

Supplementary Materials

Contents

1. Methods
2. Measures and coding
3. Correlation matrix of all variables used in the structural equation modeling
4. Initial measurement model
5. Measurement model with correlated error terms freed
6. One-factor model with correlated error terms freed
7. Values and demographics as predictors of climate activism
8. Key beliefs and demographics as predictors of climate activism
9. Values, key beliefs and demographics as predictors of climate activism
10. Initial full model as hypothesized
11. Modified, final social-cognitive model of climate activism

1. Methods

Data for this study were obtained from a national survey conducted in October and November, 2008; respondents were adult members of an online, non-volunteer, probability-based panel with 50,000-members, covering 97% of the U.S. population. The panel has been recruited and maintained by the survey research firm, Knowledge Networks. Members are recruited using random digit dialing and address-based sampling; this dual sampling strategy covers both listed and unlisted phone numbers, telephone, non-telephone, and cell-phone-only households. Panelists complete an average of two surveys of 5 to 20 minutes per month for which they receive small incentives, in the range of \$4 to \$6. Those without a home computer receive a free netbook and Internet service to ensure that segments of the population without computers are represented in the panel.

The length of the questionnaire mandated that we divide it into two parts. An invitation to participate in the first survey was emailed to 4,000 randomly selected panel members in September 2008. Two weeks after administration of the first survey ended, respondents received an invitation to participate in the second survey. Beliefs about climate change, issue involvement, and injunctive beliefs were assessed in the first wave of data collection; the remaining variables were measured in the second wave.

Completed questionnaires were received from 2,164 respondents, a 54% within-panel completion rate. The period of administration for each survey – from invitation to termination of data collection – was approximately 10 days, during which one reminder email was sent to non-respondents.

Response rate metrics for online panel surveys are still under development, and do not compare directly to telephone or mail surveys in which a single questionnaire is administered. A cumulative response rate may be calculated as the product of the panel's recruitment rate, profile rate (the proportion of respondents who completed the initial profile survey to become panel members), and completion rate (Callegaro and Disogra 2008). This study had a recruitment rate of 21.6% (using AAPOR Response Rate 3); a profile rate of 56.4% (computed as an average of the cohort profile rates for all households in the study sample); a completion rate of 54.1% (this figure is most comparable to a telephone or mail survey's response rate); and a cumulative response rate of 6.6% (calculated as the product of the recruitment rate, profile rate and completion rate).

While the cumulative response rate appears low compared to telephone surveys, studies show that

probability-based Internet surveys yield more accurate results than telephone interviews, with the optimal combination of both sample composition and response accuracy (Chang and Krosnick 2009).

2. Measures and Coding

Climate change activism, our dependent variable, was assessed with three behaviors, and combines behavior over the prior year with intentions for the coming year to create scales for the three behaviors: Contacting elected officials in support of mitigation; supporting an organization working on the issue; and attending climate-related rallies or meetings. Seven-point scales were created for each behavior: 1= intend to act less frequently in the coming year; 2=have never done this and intend to do the same in the coming year; 3=have never done this, but intend to do so in the coming year; 4= have done this once and intend to do the same in the coming year; 5= have done this once and intend to do so more frequently; 6=have done this more than once and intend to do the same; and 7=have done this more than once and intend to do so more frequently; Cronbach's $\alpha=.81$ for the three stage-of-change scales.

The independent variables are listed below in roughly their order of entry in the information-processing model.

Values: Four Likert-type measures of egalitarianism ($\alpha=.72$) and four of individualism ($\alpha=.77$) were used to assess the degree to which respondents value equal opportunity and a more equitable distribution of resources (egalitarianism), and individual freedom and limited government (individualism).

Belief certainty regarding the reality of global warming was assessed with a nine-point scale ranging from (9) complete certainty that global warming is occurring; to (5) don't know; to (1) complete certainty that it is not occurring.

Risk perceptions were assessed with 23 items that asked (a) who is threatened by climate change; (b) what types of impacts climate change will cause; (c) how probable several impacts of climate change are; and (d) when climate change will begin to harm people. Most items included a "don't know" response option, which was replaced using regression imputation in AMOS. The 23 items were standardized (due to varying number of scale points) and averaged; $\alpha = .97$.

Belief in human causation was assessed with one item, which asked, “Assuming global warming is happening, do you think it is... (1) caused mostly by human activities; (2) caused mostly by natural changes in the environment; (3) other (Please specify); or (4) none of the above because global warming isn’t happening. The responses were dichotomized: The respondent does or does not recognize that humans are causing global warming.

Collective efficacy: The belief that global warming is solvable was assessed with a 5-point scale: (1) Global warming isn’t happening; (2) Humans can’t reduce global warming, even if it is happening; (3) Humans could reduce global warming, but people aren’t willing to change their behavior, so we’re not going to; (4) Humans could reduce global warming, but it’s unclear at this point whether we will do what’s needed; and (5) Humans can reduce global warming, and we are going to do so successfully.

Affective issue involvement was assessed using two measures: The first asked, “How important is the issue of global warming to you personally,” with five response options ranging from “extremely important” to not at all important.” The second asked how worried the respondent was about global warming, with four response options ranging from “very worried” to “not at all worried”; $\alpha = .87$.

Injunctive beliefs were assessed with seven 5-point items asking whether a variety of societal actors should be doing more or less to reduce global warming: Local government officials; state legislators; governors; the U.S. Congress; the president (George W. Bush); corporations and industry; and citizens themselves; $\alpha = .97$.

Civic engagement was assessed by asking which, if any, of 11 political activities the respondent had engaged in over the prior year: Written or called any politician; attended a political rally, or speech or protest; attended a public meeting; held or run for political office; served on an organization's committee; served as an organization's officer; written a letter to the editor of a newspaper or magazine or called a live radio or TV show; written an article for a magazine or newspaper; worked for a political party; made a speech; been an active member of a political group. The number of activities the respondent had engaged in were summed ($\alpha=.72$).

Global warming opinion leadership was measured using five items asking whether the respondent: (a) had spoken with others about global warming over the past two weeks; (b) liked to discuss global warming; (c) was someone other people came to for advice on global warming; (d) believed that others perceive him/her to be a good source of information on the issue; and (e) gave more information on global warming than s/he received in discussions. All five items were coded bi-directionally, with positive scores indicating opinion leadership for mitigation; negative scores indicating opinion leadership against mitigation; and zero indicating no opinion leadership; $\alpha = .63$.

