Meat Consumption and Potential Reduction: Environmental and Public Health Benefits

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Introduction

Impacts:
- Producing and consuming meat linked to a variety of environmental and public health impacts:
  - Globally: Produces about 20% of greenhouse gas (GHG) emissions.42, 60% of land use, 33% of water use, and is major contributor to habitat loss, species decline43, and pollution44
  - In New Zealand: 45% of total GHGs from animal agriculture65
  - Linked to major diseases: heart disease, obesity, diabetes, cancer, etc.66,67,68
- Projected global meat demand: 72% higher in 2010 than in 200069
- Impacts of increase
  - Intake reductions would result in both environmental and public health benefits.

Understanding Meat Consumption
- One recent study70 based in New Zealand found:
  1. Consumer awareness of meat's environmental impacts is low.
  2. Motivations to reduce meat differ between consumer groups (i.e. non-reducers, reducers, abstinence).
  3. Attitudes and meat attachment predict willingness and intentions to reduce meat consumption.
  - Agreement with proposed policy measures that would promote reduced-meat diets.
- So meat intake is relatively understood, but in practice, why might it be reduced?

Research Questions
This study aimed to understand how different motivational framings (i.e. health, environmental, animal welfare) influence consumers’ meat consumption, asking three primary research questions:

RQ1 - Does the viewing of a meat-related film have any immediate or long-term impacts on motivations (six in total) to reduce meat consumption?
RQ2 - Does the viewing of a meat-related film have any immediate or long-term impacts on attitudes, meat attachment/consumption and agreement with proposed ‘meat-reduction policies’? If so, are there differences between the motivational framings?
RQ3 - Does the viewing of a meat-related film have any impacts on willingness and/or intentions to reduce meat in the diet, reduction frequencies, and/or meat intake frequencies?

Methods

Sample:
- 85 university students
- Ages: 18 to 30
- Consumed meat, but have not seen any films on meat-related issues/impacts

Experimental and Control Group(s):
- Randomly ascertained by gender into four different ‘film groups’:
  1. Health group (i.e. Group H, n = 22) – Film: What the Health
  2. Environmental group (i.e. Group E, n = 21) – Film: Earthlings
  3. Animal welfare group (i.e. Group A, n = 21) – Film: Earthlings
  4. Control group (n = 21) – Films: Jim and Andy and Subject: Nothing

Surveys:
- Three surveys were given:
  1. Pre-survey (before film)
  2. Post-survey (immediately after film)
  3. 1 month follow-up

Variables Measured:
Six motivations:
- Meat attachment (MAQ)71
- Health benefits
- Environmental benefits
- Animal welfare
- Pleasure from consuming meat
- Affinity: Positive attributes of meat

Motivation: Light to consume meat
Entitlement: Right to consume meat
Dependence: necessity of meat in diet

Theory of Planned Behaviour (TPB) components:
- Policy Agreement
- Meat Intake Variables

Changes in Meat-related Variables
Changes over time analyzed with ANCOVA and ANCOVA:
- Post-hoc t-tests performed
- All p-values adjusted for multiple comparisons
- ANCOVA analyses controlled for pre-survey scores.

Significant changes (p < .05) in variables over time:
1) Motivations: Health and Animal welfare
2) TPB: Attitudes and Perceived behavioral control (i.e. PBC)
3) MAQ: Meat attachment and subscales (i.e. Hedonism, Affinity, Entitlement, Dependence)
4) Policy Agreement: Meat tax and overall policy agreement

Paired t-test results for changes in variables over time:
- ∆ Mean SD t ∆ Mean SD t
- Motivations: Health: (Group A: 1.01 0.96 4.8 * 0.88 0.90 4.5 * 0.34 0.51 3.1 * 0.80 0.78 4.8 * )
- Environmental: (Group A: 1.22 0.81 6.9 * 0.80 0.78 4.8 * )
- Animal Welfare: (Group A: 1.22 0.81 6.9 * 0.80 0.78 4.8 * )
- Health: (Group A: 1.22 0.81 6.9 * 0.80 0.78 4.8 * )
- Overall agreement (Group A: 1.22 0.81 6.9 * 0.80 0.78 4.8 * )
- Policy Agreement: Meat tax and overall policy agreement

Paired sample t-tests for willingness and intentions to reduce meat intake:
- Pre M Post M t df
- Group H 3.28 5.60 5.57 * 21
- Group E 3.87 5.15 4.56 * 20
- Group A 3.42 5.50 5.91 * 20
- Control 3.84 3.58 -.81 20

Within-group changes:

Between-group changes:

Significant changes in willingness and intentions to reduce (n-tests), reduction frequencies (Chi-square), and meat intake frequency (Wilcoxon Signed-Ranks Test) were observed for experimental groups

Changes to Meat Consumption

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Willingness and Intentions to reduce:

Reduction frequencies:

Meat Intake Frequencies:

Wilcoxon Signed-Ranks Test:
- Group H: Significant decline (Z = –4.3, p < .05)
- Group E: Significant decline (Z = –4.6, p < .05)
- Group A: Significant decline (Z = –4.8, p < .05)
- Control: No change (Z = 0.3, p = .712)

Conclusion

Motivations:
- Animal welfare information – increases ‘animal welfare’ reduction motivation (sustained, i.e. still present one month after viewing)
- Health information – increases ‘health benefits’ reduction motivation (not sustained)
- Environmental information – no significant increase in ‘environmental benefits’ reduction motivation

TPB:
- Framings that can reduce positive attitudes towards meat (greater to least):
  - Animal welfare
  - Health
  - Environment
- Framings that can increase BPC:
  - Health (sustained)
  - Animal welfare (not sustained)

MAQ:
- All framings can reduce meat attachment
- Compared to the control:
  - Animal welfare: largest declines in hedonism, affinity, and entitlement;
  - Health: largest declines in dependence.

Policy Agreement:
- Framings can increase agreement with proposed meat-reduction policies (greater to least):
  - Environmental
  - Animal welfare
  - Health
- Simple exposure to potential policies may (slightly) increase agreement (i.e. mere-exposure effect)

Willingness, intentions, reduction frequencies, and meat intake
- All framings:
  - Increased willingness and intentions to reduce meat intake
  - Increased reduction frequencies
  - Decreased meat intake frequencies (Environmental frame showed greatest decline)

General Trends:
- Impacts of information on meat-related variables
  - Most prominent immediately after exposure to information, diminish over time
  - Animal welfare frame
    - Wider variation in impacts between individuals
    - Thus, may resonate more strongly with select individuals
  - Health and environmental framing:
    - May show weaker effects, but are more consistent across individuals
  - Animal welfare and health frame:
    - Largest impacts on attitudes, BPC, and meat attachment
  - Environmental frame:
    - Largest impacts on policy agreement and meat intake frequency.

Implications and future directions:
- Exposures to health, environmental, or animal welfare information all increased not only personal meat-related variables (i.e. attitudes, attachment, intake frequency etc.), but also increased agreement with more societal-level approaches (i.e. policy measures) that would seek to address some of meat’s associated impacts.
- Individuals, organizations, and/or governments can utilize these results when seeking to design or implement any strategies (either at personal or societal scale) that seek to promote meat reduction for environmental sustainability and/or improved public health.
- This study sought to understand differences between information framings, but future studies could combine different provisioning techniques and/or framings to better understand the potential interactions and their effects on meat-related variables, policy agreement, and/or intake frequencies.

References