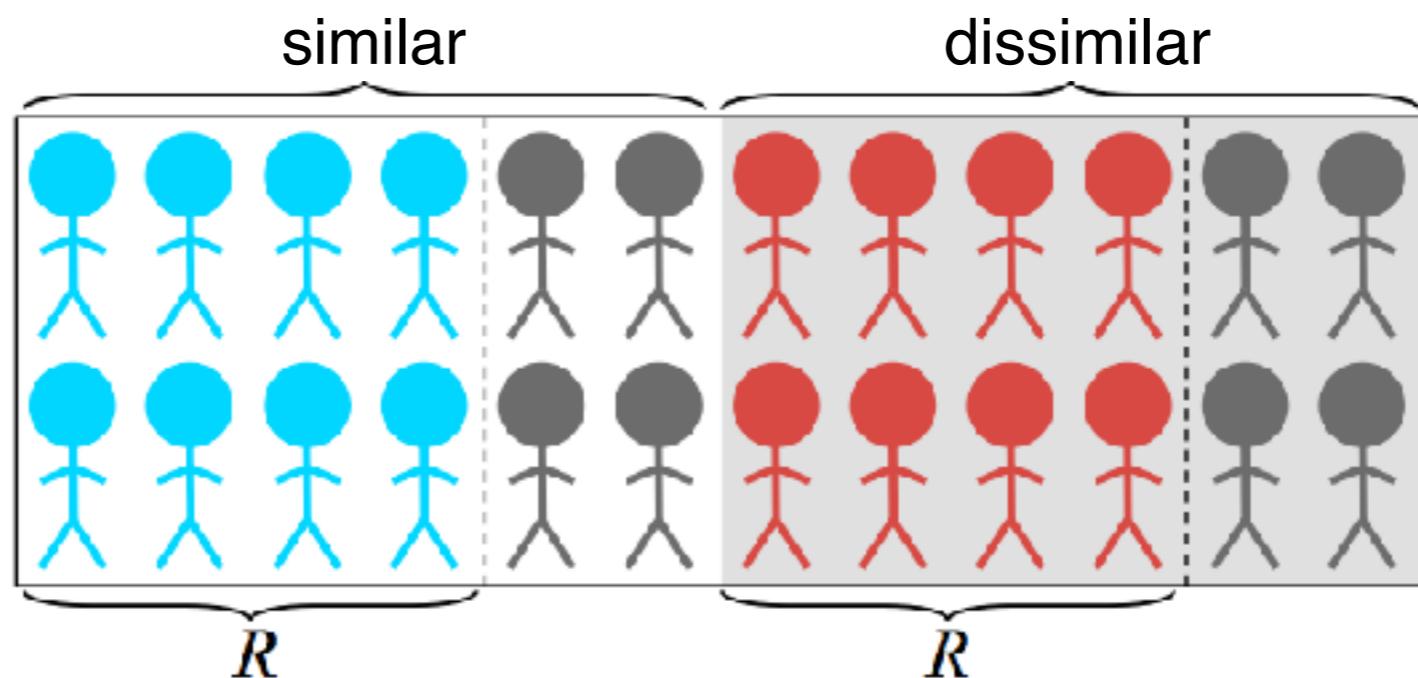
1. Signals are transmitted
2. Receivers form attitudes
3. Individuals assort for cooperative task
4. Payoffs from tasks lead to differential fitness

Smaldino, Flamson, & McElreath (2018) The evolution of covert signaling. *Scientific Reports* 8:4905.