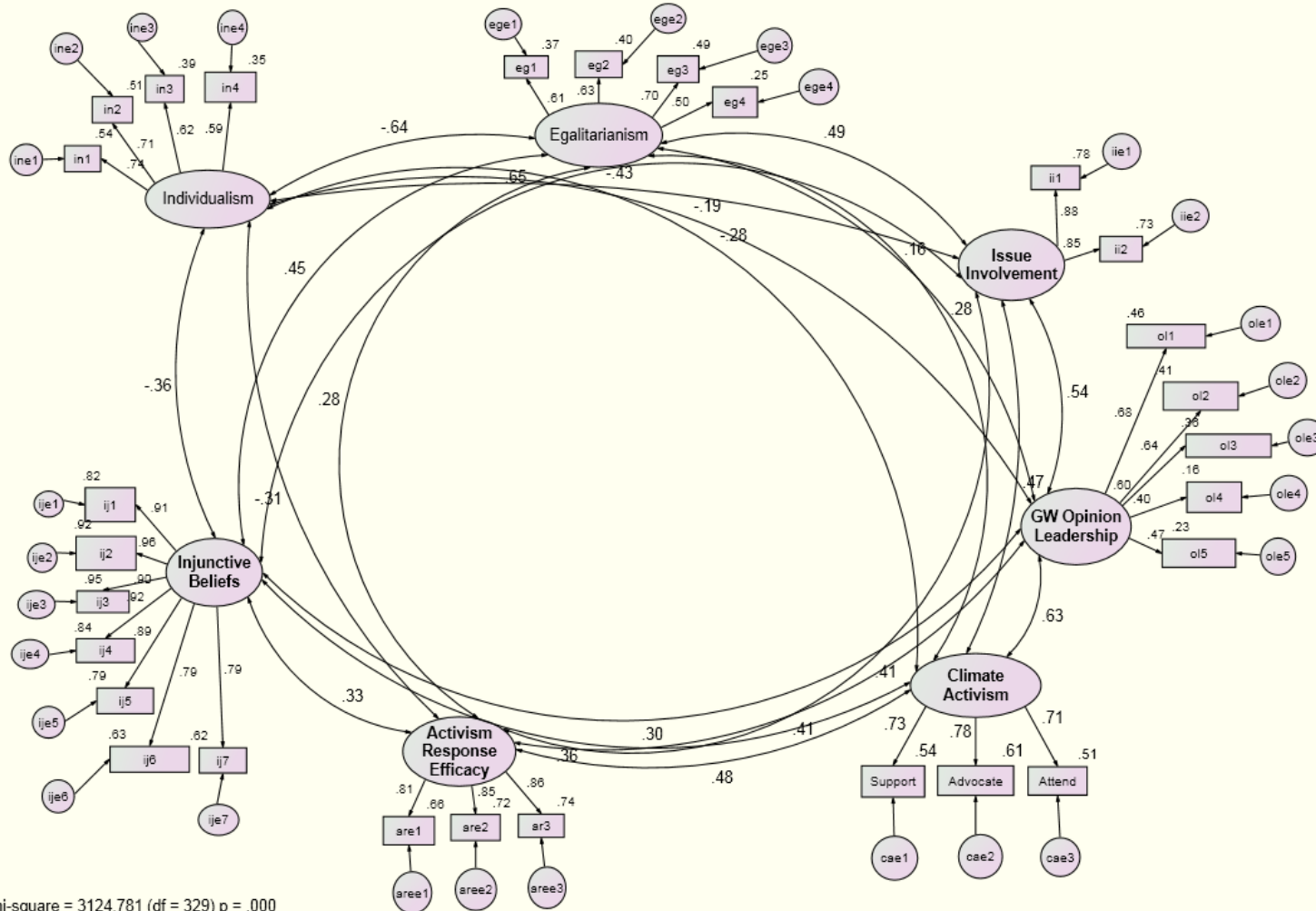
Climate activism response efficacy was assessed with three measures that asked how effective three different actions would be in getting public officials to take action to reduce global warming: Contacting government officials; supporting organizations working on the issue; and attending community meetings or rallies about global warming; $\alpha = .90$.

Activism self-efficacy was assessed indirectly as *perceived barriers to climate activism* because our data set did not include more direct measurements for the construct; a total of 25 barriers to the three behaviors were assessed. Barriers encompassed lack of skills, low interest in the issue, low perceived response efficacy, and identity (i.e., perceiving that one is not an activist); $\alpha = .72$.

