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# Household behaviour crowds out support for climate change policy when sufficient progress is perceived

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## I. Supplementary Methods

### *Study 1*

The following questionnaire was translated into Japanese. All household actions were copied from: [http://www.meti.go.jp/setsuden/archives/seikatsu/2011/docs/web\\_setsuden\\_panf\\_en.pdf](http://www.meti.go.jp/setsuden/archives/seikatsu/2011/docs/web_setsuden_panf_en.pdf).

[Begin survey]

*Control:* [skip to next section]

*Placebo:* In response to the shutdown of the Fukushima nuclear reactor, the government created a national campaign (Setsuden) in summer 2011 to encourage households and businesses to conserve energy. The campaign was largely a success, as there were no power outages in Japan and energy usage during peak hours fell by about 20 percent.

*3-item (includes Placebo):* Below is a list of actions that were recommended by the government for individuals to take to reduce their energy consumption. Please check all the actions that you completed during the Setsuden campaign:

- Turn the air-conditioner off and use an electric fan if at all possible
- Turn the lights off during the day and reduce lighting overnight to a minimum
- Unplug appliances from sockets when they are not used for an extended period

*10-item (includes Placebo):* Below is a list of actions that were recommended by the government for individuals to take to reduce their energy consumption. Please check all the actions that you completed during the Setsuden campaign:

- Turn the air-conditioner off and use an electric fan if at all possible
- Turn the lights off during the day and reduce lighting overnight to a minimum
- Unplug appliances from sockets when they are not used for an extended period
- Set TV to the energy-saving mode and reduce the brightness of the screen
- Charge any electronic devices during the nighttime
- Get your washing done as early as you can in the morning
- Change the temperature setting of your refrigerator from “High” to “Medium”
- Cook rice for one whole day early in the morning and keep it in the refrigerator
- Use the OFF functions for toilet seat warming and warm water spraying, or unplug from the socket if these functions are not provided
- Change ordinary light bulbs for fluorescent lamps and LED bulbs

[Page Break]

Listed below are some characteristics that may describe a Japanese citizen. Please take a moment to review these characteristics and then answer the following questions.

*Moral; Correct; Generous; Honorable*

How much do you agree or disagree with each of the following statements? (Note: 1 = Strongly disagree, 5 = Strongly agree)

- My actions regarding other people embody these characteristics
- My actions regarding the environment embody these characteristics
- My actions regarding animals embody these characteristics
- My actions regarding corporations embody these characteristics

[Page Break]

Next, we will ask you about a policy that might be implemented in the future.

In order to finance the production of new sources of renewable energy and mitigate the effects of climate change, the government may consider further increasing the tax on carbon emissions. The household burden caused by the tax increase is estimated to be an additional cost of JPY 500 per month, or JPY 6000 per year for the average household.

Do you support or oppose an increase in the tax on carbon emissions?

1. Strongly oppose
2. Somewhat oppose
3. Neither support nor oppose
4. Somewhat support
5. Strongly support

[Page Break]

How much do you agree or disagree with each of the following statements? (Note: 1 = Strongly disagree, 5 = Strongly agree)

- Conserving energy and protecting the environment should be top priorities for Japan.
- I am personally committed to conserving energy and protecting the environment.
- Individual actions are more important than government regulations for achieving energy sustainability

[End survey]

*Study 2*

The following questionnaire was translated into Japanese:

[Begin survey]

*Control*: Check this box to continue

*Moral self-concept*: Check this box if you did at least one thing to help another person in the past week

*Insufficient progress*: Check this box if you recycled at least one item in the past week

*Endorsement*: Check this box if you think it is important to recycle

[Page Break]

Next, we will ask you about a policy that might be implemented in the future.

In order to finance the production of new sources of renewable energy and mitigate the effects of climate change, the government may consider further increasing the tax on carbon emissions. The household burden caused by the tax increase is estimated to be an additional cost of JPY 500 per month, or JPY 6000 per year for the average household.

Do you support or oppose an increase in the tax on carbon emissions?