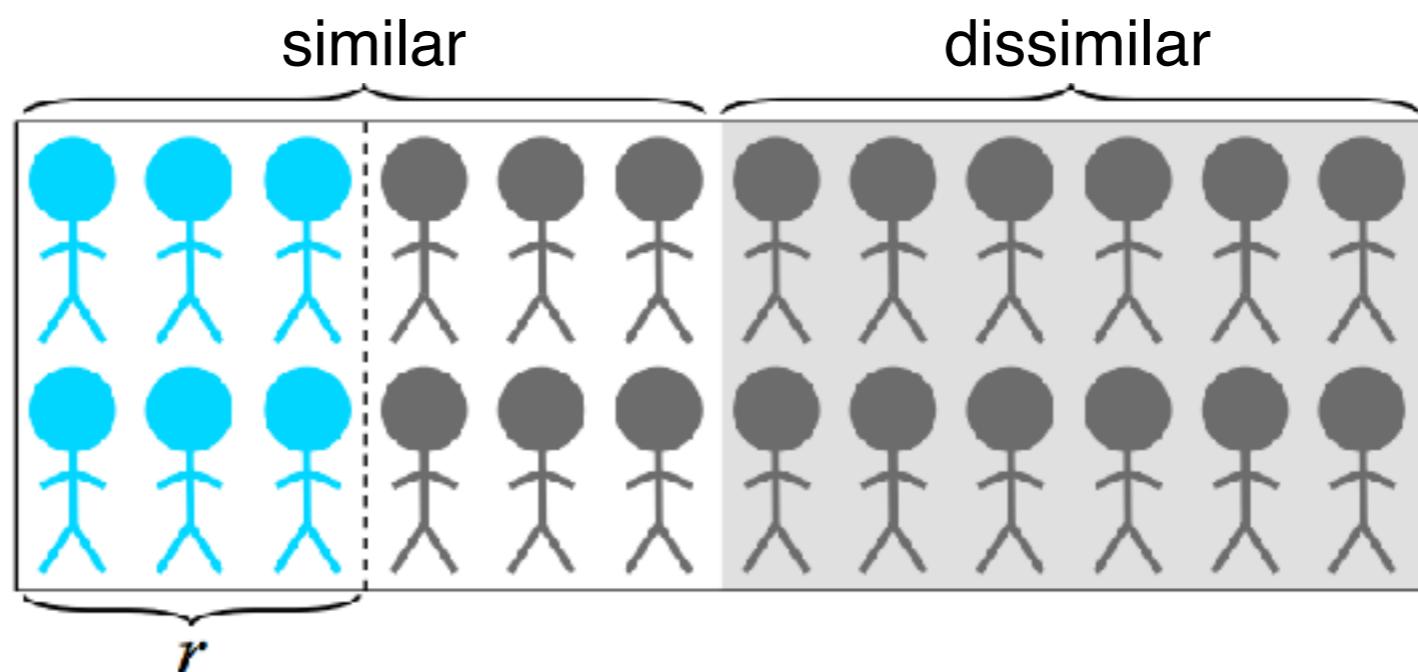
Smaldino & Turner (submitted) Covert signaling is an adaptive communication strategy in diverse populations.
<https://osf.io/preprints/socarxiv/j9wyn/>