	3. Correlation Matrix of All Variables Used in the Structural Equation Modeling																																						
		Act1	Act2	Act3	KB1	KB2	KB3	KB4	Inv1	Inv2	IJ1	IJ2	IJ3	IJ4	IJ5	IJ6	IJ7	Eg 1	Eg2	Eg3	Eg4	In 1	In2	In3	In 4	OL1	OL2	OL3	OL4	OL5	RE1	RE2	RE3	Civic Eng	Barriers	Age	Gender	Educ	Income
Activism	Act1: Political Advocacy	1																																					
	Act2: Environmental Organization	.557	1																																				
	Act3: Rallies & Meetings	.577	.522	1																																			
Key Beliefs	KB1: Global warming certainty	.252	.278	.169	1																																		
	KB2: Perceived Risk	.291	.329	.243	.486	1																																	
	KB3: Human Cause	.172	.183	.138	.388	.458	1																																
	KB4: Collective Efficacy	.173	.209	.157	.282	.422	.333	1																															
Involve ment	Inv1: Worry	.292	.332	.253	.496	.687	.472	.407	1																														
	Inv2: Personal Importance	.337	.342	.249	.537	.664	.405	.377	.751	1																													
Injunctive Beliefs	IJ1: Local Govt	.242	.233	.187	.349	.506	.347	.371	.500	.510	1																												
	IJ2: State Legislator	.265	.264	.203	.375	.531	.369	.404	.525	.521	.906	1																											
	IJ3: Governor Action	.258	.254	.192	.373	.526	.366	.396	.520	.517	.877	.933	1																										
	IJ4: The U.S. Congress	.285	.297	.218	.405	.570	.397	.435	.557	.537	.783	.860	.861	1																									
	IJ5: The President Action	.291	.300	.227	.412	.571	.404	.422	.553	.546	.768	.812	.821	.910	1																								
	IJ6: Corporation Action	.248	.273	.223	.375	.467	.340	.402	.431	.430	.675	.727	.716	.783	.775	1																							
	IJ7: Citizens Action	.274	.294	.239	.368	.507	.335	.429	.467	.480	.700	.729	.722	.743	.738	.819	1																						
Egalitarianism	Egal 1	.135	.147	.139	.162	.297	.193	.171	.284	.264	.232	.235	.244	.255	.246	.190	.164	1																					
	Eg2	.086	.077	.066	.135	.268	.187	.155	.242	.219	.228	.222	.238	.236	.229	.157	.122	.468	1																				
	Eg3	.179	.160	.152	.223	.306	.234	.216	.324	.302	.303	.313	.317	.359	.350	.300	.274	.377	.437	1																			
	Eg4	.113	.144	.100	.171	.312	.190	.148	.217	.219	.226	.225	.242	.246	.268	.197	.212	.297	.293	.362	1																		
Individualism	In1	-.161	-.166	-.126	-.247	-.286	-.238	-.204	-.310	-.275	-.240	-.257	-.250	-.271	-.266	-.226	-.211	-.284	-.260	-.341	-.228	1																	
	In2	-.151	-.169	-.104	-.198	-.282	-.239	-.206	-.272	-.252	-.215	-.232	-.232	-.262	-.257	-.215	-.195	-.285	-.301	-.410	-.272	.531	1																
	In3	-.105	-.121	-.101	-.172	-.204	-.185	-.183	-.220	-.197	-.151	-.162	-.152	-.200	-.196	-.150	-.131	-.189	-.174	-.271	-.121	.462	.435	1															
	In4	-.181	-.156	-.132	-.215	-.242	-.220	-.194	-.252	-.233	-.189	-.210	-.198	-.250	-.248	-.208	-.176	-.207	-.211	-.279	-.175	.426	.378	.429	1														
Opinion Leadership	OL1: Discussed	.330	.374	.316	.284	.299	.123	.143	.334	.403	.214	.239	.222	.240	.257	.232	.271	.100	.063	.137	.164	-.155	-.107	-.065	-.130	1													
	OL2: Like Discuss	.302	.344	.250	.296	.282	.127	.148	.301	.373	.198	.220	.219	.232	.234	.200	.232	.107	.060	.099	.092	-.147	-.105	-.094	-.120	.460	1												
	OL3: Give Info	.168	.138	.221	.121	.066	.017	-.016	.094	.141	.044	.052	.054	.026	.024	.016	.022	.020	.054	-.014	.007	-.057	-.016	.001	-.038	.255	.178	1											
	OL4: Source	.247	.175	.209	.163	.100	.033	.017	.131	.163	.067	.079	.074	.065	.075	.072	.080	.058	.033	.019	-.007	-.047	-.015	-.008	-.027	.246	.270	.467	1										
	OL5: Good Source	.300	.269	.212	.308	.177	.079	.076	.200	.262	.102	.129	.116	.146	.152	.172	.176	-.014	-.043	.038	-.008	-.072	-.004	-.003	-.060	.399	.390	.240	.345	1									
Response Efficacy	RE1: Advocacy	.351	.277	.244	.239	.285	.166	.238	.279	.299	.215	.231	.228	.253	.251	.261	.274	.125	.086	.173	.151	-.165	-.160	-.140	-.158	.236	.247	.104	.142	.195	1								
	RE2: Meeting s	.289	.259	.293	.221	.298	.188	.234	.294	.293	.236	.261	.253	.257	.256	.244	.260	.173	.123	.175	.155	-.178	-.168	-.142	-.184	.240	.260	.128	.125	.183	.699	1							
	RE3: Environmental Organizations	.313	.385	.281	.267	.311	.202	.267	.307	.326	.219	.262	.259	.293	.297	.297	.302	.172	.099	.178	.171	-.199	-.200	-.182	-.209	.236	.274	.111	.123	.217	.696	.734	1						
	Civic Engagement	.404	.310	.358	.149	.115	.039	.031	.109	.149	.035	.067	.049	.098	.110	.133	.130	-.028	-.092	.023	.026	-.069	-.060	-.020	-.064	.308	.221	.190	.228	.273	.220	.168	.166	1					
	Activism Barriers	-.150	-.173	-.135	-.009	-.051	-.013	-.064	-.066	-.085	-.040	-.048	-.039	-.034	-.032	-.017	-.046	-.043	.028	-.032	-.037	.049	.054	.022	.029	-.126	-.141	-.065	-.073	-.108	-.108	-.078	-.067	-.161	1				
	Age	.043	.015	-.007	-.048	.029	-.059	.020	-.056	.002	.001	.007	.000	.022	.032	.019	.006	-.097	-.132	-.005	.059	.092	.023	.052	.081	.054	.003	-.080	-.079	-.022	.036	.014	-.052	.140	-.154	1			
	Gender	.058	.068	.056	.019	.158	.063	.080	.106	.093	.087	.074	.068	.058	.068	.047	.107	.059	.053	.095	.129	-.077	-.102	-.089	-.028	.020	-.011	-.038	-.050	-.132	.057	.040	.073	-.022	-.033	.030	1		
	Education	.184	.193	.137	.163	.013	.041	.021	.062	.042	.035	.058	.035	.091	.073	.148	.132	-.031	-.144	-.038	.030	-.103	-.023	-.072	-.120	.163	.141	.099	.139	.255	.144	.102	.166	.295	-.045	-.084	.024	1	
	Income	.060	.112	.048	.095	-.080	.008	-.005	.001	-.021	-.043	-.019	-.033	-.004	-.006	.056	.054	-.104	-.208	-.092	-.050	.008	.087	.010	-.006	.069	.045	.076	.115	.158	.025	-.027	.066	.177	-.059	-.177	-.069	.407	1