1. Strongly oppose
2. Somewhat oppose
3. Neither support nor oppose
4. Somewhat support
5. Strongly support

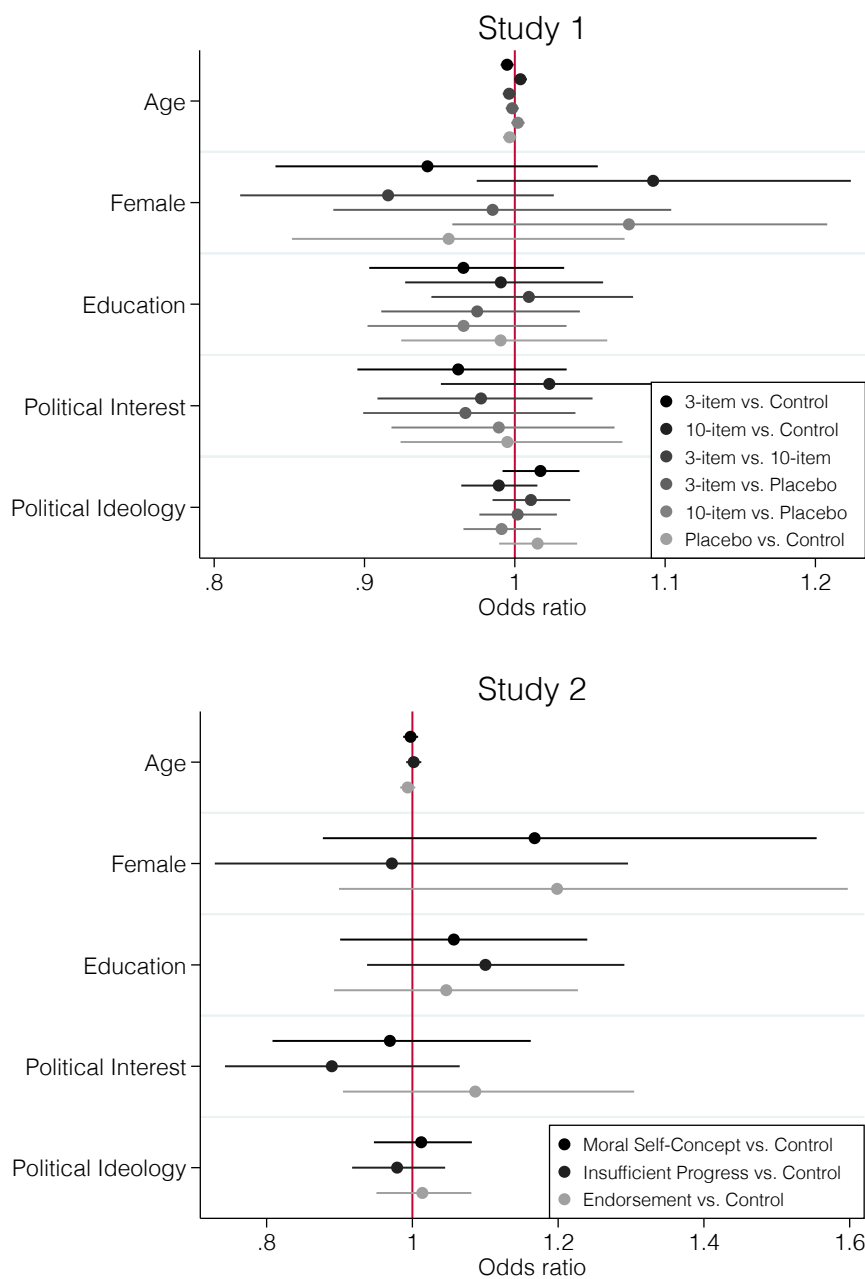
[Page Break -- skip to Demographics section]

How important is energy and environmental sustainability to you personally?

