

Dynamics of Communicating Climate Change Information

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Dynamics of Communicating Climate Change Information

- Started October 2009
- SLT CBC themes
 - Travel, transport and sustainability
 - Environment and Landscape
- Supervision team University of Exeter, Psychology, CLES
 - Dr Anna Rabinovich and Dr Thomas Morton
- Met Office contact points
 - Dr Debbie Hemming, Diogo de Gusmão - Met Office Hadley Centre
 - Sarah Tempest, Andy Yeatman - Met Office, Communications



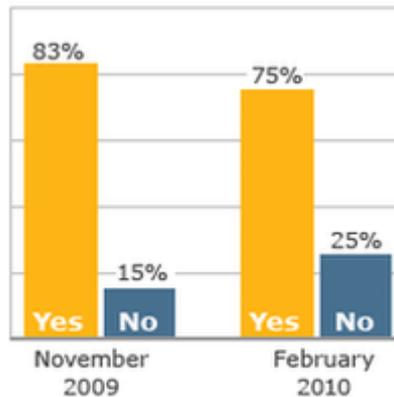
PhD Aims

- **Better understanding of the dynamics of communicating climate change information**
 - Communication process
 - Particularly when communicating information with high uncertainty
 - Recommendations which may overcome these challenges
- **Better understanding of audience responses to climate change information**
 - Understanding and engagement of message
- **Further understanding of attitudes towards climate change**
 - Potential for (travel) behavioural change
- **Contribution to theoretical psychological knowledge**
- **A well-grounded and developed researcher**



Climate Change and the Public

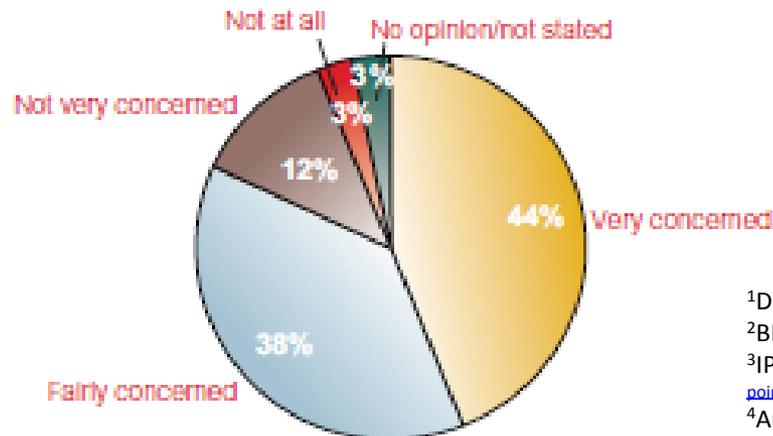
- Do you think global warming is taking place? ²



- Awareness is high
 - 1% **not** heard of climate change, global warming, greenhouse effect ¹

- Attitude-behaviour gap
 - Climate change information has limited influence on attitudes towards climate change
 - Even when information can influence attitudes, there is attitude-behaviour gap ⁴

- How concerned are you about climate change? ³



¹Defra (2007). Survey of Public Attitudes and Behaviours towards the Environment

²BBC Climate Change Poll – February 2010 http://news.bbc.co.uk/nol/shared/bsp/hi/pdfs/05_02_10climatechange.pdf

³IPSOS MORI Tipping Point, Turning Point 2009 http://www.lowcvp.org.uk/assets/reports/IPSOS_MORI_turning-point-or-tipping-point.pdf

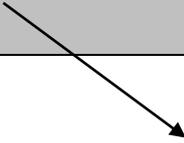
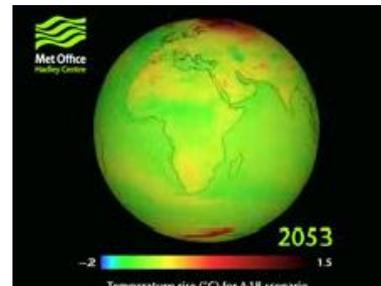
⁴Anable, J., Lane, B., Kelay, T. (2006). An Evidence Base Review of Public Attitudes to Climate Change and Transport behaviour. Final report for DfT, 2006



