

# **Networks, Social Influence, and Plans for Dealing with Climate Change: The Effects of Personal Network Ties to Environmentalists on the General Public in Canada.\***

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### **ABSTRACT**

This paper examines the social influence of environmental social movement organization (ESMO) members on the general public. It sets out to answer the question, "For members of the general public, does having a social network tie to an ESMO member influence one's concern and plans for dealing with climate change?" This paper draws upon data from two social surveys. The primary data set of interest consists of social survey data collected from a probability sample of the general public in Canada (N = 1007). A comparative data set collected from a probability sample of environmental organization members across Canada is also considered (N = 1148). With regard to this latter study, data from ESMO members were collected regarding their frequency of communication about environmental issues, and the frequency by which they encouraged others to engage in environmentally friendly activities (as well as on other topics).

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The findings provide evidence that ESMO members frequently engage in these forms of communication, and thus bolsters the plausibility of “social influence effects” resulting from network ties. Multivariate analyses are undertaken (to analyze the general public data), using multiple regression, and logistic regression analyses, to develop models which explain concern about climate change amongst the general public, and personal plans to take action about climate change among the general public. The major finding of this study is that the number of ESMO members that one has ties to increases the likelihood that one has a plan to deal with climate change. This effect holds even when ESMO membership status is controlled for. In other words, amongst non-ESMO members, the greater the number of ties they had to ESMO members, the more likely they were to have a plan to deal with climate change. We argue that this is a “social influence” effect, whereby environmental organization members disseminate information and moral suasion. Findings are discussed in the context of the social movements, social capital, and social network literatures. Implications for environmental organization strategizing are also discussed.

## INTRODUCTION

This paper uses data from a nation-wide survey of the Canadian general public. It examines the claim that one social factor that influences concern about climate change, and whether or not one has a plan for dealing with it, is the number of ties that individuals have to ENGO members. It is argued that information and social influence flow through such ties. In the context of the social movements and social capital literature, it is argued that the “bridging ties social influence effect” is one potential outcome of social movement mobilization.

- **The Problem of Global Warming.**
- **Individual Versus Systematic Solutions.**

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## **Research Questions.**

The general research questions that this paper will explore are:

**“What explains individual levels of concern about climate change?”**

and **“What explains whether or not individuals have a personal plan to deal with climate change”**.

More specifically, this paper focuses on social networks, and whether or not having ties to environmental movement organization members affects concern about climate change, and plans to deal with climate change.

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# LITERATURE/THEORY

- **Sociological Research on Climate Change**
- **Social Networks**
  - **Social Capital**
    - Nets and bridging versus bonding
    - Nets and norms, values, trust
    - Nets and civic engagement
  - **Collective Action**
  - **Networks and Social Movements**
    - Recruitment
    - Identity
    - Communication
    - Diffusion
    - Outcomes
- **Other Social Network Arguments.**
  - **Social Influence**
  - **Diffusion**

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# HYPOTHESES.

- *H1a. Concern About Climate Change is Positively Associated with Number of Social Network Ties to ENGOS.*
- *H1b. Concern About Climate Change is Positively Associated with Number of Social Network Ties to ENGOS net of ENGO membership and other variables.*
- *H2a. Having a Plan to Deal with Climate Change is Positively Associated with Number of Social Network Ties to ENGOS.*
- *H2b. Having a Plan to Deal with Climate Change is Positively Associated with Number of Social Network Ties to ENGOS net of ENGO membership and other variables.*

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# METHODS

- **Data Collection and Samples**
- **Measures.**

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## ***Dependent Variables.***

- *Concern about Climate Change.*
- *Plan for Dealing with Climate Change.*

## ***Independent Variables.***

- ***Control Variables.***

- *Education.*
- *Income.*
- *Gender/Female.*
- *Age.*
- *Youth.*

- ***Explanatory Variables.***

- *Concern about Climate Change.*
- *New Ecological Paradigm.*
- *Number of Ties to ENGO Members.*

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**CLIMATE CHANGE (Global Warming).**

11. On a scale of 1 to 5 with 1 being **Not concerned at all** and 5 being **Extremely concerned**, how concerned are you about the effects of climate change?