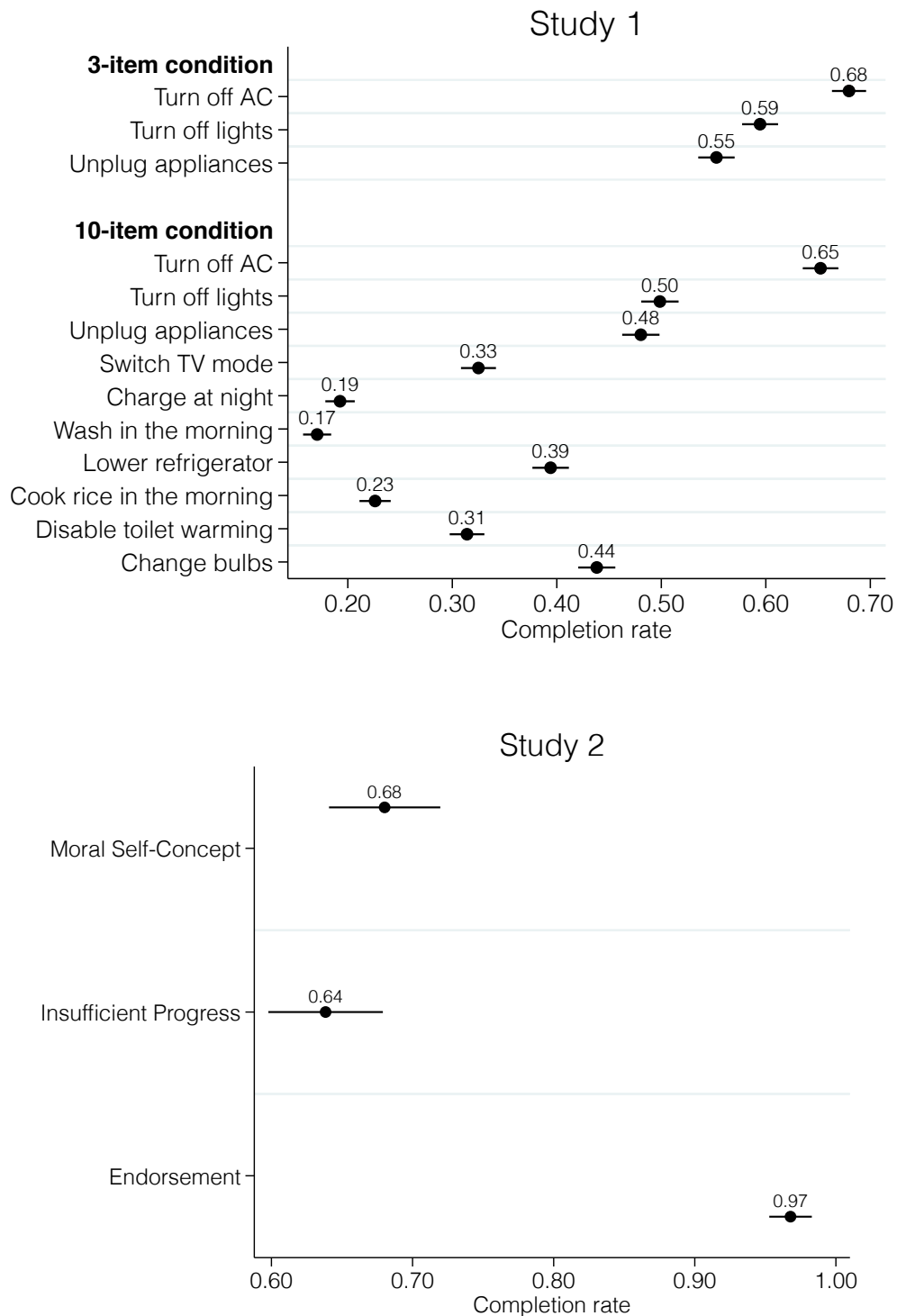
1. Not at all important
2. Not very important
3. Can't say one way or the other
4. Important
5. Very important

[End survey]