MESSENGER
 Various sources (e.g. scientists, politicians, NGOs, Govts, media)

MESSAGE
 Risk communication
 Framing
 Complex
 Distant
 Informative
 Emotive (e.g. fear)
 Pervasive (instructional)
 Advice
 Policy
 Probabilistic
Uncertainty

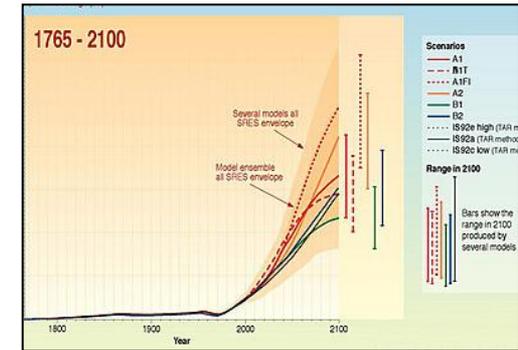
RECIPIENTS
 Awareness
 Concern
 Understanding
 Risk perception
Heuristics
 (availability, anchoring)
 Attitudes
 Intentions
 Behaviour
 Values
 Beliefs
 Behavioural control
 Norms (various)
 Habits
 Identity
 Pro-social/Pro-self
 Cost-benefit analysis
 Risk aversion
 Competition
 Cooperation
 Negotiation
 Quality of Life
 Trust
 Scepticism
 Control
 Helplessness
 Individuals
 Groups
 Segmentation



Based on Janis and Hovland's Yale Model of Communication and Persuasion (1959)

Scientific Uncertainty

- Uncertainty
 - Range of outcomes expressed in probabilities
- Barrier to effective communication
 - People avoid messages that communicate uncertainty (Camerer & Weber, 1992)
 - Averse to uncertainty, unwilling to act (Kuhn, 1997)
- Framing information can minimise the effects of uncertainty
 - Positive (will not) or negative (will) framing (Morton et al, 2011)
- Uncertainty about climate change is inevitable:
 - The key challenge is how to manage uncertainty communication



Social Psychological Theory

- Elaboration Likelihood Model (Petty and Cacioppo, 1986): 2 routes to persuasion
 - Central route: effortful, high motivation, limited capacity
 - Peripheral route: low motivation, low capacity, cues
-  Heuristics: 'rules of thumbs' (Chaiken, 1987)
 - Such as the source: "e.g. experts are trusted"
- Stereotypes are heuristics which represent groups
 - Beliefs about characteristics, attributes and behaviours (Hilton & Hippel, 1996)

Stereotype content

- Recent models emphasise a limited number of stereotype dimensions:
 - Wojciszke et al (1998): Competence and morality
 - Fiske et al (2002): Warmth and competence
 - Leach (2007): Competence, morality and sociability
- **Competence:** Clever, competent, efficient, ingenious, intelligent, knowledgeable, capable
- **Morality:** Trustworthy, fair, helpful, honest, righteous, sincere, tolerant, understanding
- **Warmth:** Good-natured, trustworthy, tolerant, friendly, sincere
- **Sociability:** Warm, sociable, happy

Stereotypes and communication

- Social psychological theory suggests that effective communication does not reside solely in the message (i.e. the **information**)
- It is also important to account for how people perceive the **informer**:
 - E.g. stereotypic perceptions of competence, warmth and morality, sociability
- (How) Are these processes relevant to scientific communication about climate change?
 - Is communication just a one-way process?
 - What about the relationship between the communicator and the audience?
 - (How) Does this influence information being communicated?

