Understanding of Global Climate Change: Beliefs vs. Actions

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Introduction

- There are a lot of uncertainties in current research on global climate related to:
  - The models and the parameters
  - Perceptions of certainty of the science

- Communication about global climate change has became an important issue
  - CRED (2009). The psychology of climate change communication.

Introduction

- Efforts by IPCC have been successful in reaching the general public
  - 2007 Nobel Peace Prize

- Skepticism against Global Climate Change (**GCC**) still remains strong
  - Pew Research Center (2009)

Motivation

- Assessment of the public's attitudes reveals the effectiveness of efforts to inform people about climate change

- Further investigation can reveal:
  - The effectiveness of communication about the individuals' role in global environmental problems.
  - If current communication techniques appeal more strongly to different demographic groups.

Belief vs. Action

- Previous research has distinguished between two main response variables:
  - Belief in global climate change
    - Measured as belief in 3 ^{o}F increase in global temp. in 50 years
  - Intentions to act
    - Measured as agreement to perform 5 different energy reduction tasks
- Intentions to act showed lower predictability (R^2) and fewer significant predictors.
  - Bord, O'Connor, and Fisher (2002)

Belief vs. Action

- Krosnik et al. (2006) – Interactive model
  - Demonstrate an interactive model of public assessment of GCC seriousness.
  - 3-way interaction - attitude to GCC, certainty of GCC, and belief in the existence of GCC.
- Heath & Gifford (2006) – Increase prediction of intention to act
  - Incorporate more general measurement scales
  - Incorporate ideological beliefs in Free-market system

Goals

- Provide a replication of the belief – action distinction
- Incorporate more general scale measures
  - We hope to increase R^2 related to intention to act
- Indentify dominant predictors of actions and beliefs

Method

- Residents of the University of Illinois community (456 individuals; 178 male; 278 female; mean age = 26.73) who volunteered to participate in a series of psychological experiments were surveyed on their attitudes toward global climate change

- Each participant responded to multiple questions from 8 scales. Responses were made on 5-point scales ranging from “Strongly Disagree” to “Strongly Agree”

Scales

- ***Revised New Ecological Paradigm*** (**RNEP**) - Measures an overall general concern for environmental factors
  - We are approaching the limit of the number of people the earth can support.
- ***Belief in Global Climate Change***(**BGCC**) – Measures belief in the existence of global warming
  - I am quite sure that global warming is occurring now.
- ***Perception of Causes*** (**PCA**)
  - The main causes of global warming are human activities.
- ***Personal Experiences with Global Climate Change*** (**PE**)
  - It seems to me that temperature is warmer now than in years before.