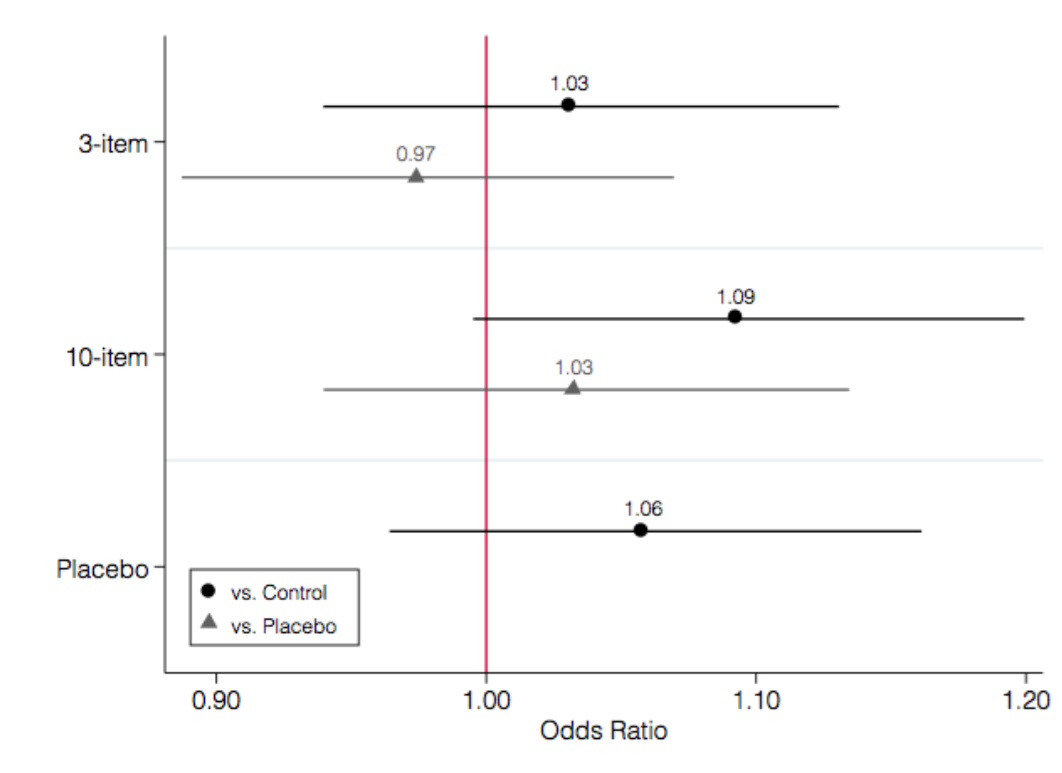
## II. Supplementary Figures



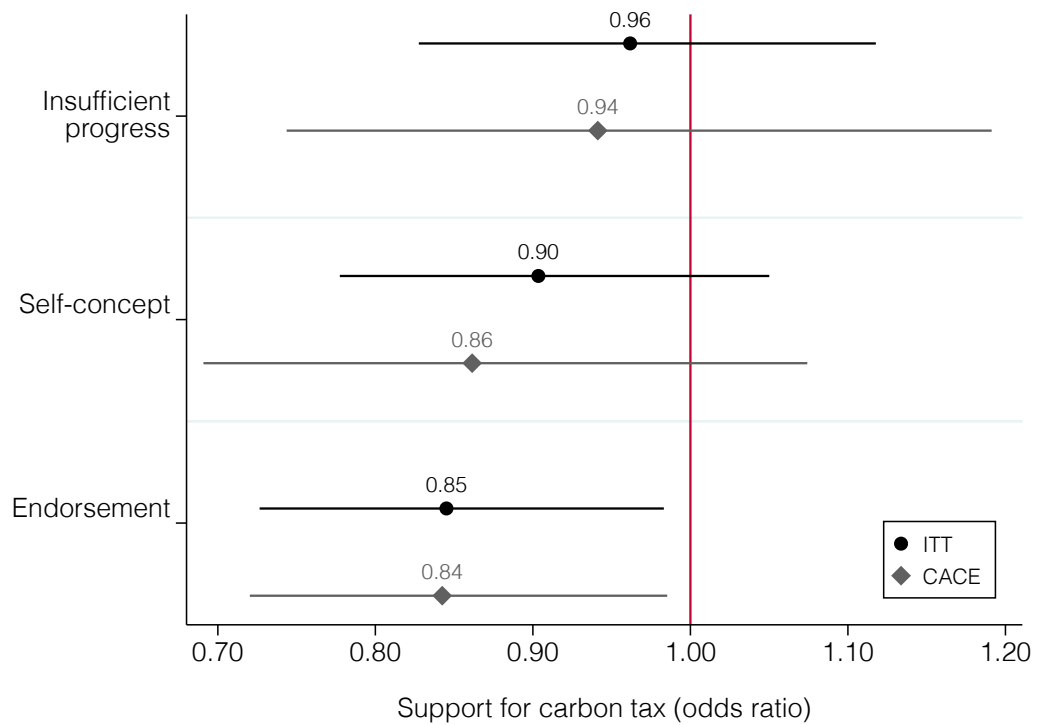
**Supplementary Figure 1. Randomization checks.** Each line represents the point estimate from a multinomial logistic regression, along with 95 percent confidence intervals. The only covariate that was unbalanced was age in Study 1, which was subsequently used as a control variable in all regression analysis for that study.



**Supplementary Figure 2. Treatment compliance.** Each line represents the proportion of subjects who were assigned to treatment and checked the respective box in each treatment condition, along with 95 percent confidence intervals. In Study 1, subjects in the *3-item* condition checked 1.82 items (61%) on average, while subjects in the *10-item* condition checked 3.69 items (37%) on average. In Study 2, compliance was incomplete for all three treatments.