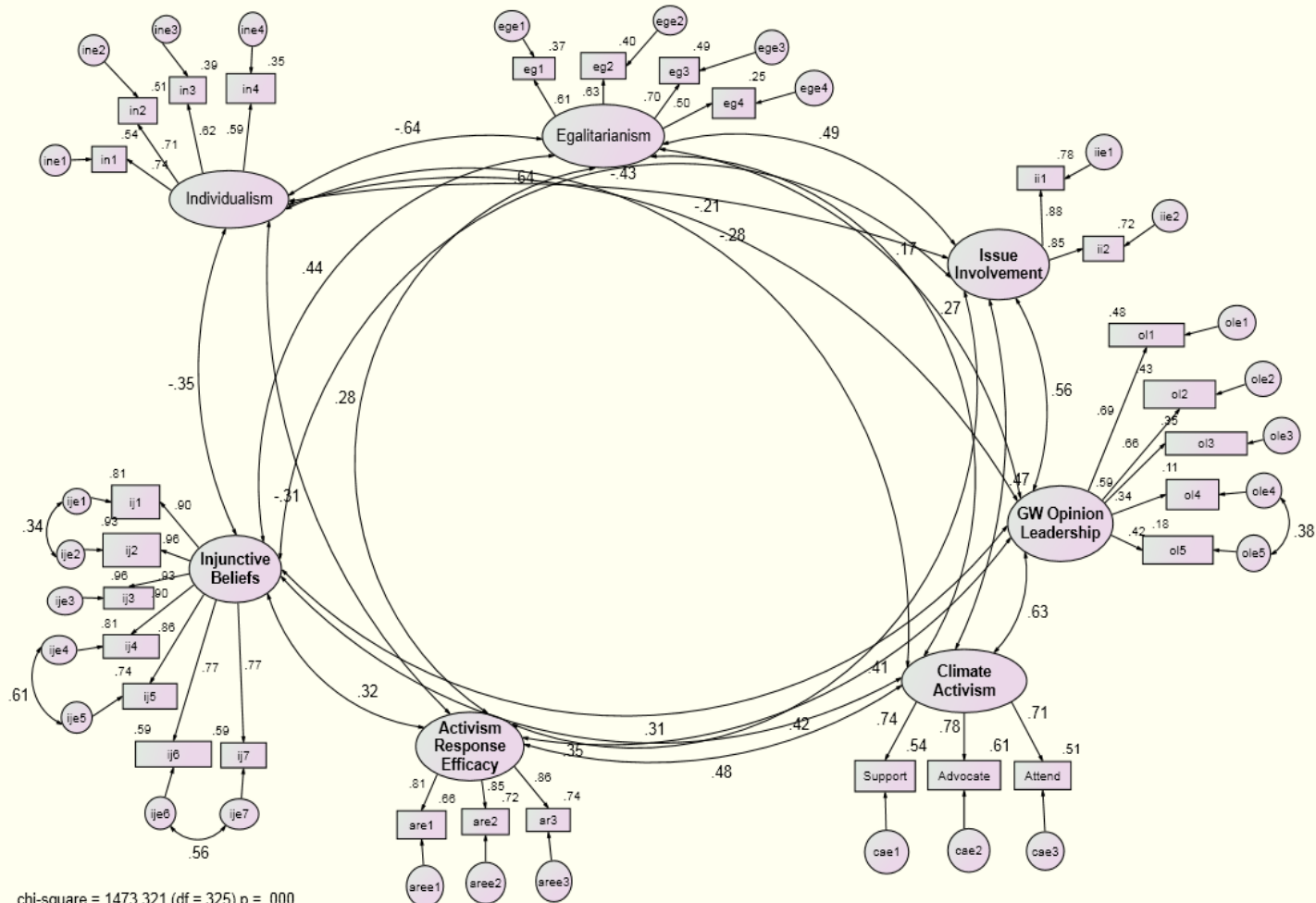
4. Initial Measurement Model

**Measurement Model:
Initial Model**



5. Measurement model with correlated error terms freed

**Measurement Model:
Model with Correlated Errors**

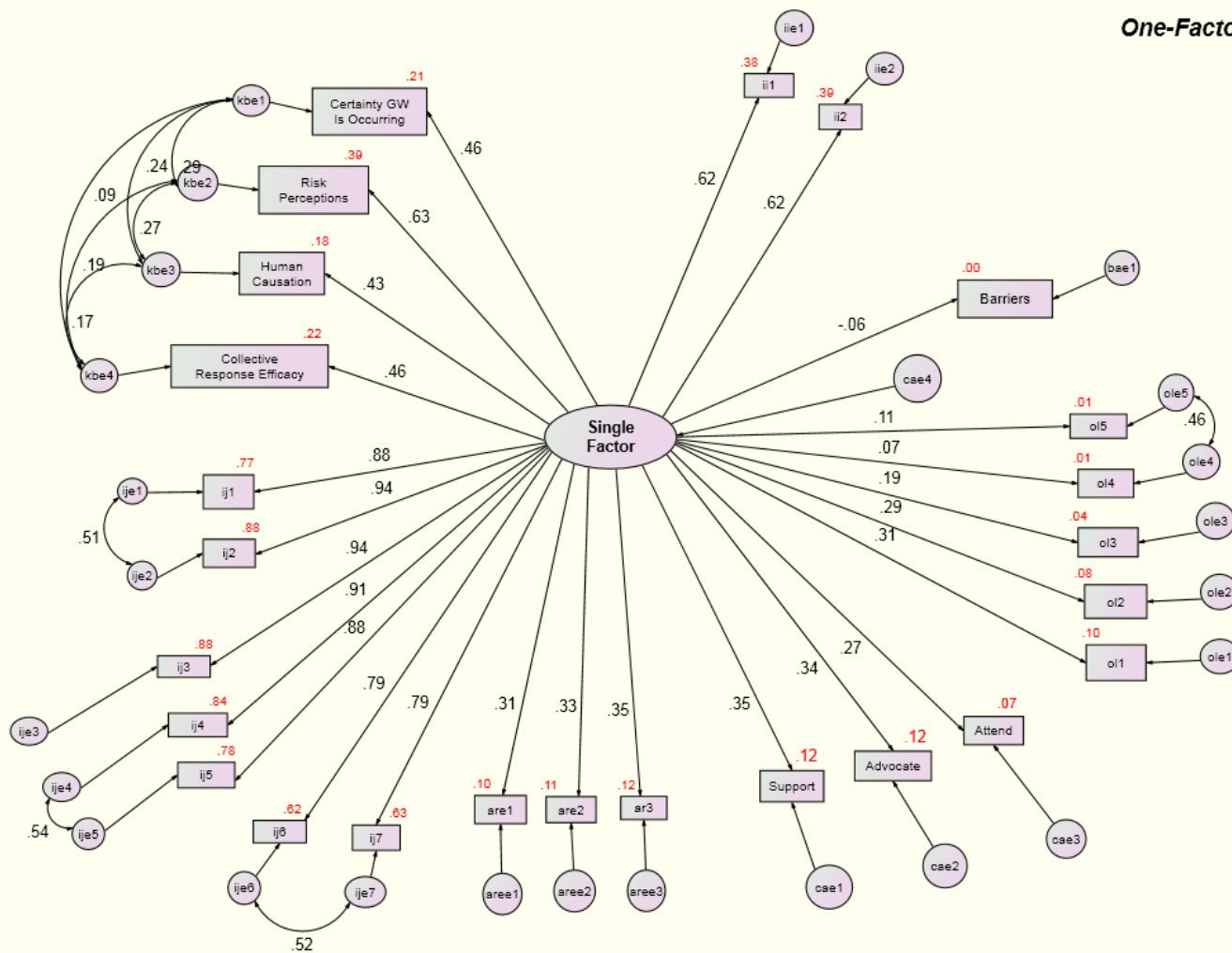


chi-square = 1473.321 (df = 325) p = .000
 RMSEA = .046; CFI = .961
 RMSEA 90% CI = .043; .048

Measurement Model with Correlated Errors: Correlations Among Latent Variables						
Latent Variables	1.	2.	3.	4.	5.	6.