1. Signal transmission

Overt signaling

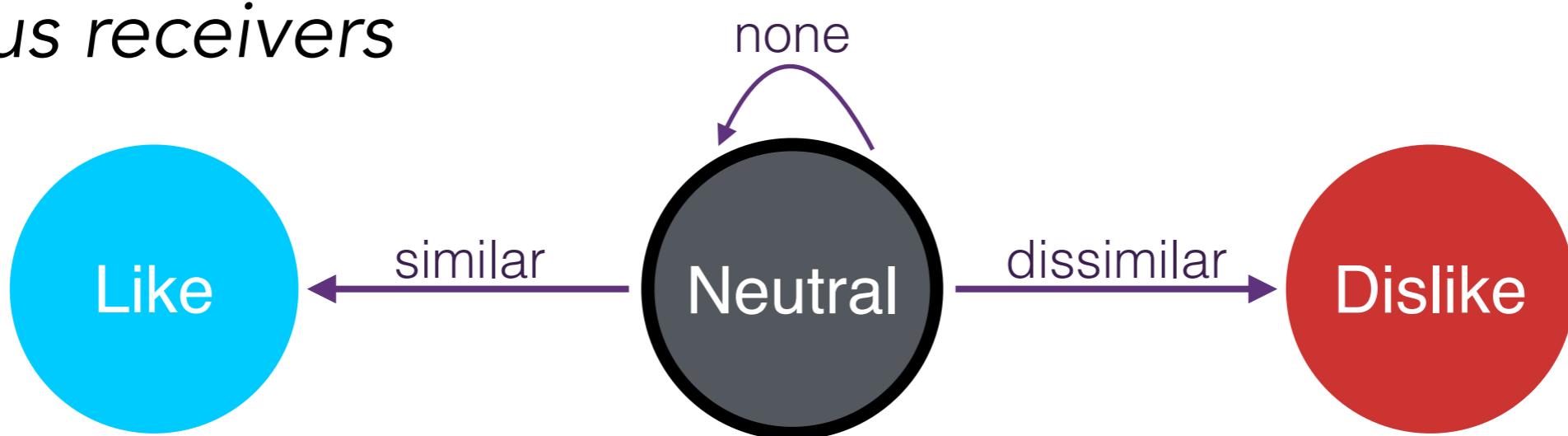


Covert signalling

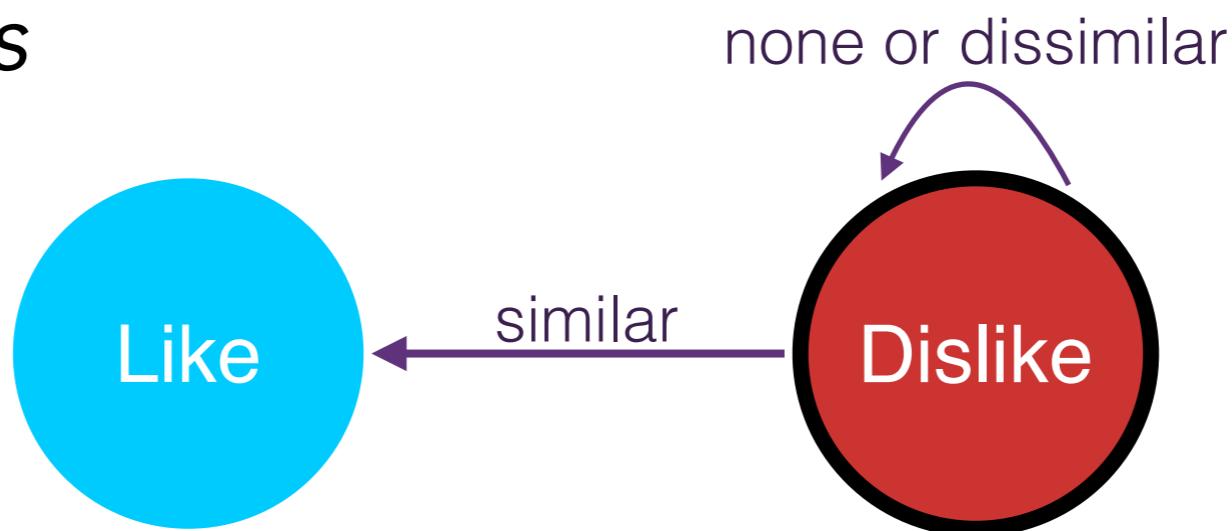


2. Attitude formation

Generous receivers



Churlish receivers



3. Cooperative assortment

Individuals pair up for cooperative tasks

Homophily