1 Not Concerned at all	2 Slightly Concerned	3 Concerned	4 Very Concerned	5 Extremely Concerned

12. Do you personally plan to do anything in response to climate change? [Please circle the response that best fits the respondent's answer.]

a. Yes      b. No.      c. Not sure

[If YES:] Can you please briefly describe what you plan to do:

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**HUMANS AND THE ENVIRONMENT**

21. I will now read to you some statements about the relationship between humans and the environment. For each one, please indicate whether you **STRONGLY AGREE**, **MILDLY AGREE**, are **UNSURE**, **MILDLY DISAGREE** or **STRONGLY DISAGREE** with it. (Place a check mark in the column that best describes the respondent's response to the statement on the left.)

	Strongly Agree	Mildly Agree	Unsure	Mildly Disagree	Strongly Disagree
1. We are approaching the limit of the number of people the earth can support.					
2. Humans have the right to modify the natural environment to suit their needs.					
3. The earth has plenty of natural resources if we just learn how to develop them.					
4. Plants and animals have as much right as humans to exist.					
5. The so-called "ecological crisis" facing humankind has been greatly exaggerated.					
6. Humans will eventually learn enough about how nature works to be able to control it.					
7. If things continue on their present course, we will soon experience a major ecological catastrophe.					

14. Are you a member of any environmental organizations?

- a. Yes.            b. No.

15. **If yes**, now I am going to read to you the names of some organizations that have been involved in environmental issues in various parts of Canada. For each group, I'm going to ask you if you are a member, and if you know anyone who belongs to it.

**If no**, now I am going to read to you the names of some organizations that have been involved in environmental issues in various parts of Canada. For each group, I'm going to ask you if you know anyone who belongs to it.

[Interviewer: Please refer to the organizations listed below in ticking the applicable columns to the right]	[If yes, to above, ask:]  Are you a current member of this group?	[If R volunteers, record whether or not they are a former member of the group.]	[Ask everyone:]  Do you know a member of this group?	[If yes to "know a member", ask:]  Do you have a close friend or relative who belongs to this group?
[ ] a. Canadian Parks and Wilderness Society (CPAWS)				
[ ] b. Canadian Wildlife Federation				
[ ] c. David Suzuki Foundation				
[ ] d. Ducks Unlimited				
[ ] e. Équiterre				
[ ] f. EYA or Environmental Youth Alliance				
[ ] g. Friends of Clayoquot Sound				
[ ] h. Greenpeace				
[ ] i. The Nature Conservancy				
[ ] j. Pollution Probe				
[ ] k. Sierra Legal Defence Fund				
[ ] l. Sierra Club of Canada				
[ ] m. Sierra Youth Coalition				
[ ] n. Western Canada Wilderness Committee				
[ ] o. WWF (World Wildlife Fund)				

# RESULTS

- The Social Influence of Environmentalists

		Yes	No	Don't Know/Other/No Response	Total
1. Does R Encourage Others to Protect the Environment	f	989	142	17	1148
	%	86.1	12.4	1.5	100.0
2. Does Others Encourage R to Protect the Environment	f	713	416	19	1148
	%	62.1	36.2	1.7	100.0

		Every Day	At Least Once a Week	At Least Once a Month	Several Times a Year	Once a Year or Less Often	Never	Don't Know/Other/No Response	Total
1. How often does R talk with someone about conservation and other environmental issues?	f	239	562	189	118	19	10	11	1148
	%	20.8	49.0	16.6	10.2	1.7	.9	1.0	100.0
2. How often does R encourage SOMEONE ELSE to participate in ENGO activities, or contribute in some other way?	f	N.A.	62	107	237	230	481	31	1148
	%	N.A.	5.4	9.3	20.6	20.0	41.9	2.7	100.0
3. How often does someone encourage R to participate in ENGO activities, or contribute in some other way?	f	N.A.	60	170	280	229	383	26	1148
	%	N.A.	5.2	14.8	24.4	19.9	33.4	2.3	100.0
4. About how often does someone encourage R to participate in environmental movement activities in general? For example, activities besides those of the ENGO?	f	N.A.	121	168	345	213	270	31	1148
	%	N.A.	10.5	14.6	30.1	18.6	23.5	2.7	100.0

	Not at all concerned (1)	Slightly concerned (2)	Concerned (3)	Very Concerned (4)	Extremely Concerned (5)	Don't Know/Other /No Response	Total
f	22	140	265	354	202	2	985
%	2.2	14.2	26.9	36.0	20.5	.2	100.0