1. Egalitarianism	1					
2. Individualism	-.64	1				
3. Issue Involvement	.49	-.43	1			
4. Injunctive Beliefs	.44	-.35	.64	1		
5. Opinion Leadership	.17	-.21	.56	.31	1	
6. Activism Response Efficacy	.28	-.31	.41	.32	.42	1
7. Climate Activism	.28	-.28	.47	.35	.63	.48

Note: All regression coefficients significant, $p < .001$

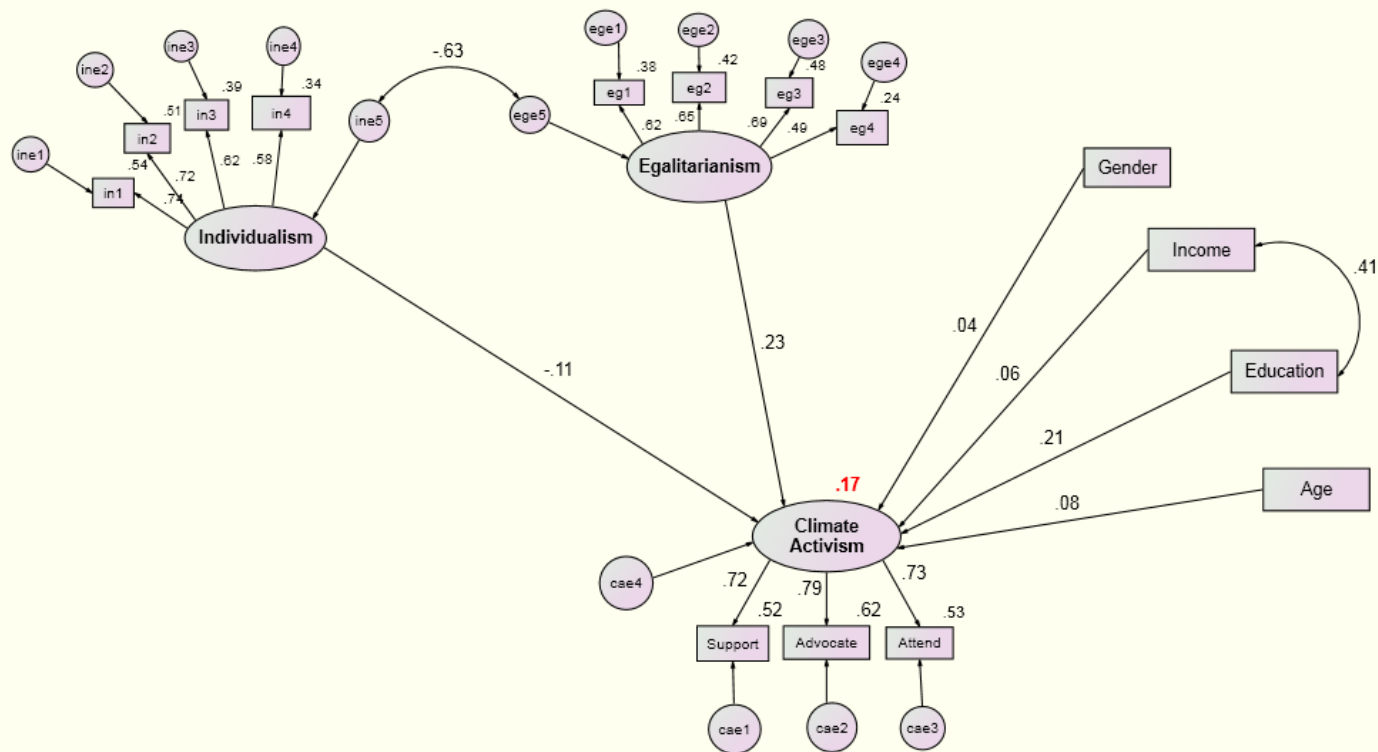
6. One-Factor Model



chi-square = 8541.093 (df = 265) p = .000
 RMSEA = .135; CFI = .714
 RMSEA 90% CI = .133; .138