- Assortment odds increase with liking and decrease with disliking
- Similar pairs get higher payoff than dissimilar pairs
- Being disliked imposes cost, mutual dislike imposes added cost



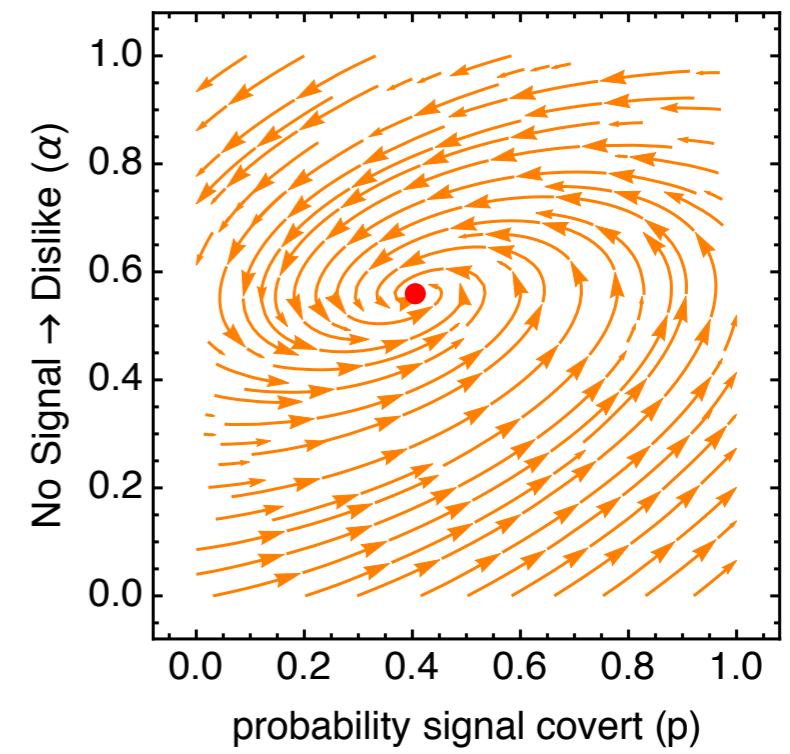
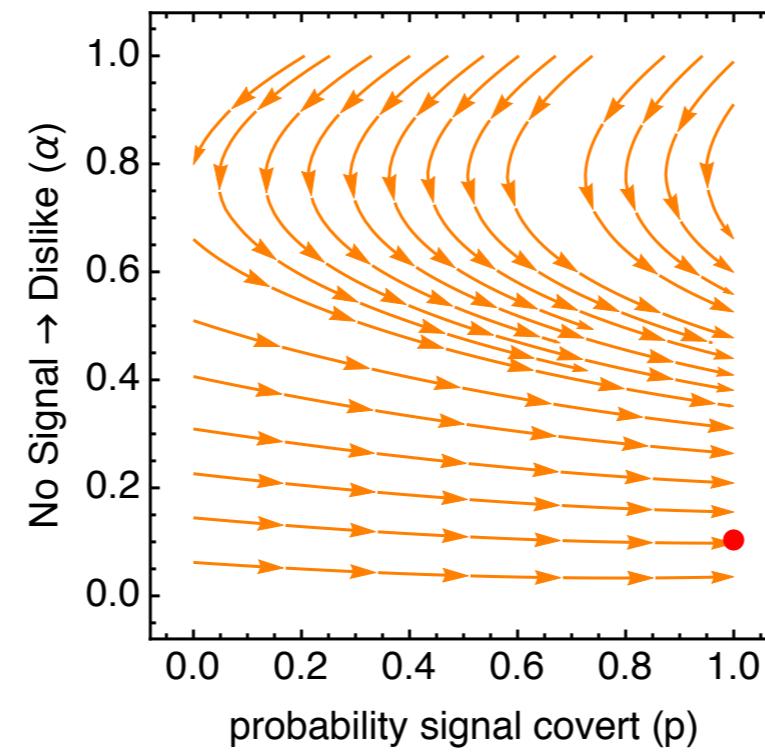
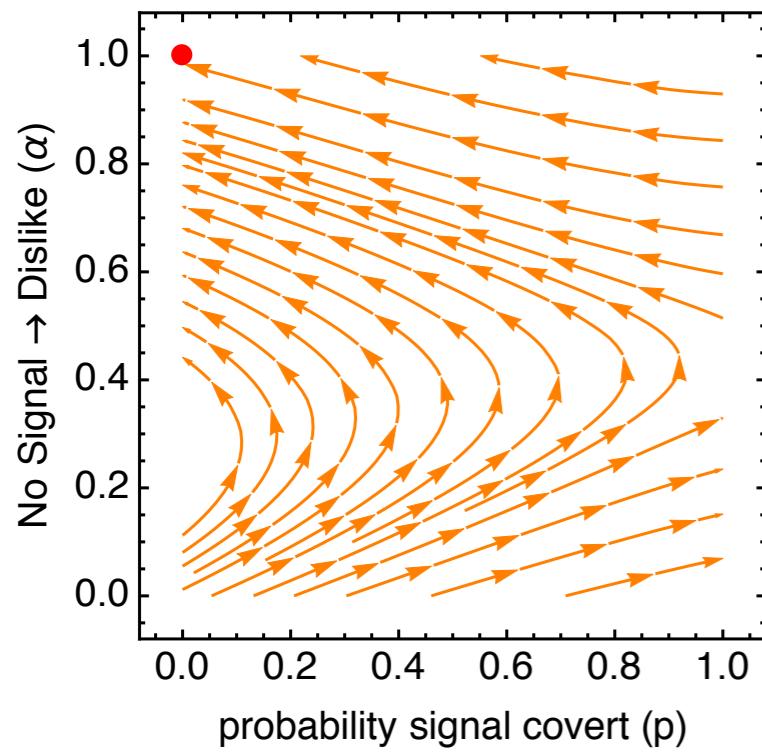
4. Selection