Mixed-Methodology



PHASE ONE

Qualitative Interviews

Aim: To get a better understanding of the role of scientists and climate science communicators in process of (public) communication of climate science

Interviews with climate scientists and climate science communicators



PHASE TWO

Quantitative surveys

Aim: Pilot and test themes from Phase One

Two studies amongst publics

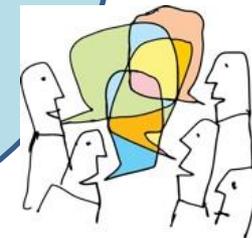


PHASE THREE

Qualitative? Quantitative?

Aim: Build on previous two Phases

Questionnaires? Interviews?
Focus groups? Experimental work?



Qualitative interviews: Aims

- To get a better understanding of how climate scientists and climate science communicators see their role in the communication of climate change:
 - Who are the audiences these experts are seeking to engage with?
 - What do communicators of climate science perceive as effective communication?
 - What key barriers do they see to communicating climate change information effectively?

Qualitative interviews: Procedure

- Semi-structured interviews with 14 participants:
 - 9 Scientists
 - 5 Communicators
- Analysis
 - Descriptive/ Thematic
 - Interpretative
 - Discursive



Indicative findings: Descriptive level

- Participants identified a wide range of audiences: policymakers, businesses, other scientists, utility companies, publics
 - **Scientists:** See publics as recipients of information as secondary to other audiences
 - **Communicators:** View the public as their main audience
- Effective communication was seen as the audience *understanding information*
 - Not behaviour change
 - Though no measure of success to understanding

Indicative findings: Descriptive level

- Perceived barriers to communication with publics differ
 - **Scientists:** Difficulty in communicating the scientific uncertainties to non-science audiences
 - **Communicators:** The need to communicate uncertainties and use scientific language

Indicative findings: Descriptive level

- Adapting the message to the audience
 - **Scientists:** Maintaining the uncertainties and technical language is important
 - **Communicators:** Plain English and simplifying the message is preferred
- Content adaption
 - **Scientists:** Information relevant to people, but still draw on climate information
 - **Communicators:** More social, economic and personal approach to message modification

Indicative findings: Interpretative

- Scientists follow an 'informational' model of communication
- Communicators follow a 'relational' model of communication

Quantitative study: Aim and Research Questions

- To test different models emerging from the interviews on audiences, and how this influences perceptions of the communicator and reception of the message
 - What perceptions (competence, warmth, morality) of the communicator do the different communication styles signal?
 - Do perceptions of the communicator facilitate the communication of climate change information which contains high uncertainty?
 - Does higher uncertainty lead to reduced engagement with climate change (e.g. belief) and reduced action?

Quantitative study: Procedure

- 152 Exeter students were presented with a website for scientific organisation. Varied:
 - Communication style (open vs. distant)
 - Uncertainty in climate change predictions (lower vs. higher)
- Measured a range of things, including:
 - Perceptions of the organisation (e.g. trustworthiness)
 - Belief in Climate Change
 - Behavioural intentions

Varied communication style

Closer, more open

Distant, more corporate

Linford Centre

Linford Centre

- Who we are
 - Our history
 - How are we doing?
 - Our obligations
 - Our society
 - Our board
- What we do
- Work for us
- Help

Who we are

- **We are** a world-leading group with expertise researching changes in the earth's climate. Changes in the world's climate over time are known as climate change
- **We attribute** this change to increased amounts of greenhouse gases (carbon dioxide and methane) in the atmosphere, which leads to warming of the planet
- **We develop** climate models to predict how the climate is likely to be in the future using the available data (such as temperature, clouds, sea level)



About the Linford Centre

- Linford Centre history
- How Linford Centre operates
- Corporate obligations
- Municipal society
- Executive
- What Linford Centre does
- Work for Linford Centre
- Help