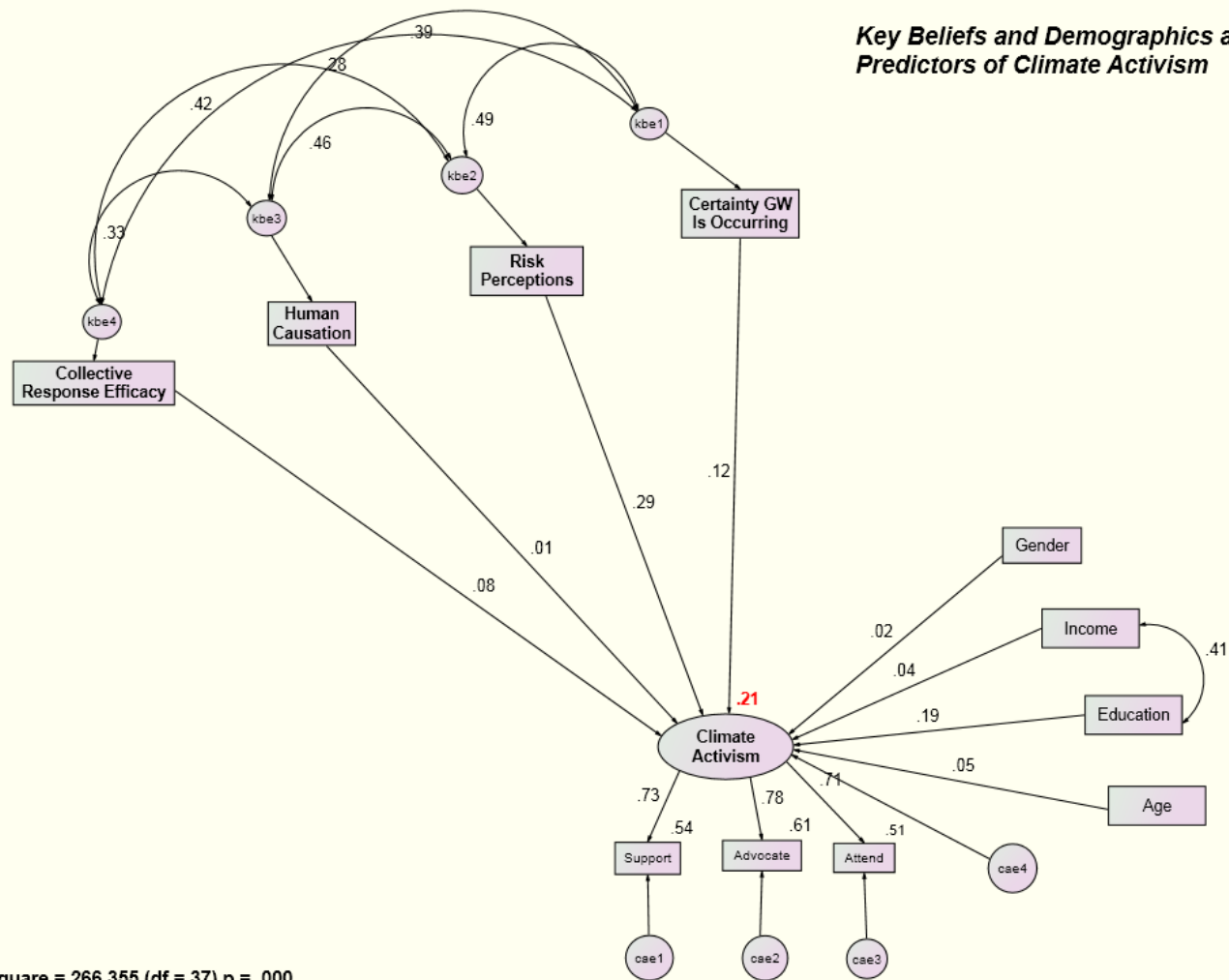
7. Values and Demographics as Predictors of Climate Activism

Values and Demographics as Predictors of Climate Activism



chi-square = 549.088 (df = 86) p = .000
 RMSEA = .056; CFI = .917
 RMSEA 90% CI = .052; .061

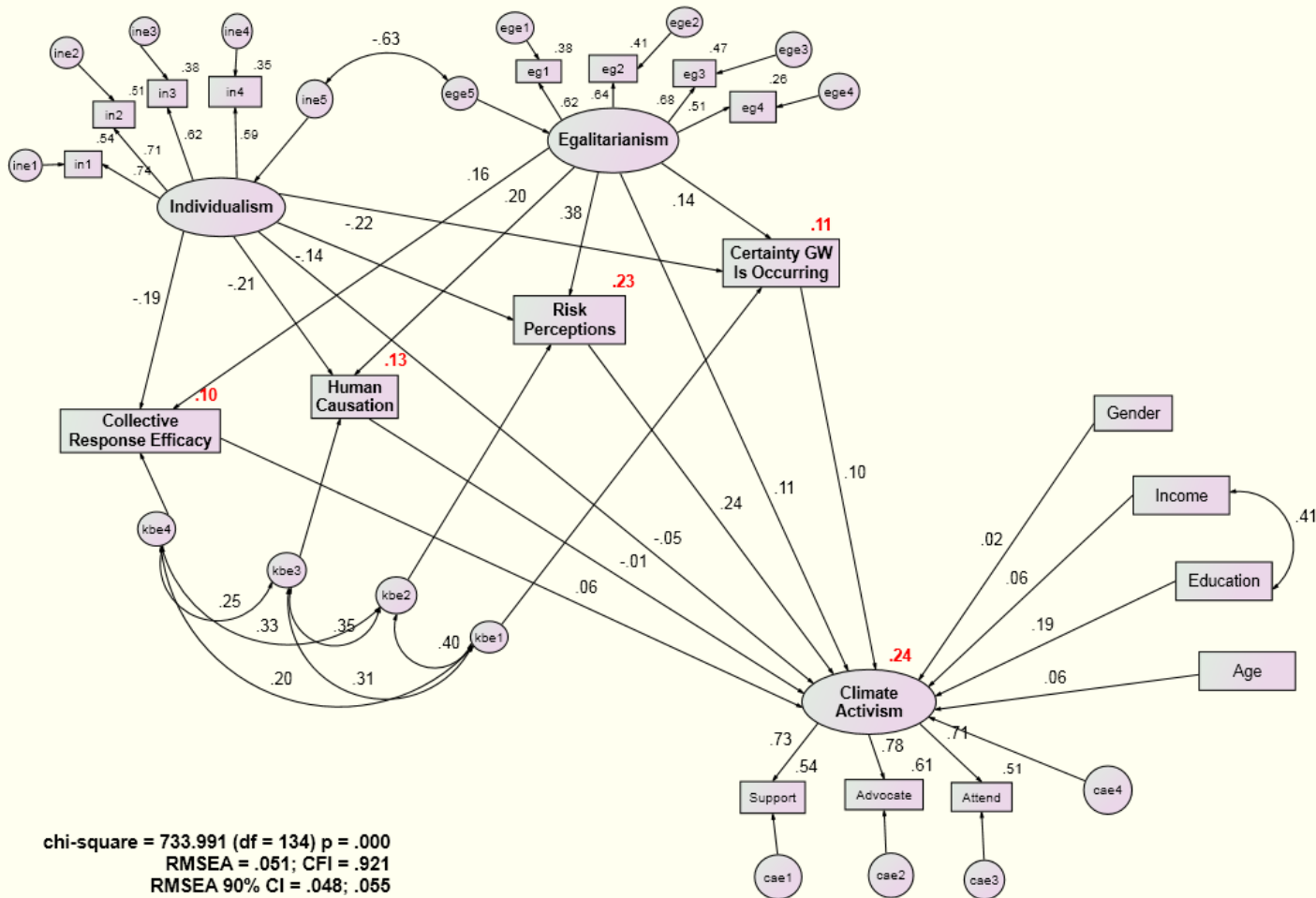
8. Key Beliefs and Demographics as Predictors of Climate Activism



