Framing the climate impact of food choices as a collective action problem: a randomised experiment

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KEY TAKEAWAYS

A collective action problem framing, or social dilemma claim, plus a nudge menu (Dilemma + Nudge) was the most effective behavioural intervention to reduce the climate footprint of food choices among university students in Switzerland (n=1691).

The Dilemma + Nudge was effective even among subgroups with above-average climate footprints such as males, and those adhering to a muscle-gain diet.

Information alone or nudging alone were especially effective when aligned with pre-existing preferences

Participants selected meals with different climate footprints and comparable nutritional quality.

These findings support the combination of public communication framing the climate impact of food choices as a social dilemma, in parallel with climate friendly menu design in education institutions.

Future avenues for research include field settings and applications to other collective action problems, such as antimicrobial resistance or vaccine hesitancy.

BACKGROUND & METHODS

Diets largely contribute to the global burden of disease (Afshin et al, 2019) and food makes **a third of global warming emissions** (Crippa et al, 2021)

Collective Action Problems are situations where short-term individual interest conflicts with the long-term collective interest

We tested the **mitigation effect** of framing the climate impact of food choices as a collective action problem compared with **information** or a **nudge**

Participants: University student or recent graduates in Switzerland, 18 years or older, and not following a medically prescribed diet (subset of meat eaters)

Primary Outcome of interest: Climate footprint of food choices in kilograms of CO_2 equivalents estimated by Life Cycle Assessment

Table 1. Online between-subjects 2x2x2 Factorial Design

	Without Collective Action Framing (No Social Dilemma Claim)		**With Collective Action Framing (With Social Dilemma Claim)**	
	Conventional menu	**Nudge Menu**	**Conventional menu**	**Nudge Menu**
Without Climate Impact Information	Group 1 Control	Group 2 Nudge	Group 3 Dilemma	Group 4 Dilemma + Nudge
With Climate Impact Information	Group 5 Information	Group 6 Information + Nudge	Group 7 Information + Dilemma	Group 8 Information + Dilemma + Nudge

INTERVENTIONS

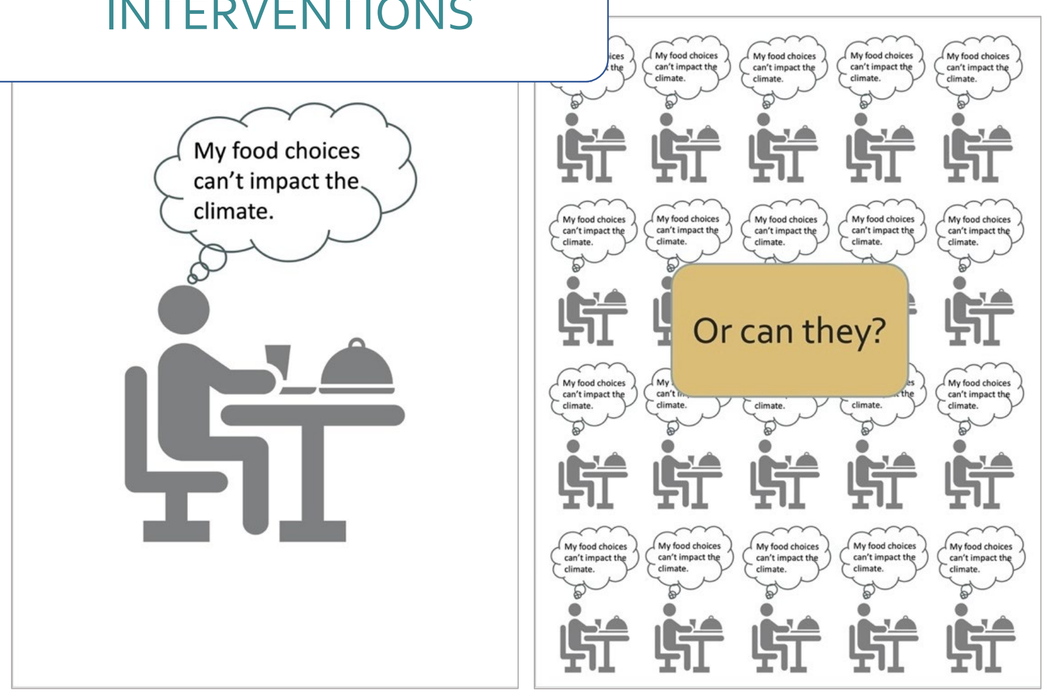

Figure 1. Collective Action Problem Framing – Social Dilemma Intervention (Excerpt)