**Supplementary Figure 3. Manipulation check for goal commitment (Study 1).** Each line represents the coefficient from a logistic regression, along with 95 percent confidence intervals. Coefficients greater than one indicate greater commitment. The results show that the treatments did not increase personal commitment to energy and environmental sustainability, which would have been incompatible with crowding-out.



**Supplementary Figure 4. Treatment effects (Study 2).** Each line represents the coefficient from a separate regression, along with 95 percent confidence intervals ( $n=2,142$ ). Coefficients greater than one indicate a greater likelihood of supporting the carbon tax. The intention-to-treat (ITT) effect was estimated using a probit regression, while the complier-average causal effect (CACE) was estimated using an instrumental-variables probit regression. Only the endorsement treatment caused a significant crowding-out effect in public opinion.



III. Supplementary Tables

	Study 1				Study 2			
	N	Mean	Min	Max	N	Mean	Min	Max
Age	12,227	48.09	20	69	2,133	45.09	20	69
Education	12,130	3.39	1	4	2,095	3.18	1	4
Female	12,193	0.41	0	1	2,115	0.50	0	1
Political Interest	12,139	2.93	1	4	2,098	2.72	1	4
Political Ideology	10,985	5.59	0	10	1,725	5.54	0	10

**Supplementary Table 1. Sample summary statistics.** The samples for Studies 1 and 2 were similar to each other along all available covariates, which increases the comparability of their results.

	(1)	(2)	(3)
DV: Policy support	ATE	By # checked	By ideology
3-item	-0.205 <sup>***</sup> (0.0548)	0.320 (0.407)	-0.508 (0.471)
10-item	-0.199 <sup>***</sup> (0.0555)		
Control	-0.070 (0.055)		
# checked		0.331* (0.185)	0.020 (0.050)
3-item * # checked		-0.330* (0.190)	
Ideology		0.024 (0.020)	-0.003 (0.075)
3-item * Ideology			0.030 (0.077)
N	12227	2980	2980
Pseudo $R^2$	0.007	0.061	0.060
Controls	Age	Full	Full

Standard errors in parentheses  
\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Supplementary Table 2. Main effects (Study 1).** Column 1 reports the estimates of a logistic regression showing that the *3-item* and *10-item* treatments each significantly decreased policy support relative to the *Placebo* condition, while the *Control* condition was statistically indistinguishable. Columns 2-3 show that these treatments effects are moderated by the number of items checked but not by political ideology. The full set of control variables includes age, gender, education, and political interest.

	(1)	(2)	(3)	(4)
	Support (3-item)	Support (10-item)	# checked (3-item)	# checked (10-item)
Treatment	-0.222 <sup>***</sup> (0.076)	-0.250 <sup>***</sup> (0.077)		
Target area	-0.086 (0.084)	-0.081 (0.083)	0.003 (0.031)	-0.074 (0.086)
Treatment * Target area	-0.001 (0.119)	0.129 (0.119)		
N	5475	5324	3132	2985
Pseudo $R^2$	0.032	0.025		
Baseline	Placebo	Placebo	Placebo	Placebo
Controls	Full	Full	Full	Full

Standard errors in parentheses  
\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Supplementary Table 3. Sensitivity analysis for regional effects (Study 1).** Columns 1-2 report the estimates from logistic regressions showing that treatment effects did not vary according to whether subjects lived in the target areas for the Setsuden campaign (Tokyo, Tohoku, and Kansai regions). Columns 3-4 report the estimates from OLS regressions showing that the lack of heterogeneous treatment effects is consistent with the fact that subjects in the targeted areas did not check more items on average than subjects who lived outside of the target areas. The full set of control variables includes age, gender, education, political interest, and political ideology.

	(1)
DV: Policy support	By subjective importance
Endorsement	0.646 (0.400)
Subjective importance of energy & environment	0.039 (0.073)
Endorsement * Subjective importance of energy & environment	-0.230** (0.106)
N	830
Pseudo $R^2$	0.016
Controls	Full

Standard errors in parentheses  
 \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Supplementary Table 4. Heterogeneous treatment effects (Study 2).** Column 1 reports the estimates of a probit regression showing that the endorsement treatment was significantly moderated by the subjective importance of energy and environmental sustainability. The full set of control variables includes age, gender, education, political interest, and political ideology.