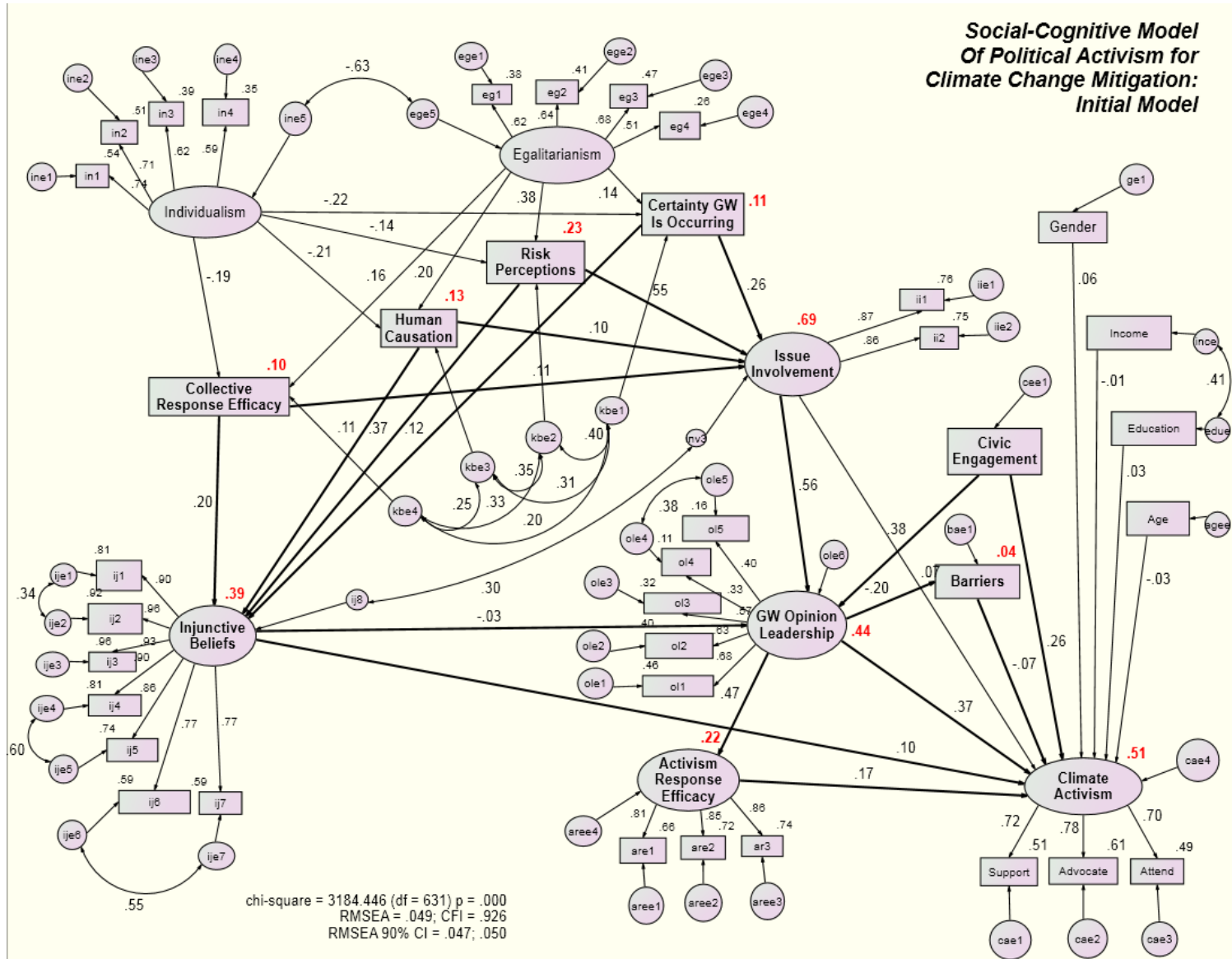
chi-square = 266.355 (df = 37) p = .000
RMSEA = .060; CFI = .937
RMSEA 90% CI = .054; .067