## RESULTS

- **Concern about, and Plans for Dealing with Climate Change.**

Table 4. Individual Plan to Deal with Climate Change Frequency and Percentage Distribution: Whole National General Public Sample Weighted by Age, Gender, and Province.				
	Yes	No	Don't Know/Other/No Response	Total
f	812	140	34	985
%	82.4	14.2	3.4	100.0

Table 5. Content Analysis of Open Ended Responses Describing R's Climate Change Plan. Whole National General Public Sample Unweighted.		
Master Category	# of Coding References	% of Participants (n=838)
1. Transportation	450	53.7
2. Waste Reduction	429	51.2
3. Reduce Energy Use	358	42.7
4. Water Use	90	10.7
5. Food Production and Consumption	48	5.7
6. Use of Chemicals	48	5.7
7. Landscaping	38	4.5
8. Education Awareness	27	3.2
9. Political Action	22	2.6

**Table 6: Master Category Intersections (# of coding references)**

	WASTE REDUCTION	REDUCE ENERGY USE	TRANSPORTATION
TRANSPORTATION	230	204	450
WASTE REDUCTION	429	167	230
REDUCE ENERGY USE	167	358	204
WATER USE	57	56	49
FOOD PRODUCTION & CONSUMPTION	27	23	29
USE OF CHEMICALS	32	21	26
LANDSCAPING	16	15	18
EDUCATION & AWARENESS	11	6	11
POLITICAL ACTION	11	4	8

**Table 7. Percentage Distribution for Survey Items Concerning Climate Change, and Energy Issues: Whole National General Public Sample, Weighted by Age, Gender, and Province.**

	Completely Disagree	Mostly Disagree	Partly Agree/ Disagree	Mostly Agree	Completely Agree	Valid Total	Valid N
1. Canada should live up to its commitments under the Kyoto accord.	4.2	3.2	14.6	24.3	53.7	100.0	891
2. Climate change is a myth – there is no compelling scientific evidence for it.	57.9	19.8	10.2	7.9	4.1	100.0	970
3. Canada should focus more intensively on developing the oil and gas sector of the economy.	14.8	18.5	33.4	18.2	15.1	100.0	956
4. Canada should place more emphasis on alternative energy sources (such as windpower, solar energy, and bio-fuels)	.5	.6	5.7	20.1	73.0	100.0	982

# RESULTS

- Explaining Concern about Climate Change.

Table 8. Multiple Regression Model Explaining Concern for Climate Change Using Standardized Regression Coefficients. General Public Sample (Non-ENGO Members) Weighted by Age, Gender, and Province.	
<b>Socio-Demographic-Economic Control Variables</b>	
Years of Education	.15****
Personal Income	-.11*
Gender (Female = 1)	.05
Age	.05
Youth (Under 30 = 1)	-.02
<b>Values, ENGO Ties</b>	
NEP Scale	.43****
Number of Ties to ENGOs	-.02
R <sup>2</sup>	.23****
N	653
Notes: * p. ≤ .05, ** p. ≤ .01, *** p. ≤ .005, ****p. ≤ .001	

# RESULTS

- **Explaining Plans to Deal with Climate Change**

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Table 9. Logistic Regression Model Explaining Individual Plan for Dealing with Climate Change Using Logistic Regression Coefficients: National General Public Sample (Non-ENGO Members) Weighted by Age, Gender, and Province.	
<b>Socio-Demographic-Economic Variables</b>	
Years of Education	.13*
Personal Income	.00
Gender (Female = 1)	-.24
Age	-.01
Youth (Under 30 = 1)	-.06
<b>Concern about Climate Change, Values, and ENGO Ties</b>	
Concern about Climate Change	.87****
NEP Scale	.46*
Number of Ties to ENGOS	.39****
$\chi^2$	103****
Cox and Snell R <sup>2</sup>	.15
Nagelkerke R <sup>2</sup>	.27
N	633
Notes: * p. ≤ .05, ** p. ≤ .01, *** p. ≤ .005, ****p. ≤ .001	

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# Discussion

- Main findings:
  - The major finding of this study is that the number of ENGO members that one has ties to increases the likelihood that one has a plan to deal with climate change. This effect holds even when ENGO membership status is controlled for. In other words, amongst non-ENGO members, the greater the number of ties they had to ENGO members, the more likely they were to have a plan to deal with climate change. We argue that this is a “social influence” effect, whereby environmental organization members disseminate information and moral suasion.

