

Introduction

How do groups of norms come together to influence food consumption decisions?

- Social norm interventions have been shown to successfully influence behavior in many contexts, but this research has been limited to testing the effect of 1-2 norms at a time
- We expand this line of work by investigating how multiple norms relate to one another in the context of sustainable food consumption.

Intervention Precursor: Norm Mapping

- Constructed network of norm intercorrelations to inform main study intervention
- Participants: nationally representative US online sample (by age, sex, ethnicity) recruited from Prolific (N=915)
- Procedure: participants asked to estimate 29 consumption-related norms and report 3 outcome measures (attitude, frequency, rate of fish consumption)
- Output: Correlation of norm and outcome measures represented with a multidimensional scaling (MDS) network

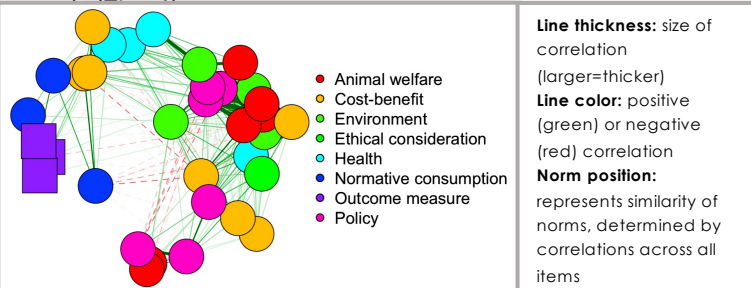


Fig. 1: MDS Network Graph of Consumption Norms & Outcomes

Main Study: Norm Intervention

Methods and Materials

- Designed three norm interventions to lower intention to consume fish, using MDS norm network
- Procedure: random assignment to a control group or one of the following norm intervention conditions:

Direct	Sever-Connect	Upstream
Manipulate norms significantly correlated with and proximal to the outcome measures in the norm network	Lessen the salience of closely related pro-consumption norms, strengthen the salience of distant anti-consumption norms	Manipulate norms with secondary and tertiary network connections with the outcome measures
"People have a variety concerns... by catch ...question how ethical it is to buy fish... pesticides and hormones in farmed fish...and mercury ..."	"People agree it's important to consider one's health , and impacts on animals ...concerns like wastewater pollution ... overfishing ..."	"People are concerned about... by-catch ...difficult to purchase ethically ... cardiovascular or health and good protein sources..."

Results

As predicted, all three intervention conditions lowered intentions to consume fish relative to the control, using nationally representative (age, sex, ethnicity) online sample (N=1436).

- Direct: $b = -0.29$, 95% CI [-0.41, -0.17], $t(1448) = -4.63$, $p < 0.001$
- Sever-Connect: $b = -0.14$, 95% CI [-0.26, -0.02], $t(1448) = -2.21$, $p < 0.05$
- Upstream: $b = -0.20$, 95% CI [-0.32, -0.08], $t(1448) = -3.19$, $p < 0.01$

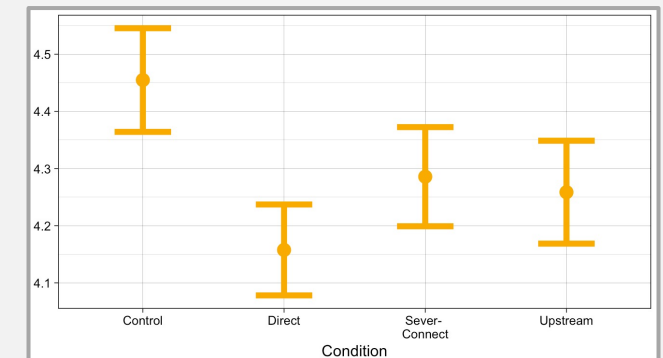


Fig. 2: Intention to Consume Fish Across Conditions. (95% confidence intervals)

References

- Abrahamse, W., & Steg, L. (2013). Social influence approaches to encourage resource conservation: A meta-analysis.
- Yamin, P., Fei, M., Lahlou, S., & Levy, S. (2019). Using Social Norms to Change Behavior and Increase Sustainability in the Real World: A Systematic Review of the Literature.