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Varied level of uncertainty

Higher uncertainty

Lower uncertainty

Linford Centre

Linford Centre

Guide

Data

Climate news

Reports and publications

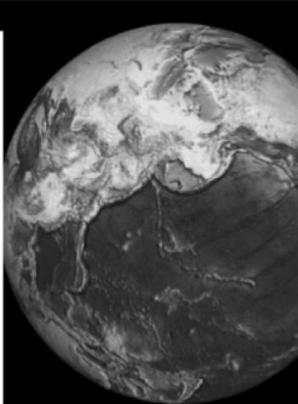
FAQ

Links

Climate Change

We predict the following impacts based on current rates of CO₂ emission:

- Global average temperature will likely rise **between 2-4°C**
- **70-90% likelihood** that deaths attributable to climate change will double
- **65-85% likelihood** that more than 2 million of people will be flooded due to climate change
- **70-90% likelihood** that climate change will make more than a quarter of all species extinct
- **10-30% likelihood** sea levels will rise by more than 6 meters



Guide

Data

Climate news

Reports and publications

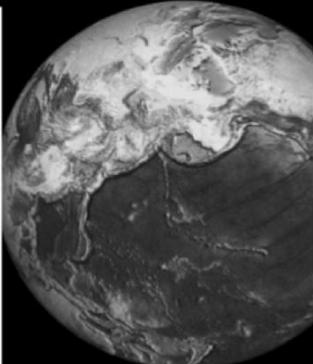
FAQ

Links

Climate Change

We predict the following impacts based on current rates of CO₂ emission:

- Global average temperature will likely rise by **3°C**
- **80% likelihood** that deaths attributable to climate change will double
- **75% likelihood** that more than 2 million of people will be flooded due to climate change
- **80% likelihood** that climate change will make more than a quarter of all species extinct
- **20% likelihood** sea levels will rise by more than 6 meters

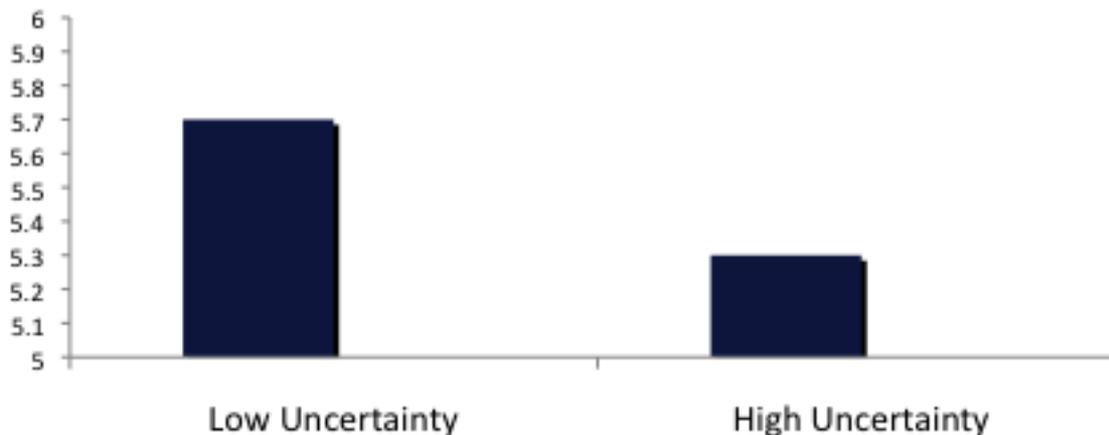


Stereotype content

- Factor analysis show three dimensions:
- **Competence**
 - Capable, Corporate, Credible, Professional, Competent, Incompetent (reversed)
- **Warmth**
 - Relaxed, Casual, Friendly, Warm
- **Morality**
 - Moral, Honest, Sincere, Trustworthy