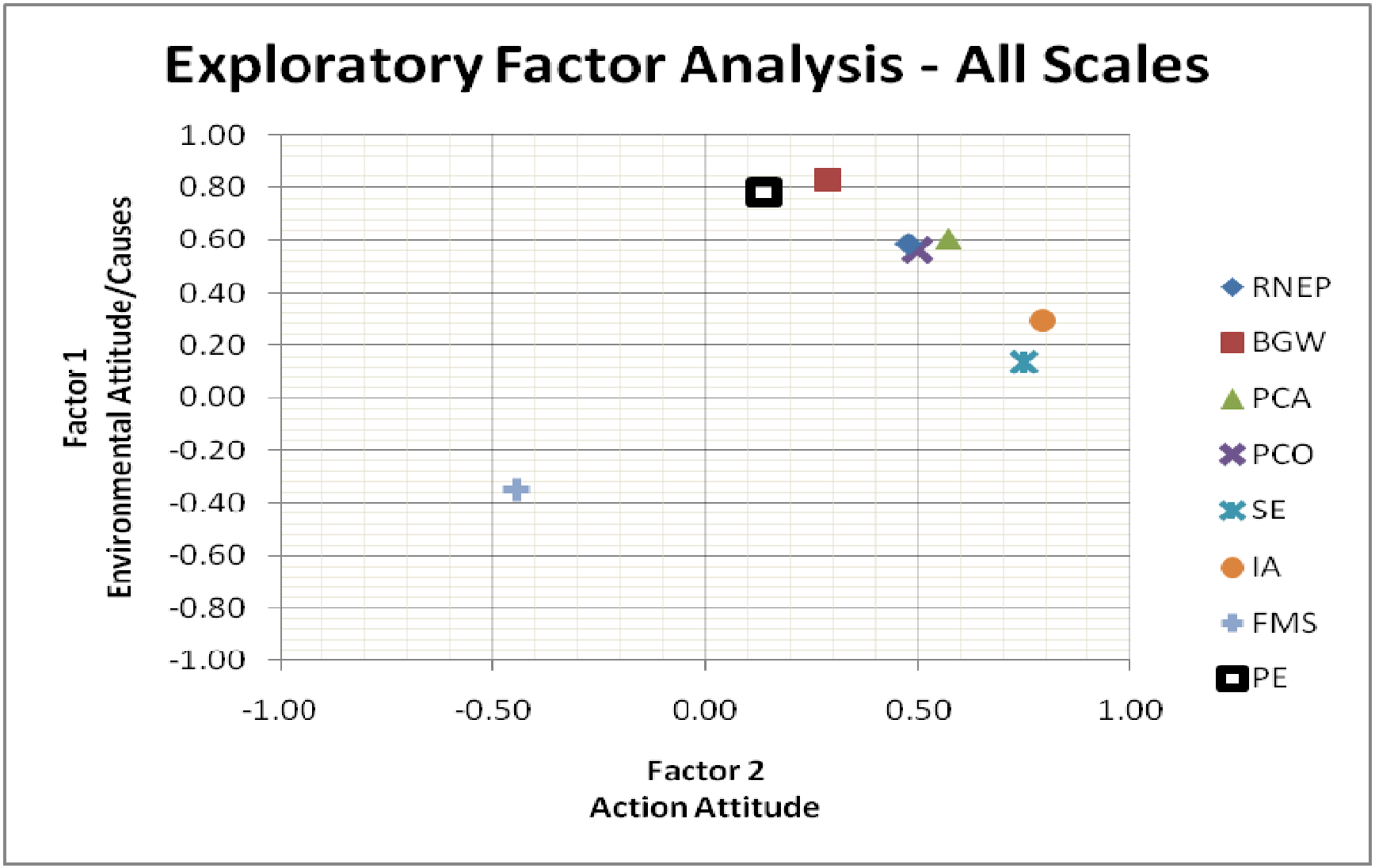
Scales

- ***Perception of Consequences*** (**PCO**)
  - Global warming will bring about some serious negative consequences.
- ***Self Efficacy*** (**SE**) - Measures the belief that the one's own behavior has an impact
  - I believe that little things we can do will make a difference to alleviate the negative effects of global warming.
- ***Intention to Act*** (**IA**)
  - I plan to take some actions to stop global warming.
- ***Free Market System*** (**FMS**) – Measures strength of belief in the free market system
  - The preservation of the free-market system is more important than localized environmental concerns.

Scale Summary

Scale	Mean (SD)	Reliability
RNEP	3.62 (0.61)	0.82
BGCC	4.32 (0.92)	0.91
PE	3.87 (0.98)	0.84
PCA	3.97 (1.02)	0.92
PCO	3.98 (0.76)	0.82
SE	4.09 (0.77)	0.80
IA	4.00 (0.90)	0.93
FMS	2.33 (0.66)	0.70

Factor Analysis



MR Analysis – Additive Models

Belief in GCC	Predictor	Intention to Act
0.14	Percept. of Causes	0.07
0.10	Percept. of Consequences	**0.06**
0.08	RNEP	**0.08**
0.21	Personal Experience	**0.05**
0.04	Self Efficacy	**0.14**
0.03	Free-market system	**0.04**
-	Belief in GCC	0.05
0.61	Total R^2	0.49

Canonical Correlation Analysis

	Canonical Correlation	Sq Canonical Correlation	P-value
1	0.84	0.70	<.0001
2	0.33	0.11	<.0001