9. Key Beliefs, Values and Demographics as Predictors of Climate Activism

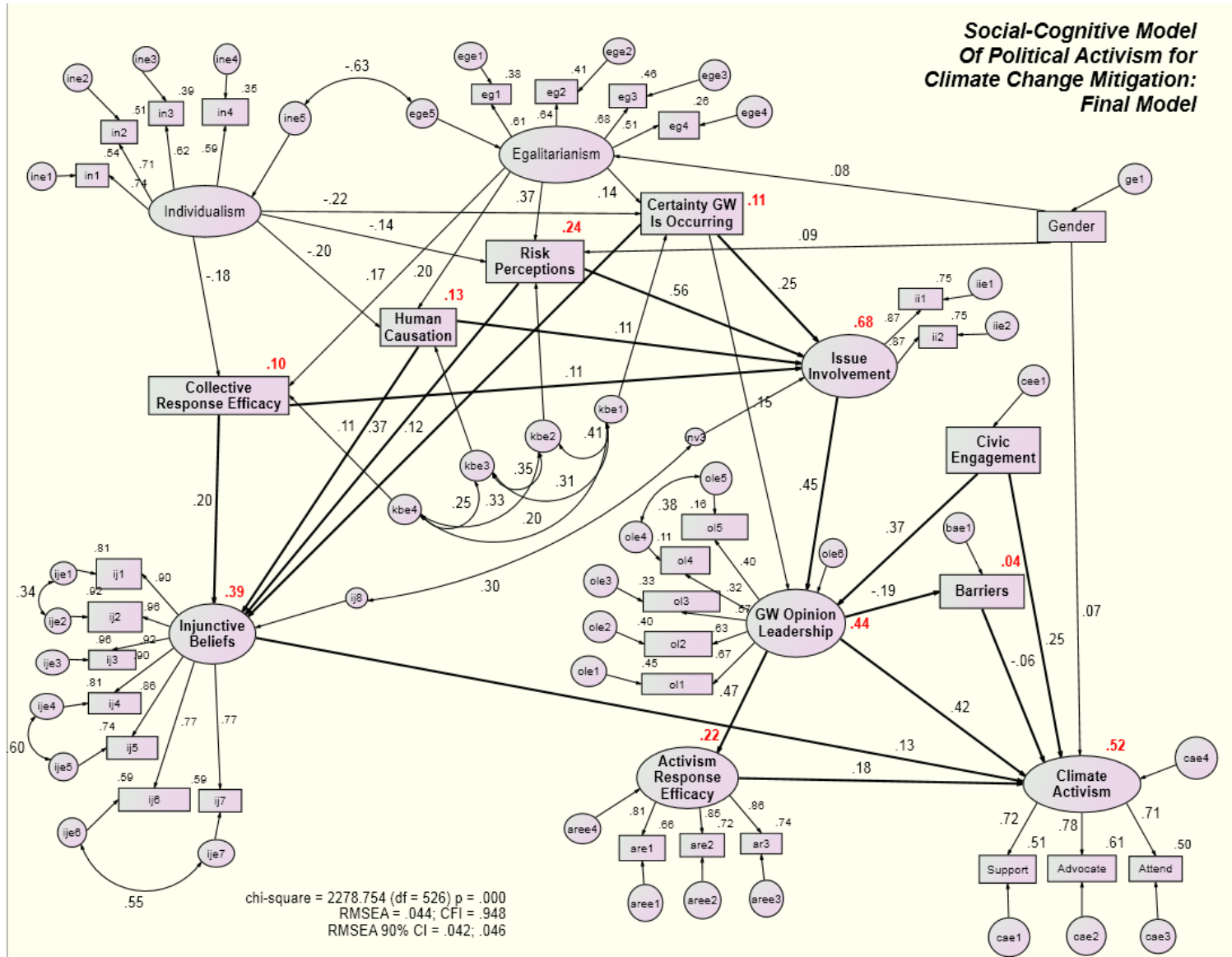
Key Beliefs, Values and Demographics as Predictors of Climate Activism



10. Initial full model as hypothesized



11. Modified, full, final social-cognitive model of climate activism



<i>Social Cognitive Model of Climate Change Activism Measurement Model: Indicators of Latent Variables</i>			
Latent Variables	Indicators	Std. Regression Coefficients	Explained Variance
Egalitarianism	Eg1: The world would be a more peaceful place if its wealth were divided more equally.	0.61	0.38
	Eg2: In my ideal society, all basic needs would be guaranteed by the government for everyone.	0.64	0.41
	Eg3: I support government programs to get rid of poverty.	0.68	0.46
	Eg4: Discrimination against minorities is still a very serious problem in our society.	0.51	0.26
Individualism	In1: If the government spent less time trying to fix everyone's problems, we'd all be a lot better off.	0.74	0.55
	In2: Our government tries to do too many things for too many people. We should just let people take care of themselves.	0.71	0.51
	In3: The government interferes too much in our everyday lives.	0.62	0.39
	In4: Government regulation of business usually does more harm than good.	0.59	0.35
Issue Involvement	II1: How important is the issue of global warming to you personally?	0.87	0.75
	II2: How worried are you about global warming?	0.87	0.75
Injunctive Beliefs	Ij1: [Your local government officials] Do you think the following should be doing more or less to address global warming?	0.90	0.81
	Ij2: [Your state legislators] Do you think the following should be doing more or less to address global warming?	0.96	0.92
	Ij3: [Your Governor] Do you think the following should be doing more or less to address global warming?	0.96	0.93
	Ij4: [The U.S. Congress] Do you think the following should be doing more or less to address global warming?	0.90	0.81
	Ij5: [The President] Do you think the following should be doing more or less to address global warming?	0.86	0.74
	Ij6: [Corporations and industry] Do you think the following should be doing more or less to address global warming?	0.77	0.59
	Ij7: [Citizens themselves] Do you think the following should be doing more or less to address global warming?	0.77	0.59
Opinion Leadership	Ol1: How many people have you spoken with about global warming in the last two weeks?	0.67	0.45
	Ol2: In general, do you like to talk with other people about global warming?	0.63	0.40
	Ol3: When you talk with other people about global warming, do you usually...	0.58	0.33
	Ol4: Do people you know come to you for advice about global warming?	0.32	0.11
	Ol5: Do you think other people consider you a good source of advice about global warming?	0.40	0.16
Activism Response	Are1: ['Write letters, email, or phone government officials to urge them to take action to reduce global warming.'] If you were to	0.81	0.66

Efficacy	do each of the following, how effective would it be in getting government officials to take action to reduce global warming?		
	Are2: [Attend a community meeting or rally on global warming.] If you were to do each of the following, how effective would it be in getting government officials to take action to reduce global warming?	0.85	0.72
	Are3: [Volunteer with or donate money to an organization working to reduce global warming.] If you were to do each of the following, how effective would it be in getting government officials to take action to reduce global warming?	0.86	0.74
Climate Activism	Support: Volunteering or donating money to an organization working to reduce global warming	0.72	0.51
	Advocate: Writing, emailing or phoning government officials to urge them to take action to reduce global warming	0.78	0.61
	Attend: Attending a community meeting or rally about global warming	0.71	0.50

Social Cognitive Model of Climate Change Activism
Correlations Among Error Terms

Egalitarianism	Individualism	-.63
Certainty GW Is Occurring	Risk Perceptions	.41
Certainty GW Is Occurring	Human Causation	.31
Certainty GW Is Occurring	Collective Response Efficacy	.20
Risk Perceptions	Human Causation	.35
Risk Perceptions	Collective Response Efficacy	.33
Human Causation	Collective Response Efficacy	.25
Issue Involvement	Injunctive Beliefs	.30
Ij1: [Your local government officials] Do you think the following should be doing more or less to address global warming?	Ij2: [Your state legislators] Do you think the following should be doing more or less to address global warming?	.34
Ij4: [The U.S. Congress] Do you think the following should be doing more or less to address global warming?	ije4 Ij5: [The President] Do you think the following should be doing more or less to address global warming?	.60
Ij6: [Corporations and industry] Do you think the following should be doing more or less to address global warming?	Ij7: [Citizens themselves] Do you think the following should be doing more or less to address global warming?	.56
OI4: Do people you know come to you for advice about global warming?	OI5: Do you think other people consider you a good source of advice about global warming?	.38