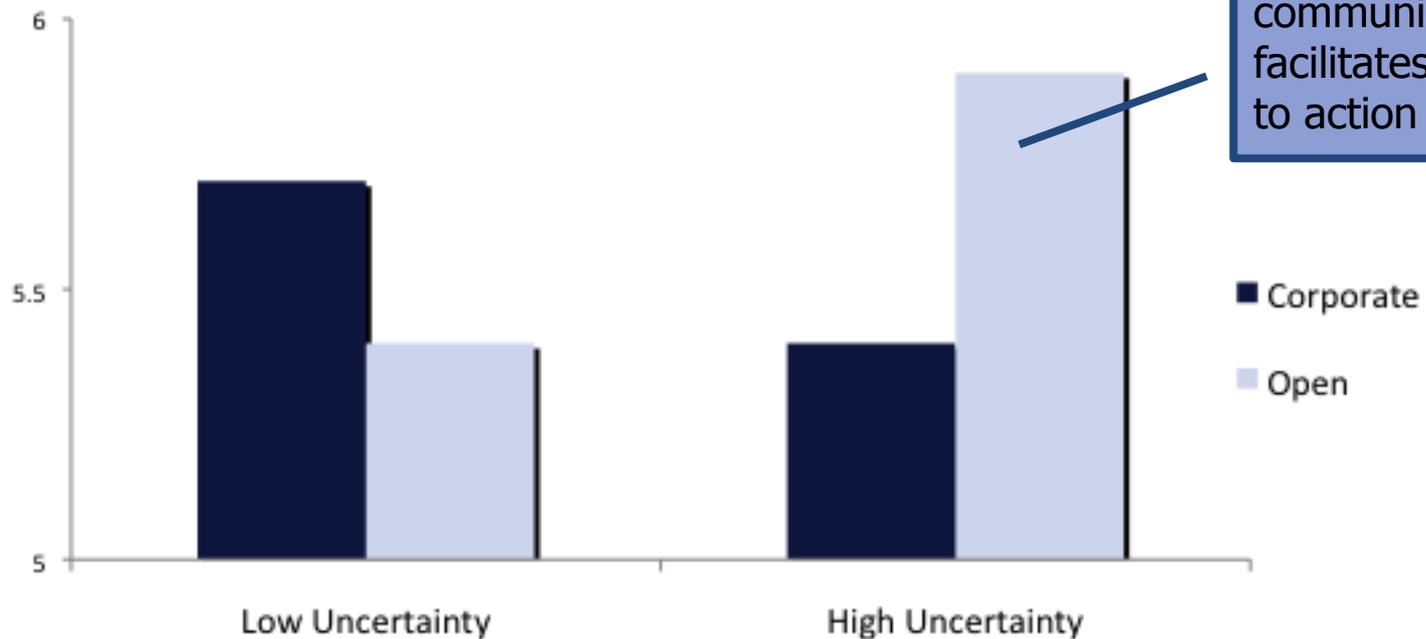
Stereotype content and uncertainty

- Communication style influenced **perceived trustworthiness**
 - Open style conveyed higher trust/ honesty/ morality of messenger
- Communicating higher uncertainty significantly **reduced belief** in climate change:



Stereotype content, uncertainty and behavioural intentions

- Communication style modified the effects of uncertainty on **behavioural intentions**:



When uncertainty is high, an open communication style facilitates intentions to action

(Preliminary) Implications

- Scientists and communicators approach communication differently:
 - Scientists focus on informational aspects
 - Communicators focus on relational aspects
- Relational processes shape how audiences respond to informational content of climate change messages
 - i.e. the two interact
- Addressing the barrier of uncertainty may not always involve resolving uncertainty *itself*:
 - Understanding communication processes and how these shape audience motivations is key

Next Steps

- Complete analysis of qualitative interviews and two quantitative studies
- How do scientists/ communicators interact with publics in a real life situation? (Focus groups?)
- Does providing information on action facilitate engagement with the message? (Quantitative?)
- Is providing scientific information necessary to encourage sustainable behaviour? (Quantitative?)
- Does higher uncertainty in the message signal lower competence of the communicator? (Quantitative?)