Individuals with higher payoffs reproduce their strategies

- ▶ Model 1: analytical, replicator dynamics
- ▶ Model 2: agent-based, Moran process



Coevolutionary dynamics



Agent-Based Modeling

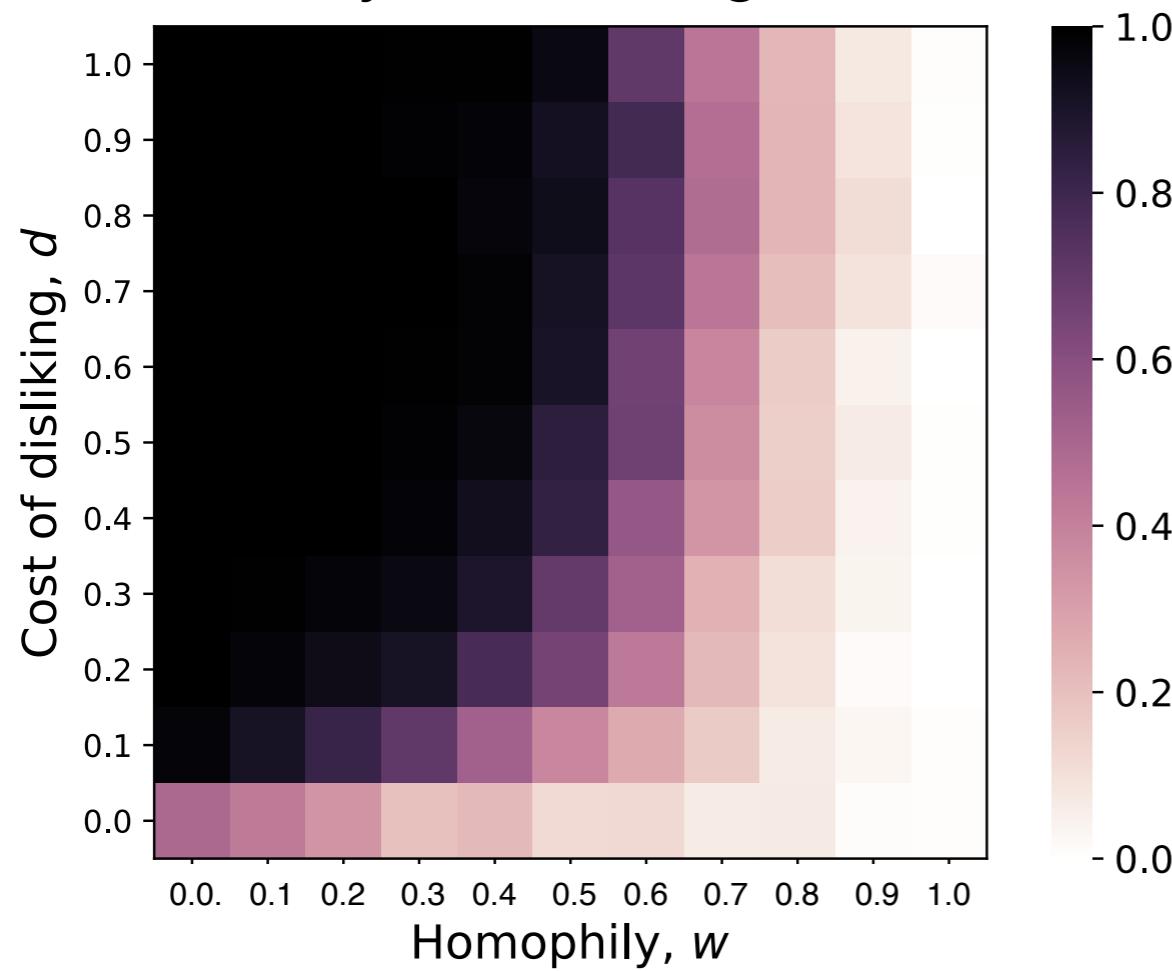


- Agents have **strategies** for signaling (overt or covert) and receiving (generous or churlish).
- Agents have **K traits** represented by binary vector.
Similarity means sharing at least 50% of traits.
- Reproduction through Moran process.

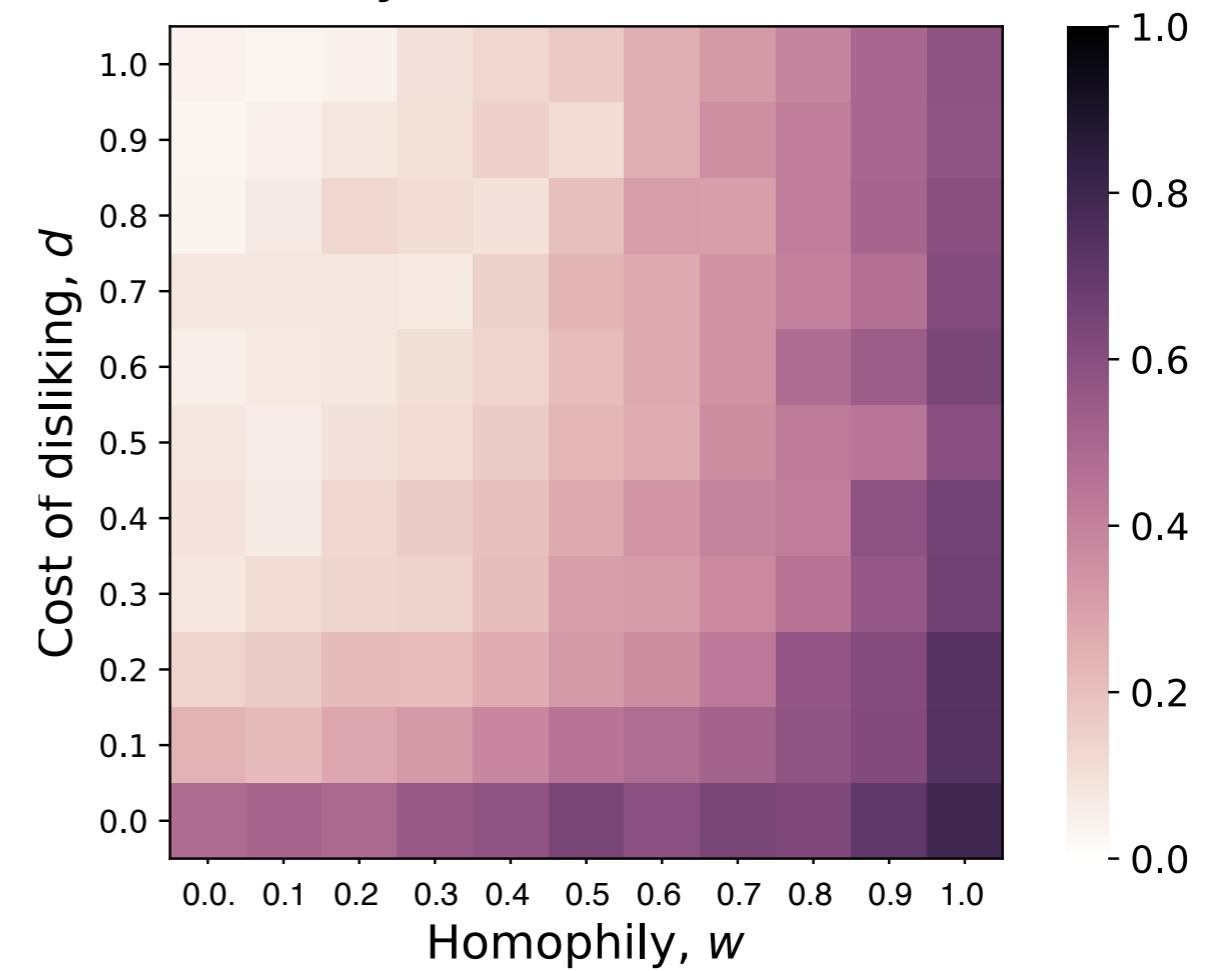
k_1	0
k_2	1
k_3	0
k_4	1
k_5	1
k_6	0
k_7	1
k_8	0
k_9	0