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- Somewhat surprisingly, at the multivariate level we did not find similar effects regarding concern with climate change. At the zero order level, the greater the number of ties one had to ENGO members, the more concerned they were about climate change – but this effect did not persist when other variables were controlled for. We speculate that the effect of having ties to ENGO members on concern about climate change is probably indirect. For example, ties are significantly associated with respondent’s NEP scale score (level of value biocentrism), and the NEP scale is positively and significantly associated with concern with climate change. (Further, the greater one’s level of concern about climate change, the more likely they were to have a plan to deal with climate change – thus this shows that ties also have an indirect effect on climate change plans through concern.)

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- Social capital/social influence.
- Death of Environmentalism.
- Qualitative research on mechanisms and processes.
- Future research on weak ties, strong ties.

Appendix Table 1. Intercorrelation Matrix.

	CC Plan	Education	Income	Female	Age	Youth	CC Concern	NEP	Ties	Membership
CC Plan	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Education	.11***	-----	-----	-----	-----	-----	-----	-----	-----	-----
Income	-.03	.32****	-----	-----	-----	-----	-----	-----	-----	-----
Female	.06	.02	-----	-----	-----	-----	-----	-----	-----	-----
Age	-.10***	-.04	.16****	.03	-----	-----	-----	-----	-----	-----
Youth	.03	-.07*	-.28****	-.08*	-.64****	-----	-----	-----	-----	-----
CC Concern	.36****	.14****	-.06	.14****	.05	-.09****	-----	-----	-----	-----
NEP	.23****	.06*	-.03	.06	.03	-.03	.44****	-----	-----	-----
Ties	.12****	.11****	.17****	-.01	.05	-.04	.07*	.17****	-----	-----
Membership	-.01	.09****	.10****	-.02	.05	.01	.13****	.15****	.24****	-----

Notes: \* p. < .05, \*\* p. < .01, \*\*\* p. < .005, \*\*\*\*p. < .001

**Appendix Table 2. Measures.**

Variable Name	Mean (S.D.)	Description
Concern about Climate Change	3.58 (1.04)	Response to question: "On a scale of 1 to 5, with 1 being <b>Not concerned at all</b> and 5 being <b>extremely concerned</b> , how concerned are you about the effects of climate change." This is treated as an interval ratio level variable. The following categories were also available to assist respondents: 1 = not concerned at all, 2 = slightly concerned, 3 = concerned, 4 = very concerned, 5 = extremely concerned.
Plan for Climate Change	.85 (.35)	Dichotomous variable based on people's responses to whether or not they had a personal plan to deal with climate change. 1 = yes, 0 = no.
Education	14.04 (2.32)	Years of education. E.g., completed high school = 12 years, obtained a university bachelor's degree = 16 years, etc.
Income	45,303 (33,514)	Annual personal income in dollars.
Gender/Female	.52 (.50)	Dichotomous variable. Female = 1, male = 0.
Age	46.94 (16.14)	Age in years.
Youth	.16 (.37)	Dummy variable where those aged 29 and under = 1, and those aged 30 and above = 0.

**Appendix Table 2. Measures (Continued).**

Variable Name	Mean (S.D.)	Description
New Ecological Paradigm	3.6 (3.71)	Responses to the following statements were reverse coded where appropriate (items # 2, 3, 5, 6) and the set of items were then combined into an index: 1. We are approaching the limit of the number of people the earth can support, 2. Humans have the right to modify the natural environment to suit their needs, 3. The earth has plenty of natural resources if we just learn how to develop them, 4. Plants and animals have as much right as humans to exist, 5. The so-called "ecological crisis" facing humankind has been greatly exaggerated, 6. Humans will eventually learn enough about how nature works to be able to control it, 7. If things continue on their present course, we will soon experience a major ecological catastrophe. The response categories for these items were: Strongly Agree = 5, Mildly Agree = 4, Unsure = 3, Mildly Disagree = 2, Strongly Disagree = 1. To create the index the responses to these 7 items were summed together and then divided by 7.
Number of Ties to ENGO members	1.19 (1.71)	Respondents were provided with a list of 15 environmental organizations, and for each were asked whether they know a member of the group. Responses were coded 0 for no, and 1 for yes. The responses were then summed. Potential responses could vary from 0 to 15.
ENGO Membership	.09 (.29)	Dichotomous variable. Respondents were asked whether or not they belonged to an environmental organization. 1 = yes, 0 = no.