Standardized Canonical Coefficients

Response Variables

	V1	V2
BGCC	0.69	-0.90
IA	0.47	1.03

Predictor Variables

	W1	W2
RNEP	0.15	**0.39**
PE	**0.42**	-0.67
PCA	0.25	-0.46
PCO	0.19	-0.11
SE	0.24	**0.89**
FMS	-0.10	-0.24

Demographics

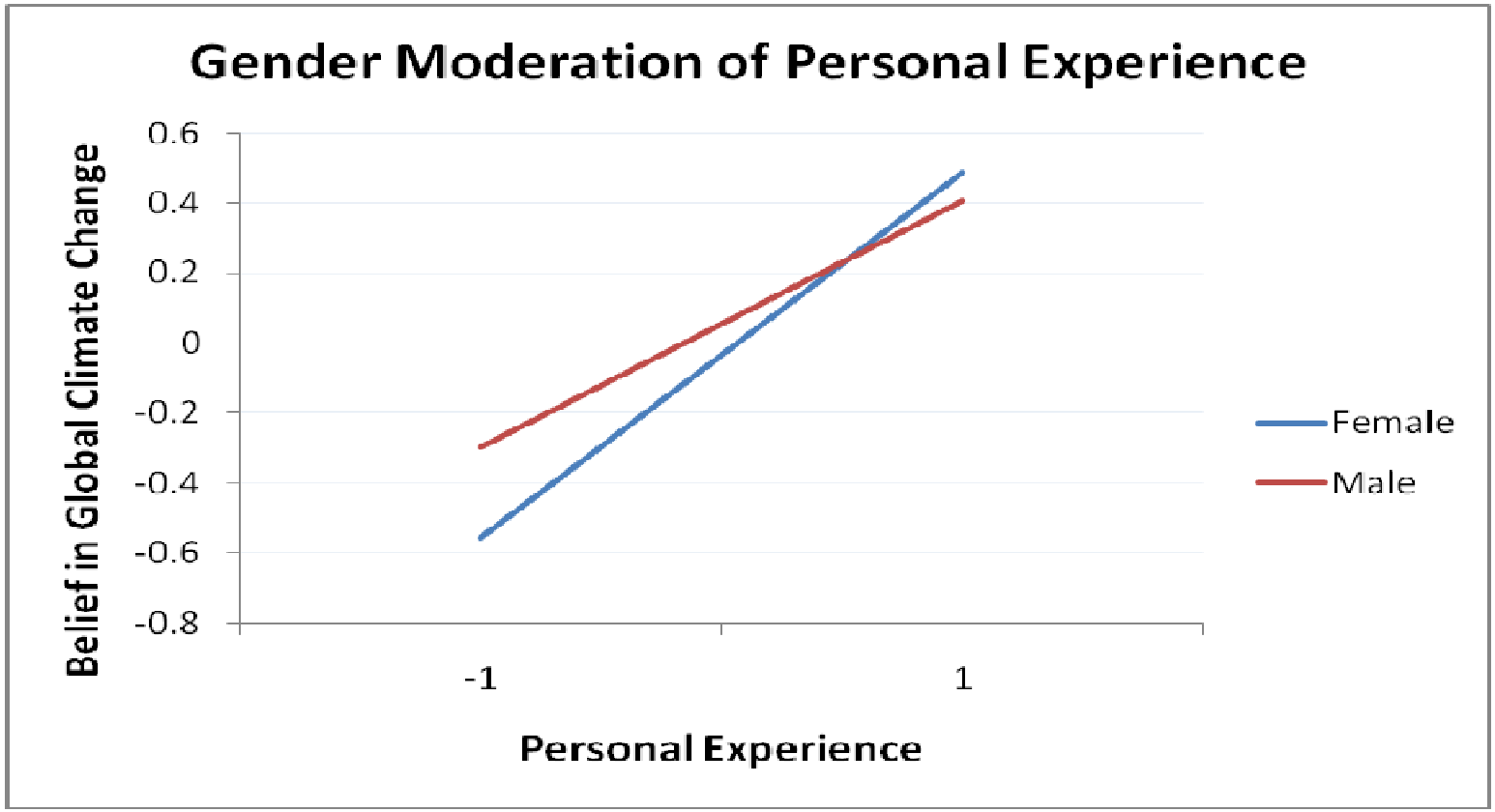
- Female responses are significantly higher than male responses for RNEP, PE, SE, and IA (based on t-tests)
- 35 of 36 items on environment have negative correlation with gender (significant by sign test)
- Additionally 7 of 8 scales show same negative correlation pattern.

	RNEP	**BGCC**	**PE**	**PCA**	**PCO**	**SE**	**IA**	**FMS**
Age	0.06	-0.07	0.02	-0.05	-0.09	-0.09	0.03	-0.13
Gender	**-0.17**	**-0.07**	**-0.18**	**-0.08**	**-0.07**	**-0.15**	**-0.14**	0