Matt Turner

Density of covert signalers

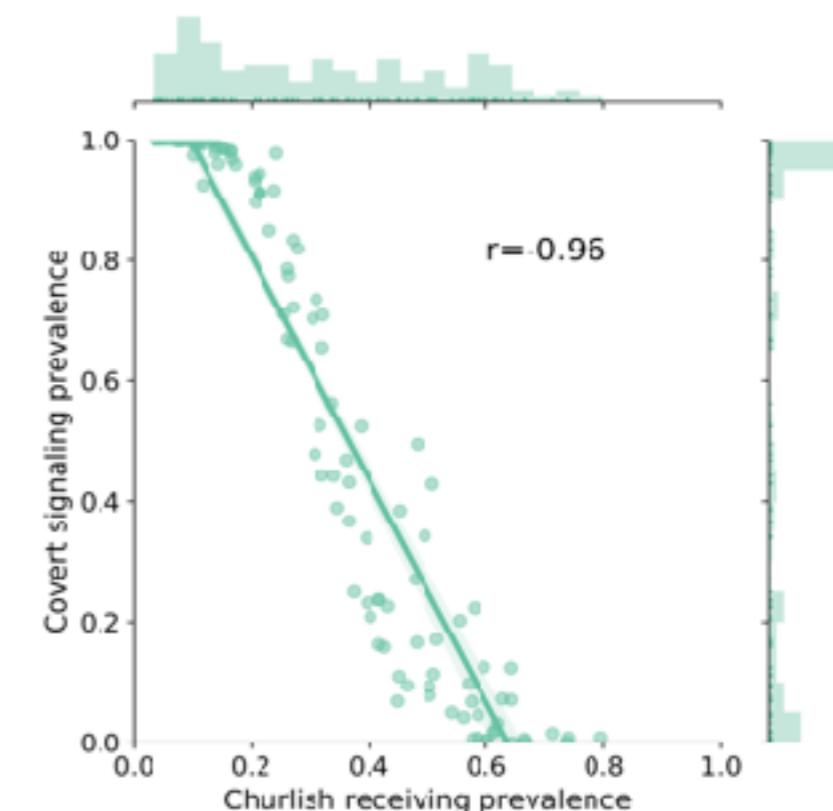


Density of churlish receivers

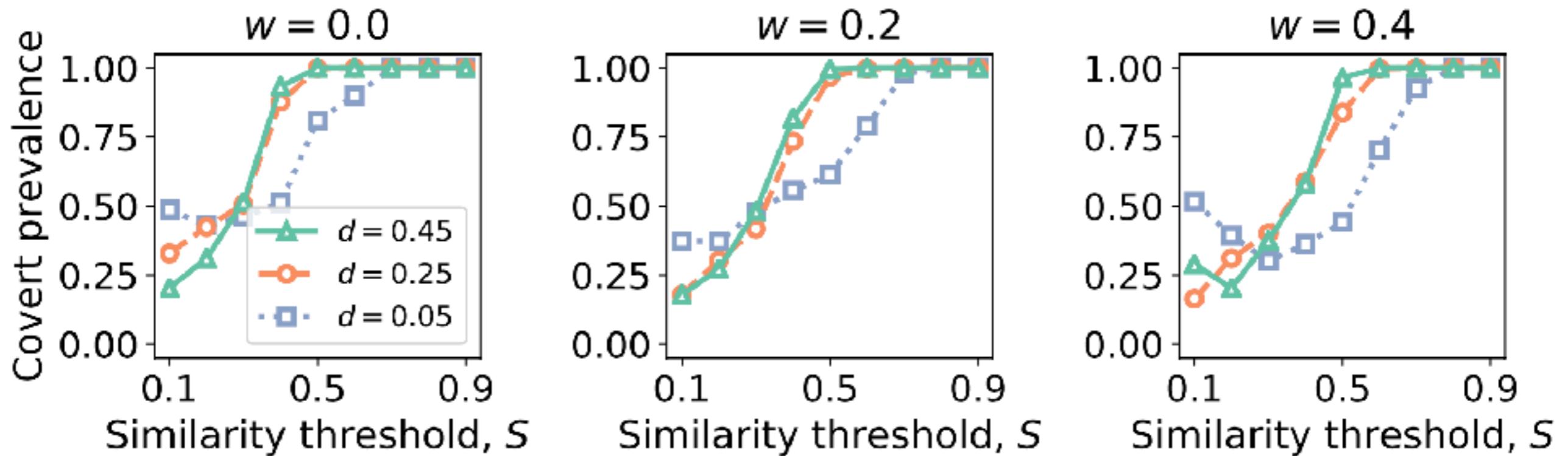


Covert signaling evolves when homophily is low and the cost of being disliked is high