MENU PLAN – SELECT YOUR LUNCHES FOR THE COMING WEEK

Flat discounted rate for five lunches: 40 CHF

Monday	Tuesday	Wednesday	Thursday	Friday
RISOTTO	MUSHROOM BURGER	VEGGIE CARBONARA	NASI GORENG	VEGGIE CHILI
FALAFEL KEBAB	BLACK LENTILS	THAI "BUTTER" BEANS	VEGGIE SCHNITZEL	HUMMUS PLATTER
BEEF MEATBALLS	THAI CHICKEN	CHILI CON CARNE	BEEF BURGER	FISH FILLET TILAPIA
FISH FILLET SEA BREAM	LAMB KEBAB	ROASTED CHICKEN	PASTA ALL'AMATRICIA-NA	VEAL BRATWURST (sausage)

Figure 2. Nudge Menu Intervention: Lower footprint on top two rows. All dishes were in adherence to Swiss Dietary Guidelines. (The content was reduced to fit the poster format)

RESULTS

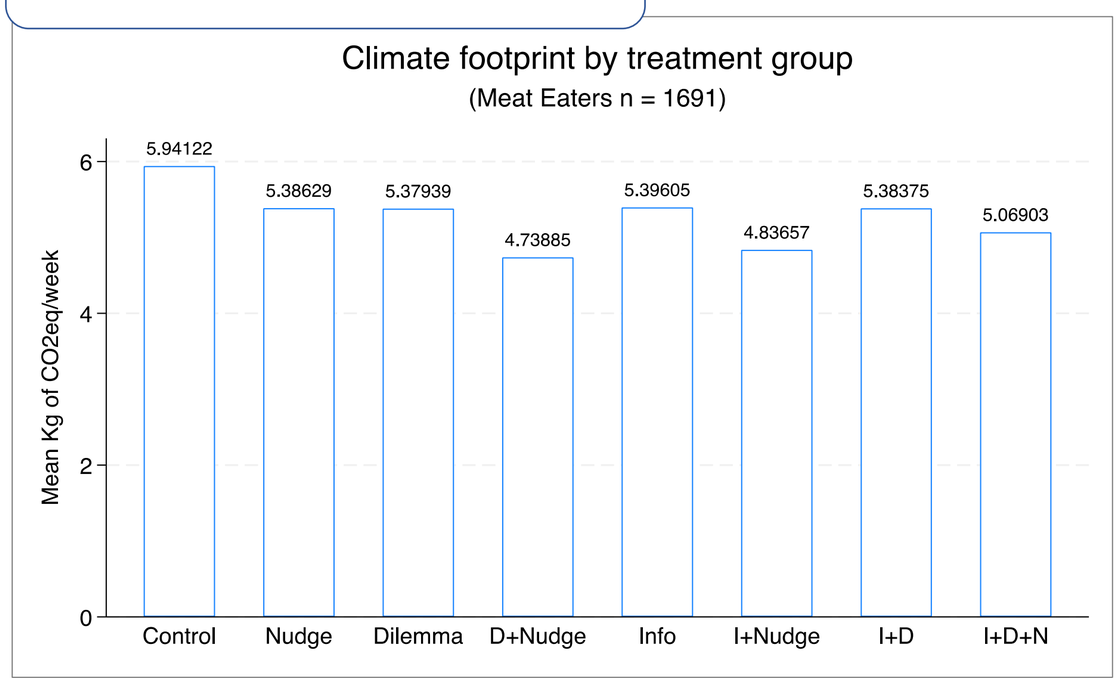

Figure 3. Climate footprint of food choices per treatment in Kg of CO2-eq per week.

Table 2. Climate footprint of outcomes by treatment group among meat-eaters

Treatment condition	**n**	**Mean footprint (1)**	**Mean diff (2)**	**Net footprint reduction (%)**	***p***	**95% CI**
Control: no information, no social dilemma, conventional menu	230	5.94				
Information Only	215	5.40	-0.54	9.09%	*	-1.06; -0.03
Nudge Menu Only	197	5.39	-0.55	9.26%	*	-1.04; -0.07
Social Dilemma Only	213	5.38	-0.56	9.43%	*	-1.05; -0.07
Information + Social Dilemma	192	5.38	-0.56	9.43%	*	-1.07; -0.04
Information + Social Dilemma + Nudge Menu	226	5.07	-0.87	14.65%	**	-1.35; -0.40
Information + Nudge Menu	210	4.84	-1.10	18.52%	**	-1.57; -0.64
Social Dilemma + Nudge Menu	208	4.74	-1.20	20.20%	**	-1.66; -0.74

1 Climate footprint of food choices (Mean kg CO_2-eq/week)
2 Difference compared to the control group (Mean kg CO_2-eq/week)
*p < 0.05, **p < 0.001