Female = 0 and Male = 1

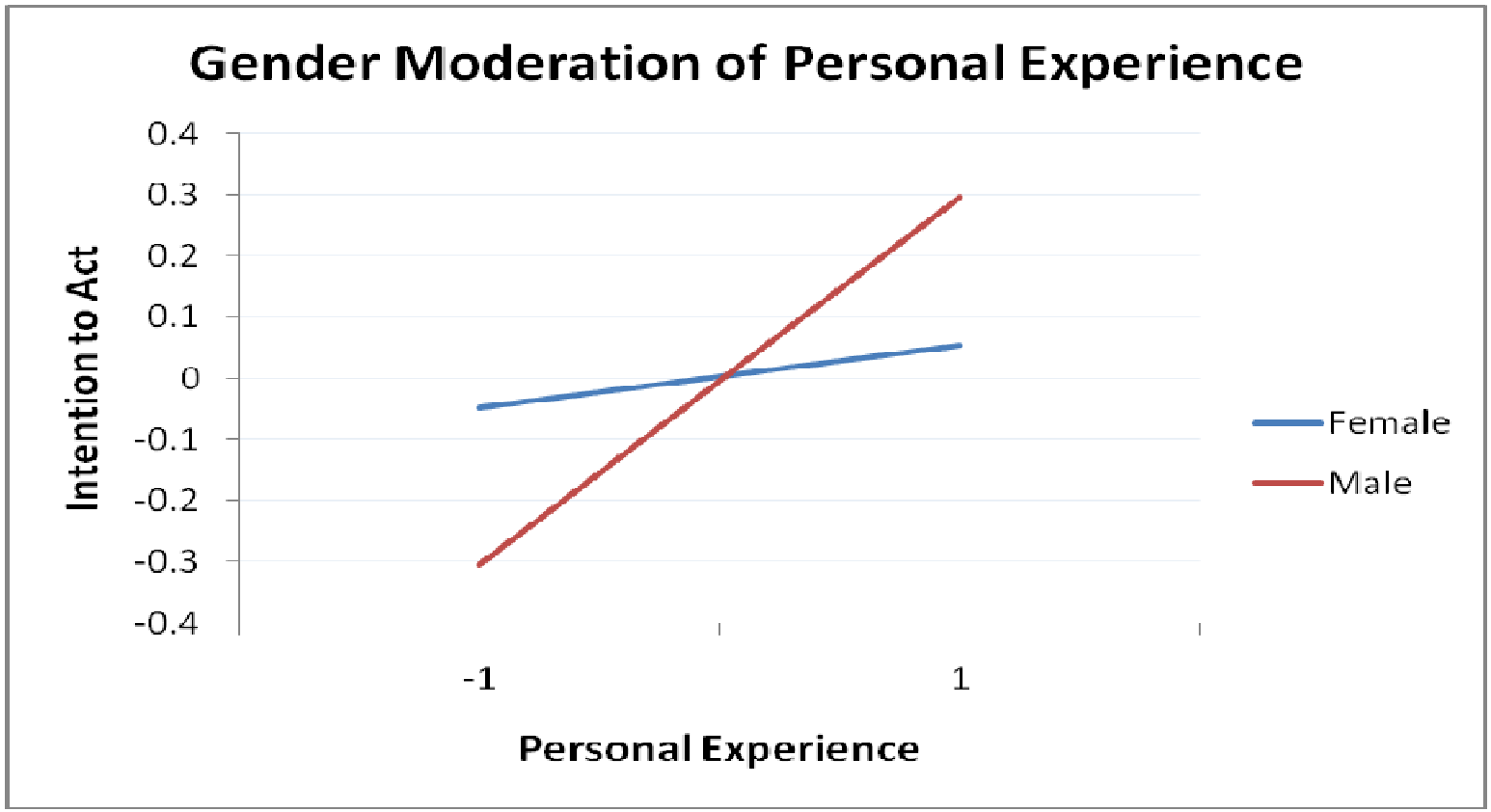
MR Analysis – Gender

- Belief in GCC



MR Analysis – Gender

- Intention to Act



Conclusion

- Belief vs. Action
  - We confirm the distinction between beliefs in GCC and intentions to act.
  - We find non-overlapping predictors for beliefs and actions
  - Belief-Action Correlation (r = 0.47)
  - Belief in GCC non-significant predictor of Intention to Act
- We find 2 distinct constructs that share about 22% common variance, with partially overlapping predictors.

Conclusion

- ***Belief in Global Climate Change*** predicted by:
  - Percept. of Causes
  - Percept. of Consequences
  - Personal Experience
- ***Intentions to Act*** predicted by:
  - Ideological beliefs about the free-market
  - Pro-environmental attitudes
  - Self Efficacy
  - Percept. of Consequences
  - Personal Experience

Conclusion

- Gender Differences
  - A persistent pattern of more extreme female responses
  - Significant gender moderation for personal experience with global climate change
    - Personal experience plays a smaller (larger) role for females in formulation of intentions to act (beliefs in GCC)

Conclusion

- One should consider the goal of communication about climate change
  - To generate action?
    - Intentions to act may be formulated somewhat independently from beliefs in GCC
    - Intentions to act appear to be more complex in relation to our battery of predictors
  - To generate belief?
    - Beliefs in GCC may be easier to understand/model

Thank You