Covert signaling coevolves with generous receiving



Covert signaling is favored in more diverse populations

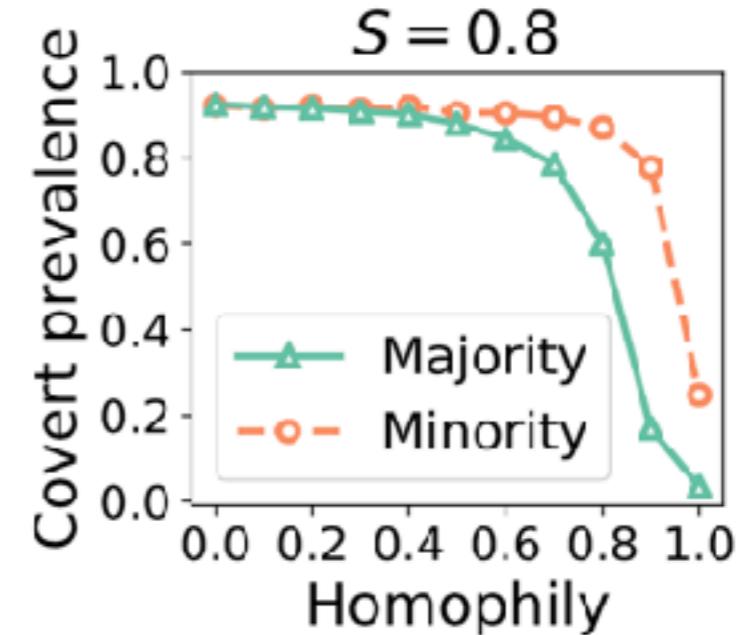
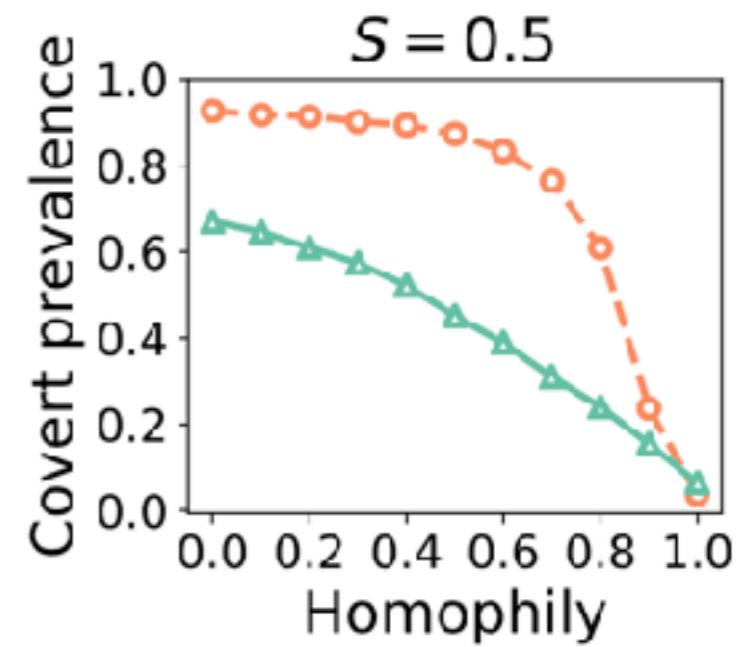
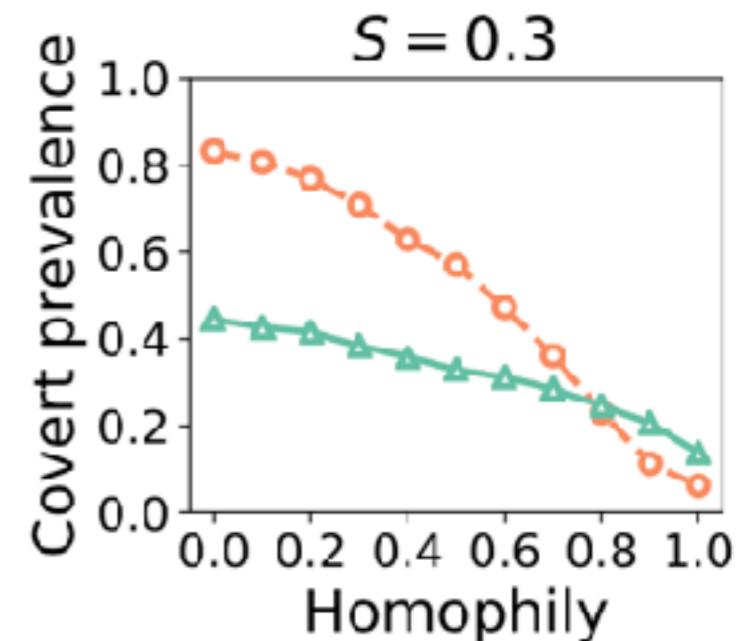


Covert signaling is favored among minority groups

Majority
(90%) Minority
(10%)

1
1
1
1
?
?
?
?
?

0
0
0
0
?
?
?
?
?