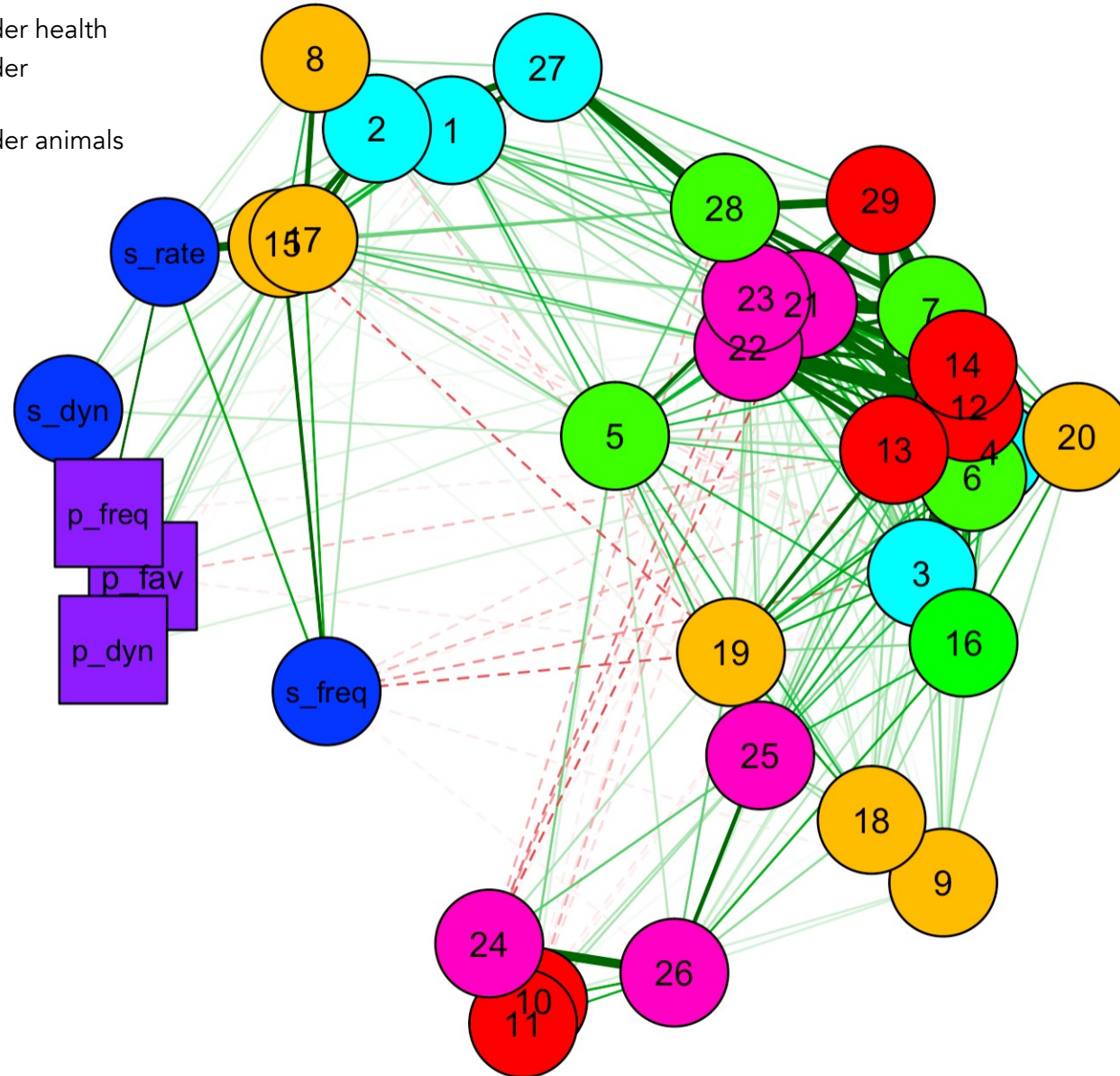
Conclusion

- This work develops the current standard of norm intervention work, demonstrating a systematic approach to selecting the most effective content for social norm interventions
- In the context of sustainable food consumption, these findings suggest that "direct" norms, (in this case: health, animal welfare, and ethical ambiguity) are most effective at encouraging sustainable consumption

Supplementary figure: MDS network graph with labeled norm nodes

1. good for cardiovascular health
2. good source of protein
3. bad for mercury
4. farmed fish are unhealthy
5. lower carbon emissions
6. farmed fish pollutes water
7. overfishing
8. affordable protein
9. expensive protein
10. fish are unintelligent
11. fish don't suffer
12. unethical, farmed fish suffer
13. unethical to kill animals
14. unethical because bycatch
15. tastes good
16. hard to consume ethically
17. convenient
18. seen as upscale
19. seen as gross
20. risk of mislabeling
21. policies against overfishing are needed
22. policies helping farmed fish are needed
23. policies make easier to consume ethically
24. policies are unimportant
25. policies will make nutritious food scarce
26. policies hard to enforce

27. should consider health
28. should consider environment
29. should consider animals



- Animal welfare
- Cost-benefit
- Environment
- Ethical consideration
- Health
- Normative consumption
- Outcome measure
- Policy