Implication: Context matters

- Communication often carries multiple, diverging lines of meaning, beyond what is superficially being expressed (Grice 1975; Searle 1975; Sperber & Wilson 1986)
- Covert signals require relationship-specific pragmatics to understand meaning of utterances

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Remember that scene in LOTR where that old dude tries to burn his still-living son and the lil hobbit is like "NOOOO YOU CAN'T DO THIS!"

10:35 AM - 9 Nov 2016

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Remember that scene in "The Two Towers" where Theoden is watching the Urak Hi surround Helms Deep?

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Remember that scene in Deliverance, what the hillbillies did to the city folk? I just thought of that right now for some reason. So weird.

12:05 AM - 9 Nov 2016

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hey remember that scene in Titanic when the lights go out and everyone realizes nobody's going to rescue them?

10:29 AM - 9 Nov 2016

6 Retweets 21 Likes

Covert Identity Signaling on Twitter



Motivating question: Do people actually strategically alter their signaling behavior in ways consistent with the model?



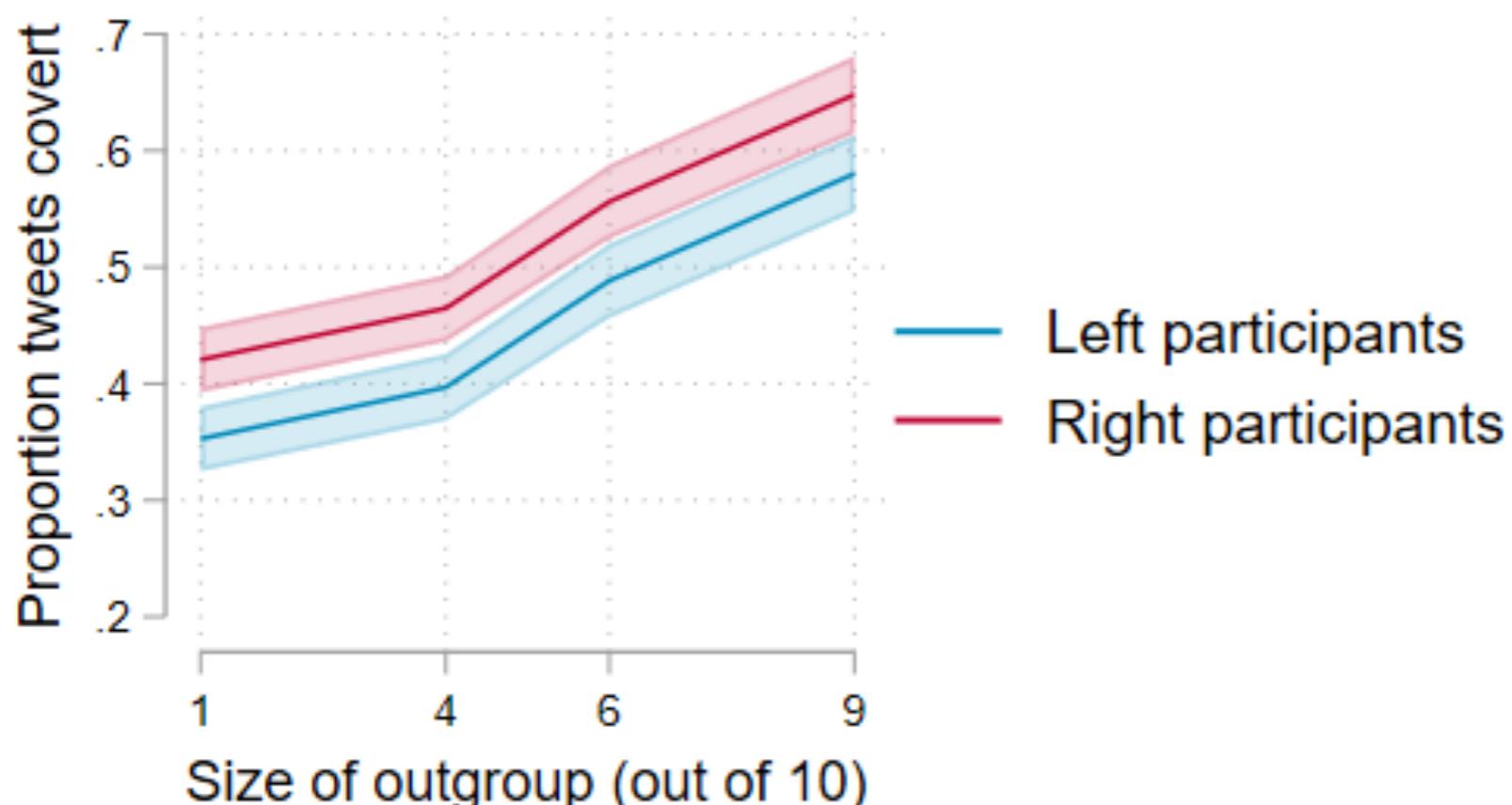
Mirta Galesic



Tamara van der Does



Zackary Dunivin



- Understanding identity requires understanding ***what it is for***, and how various forces shape its use
- Models of identity can illuminate our understanding of social processes, but those models will be most informative if they are tied to instrumental theories of ***identity as relevant to behavior***



Thanks!

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