**Smart-housing survey items**

***Motivational Orientation.*** The following five dimensions of the Motivation towards the Environment Scale (MTES; Pelletier et al., 1998) were used: intrinsic motivation, integrated motivation, identified motivation, external motivation, and amotivation. Participants were asked to rate the extent to which each item corresponded to their personal motives for engaging in environmental behaviors on a 7-point Likert scale (1 = does not correspond at all; 4 = corresponds moderately; 7 = corresponds exactly). Based on the formal conceptualization of autonomous motivation within self-determination theory, the identified, integrated, and intrinsic dimensions comprised our global “autonomous” dimension (Deci & Ryan, 2008; Ryan & Deci, 2000; 2002). We averaged across items within each subscale (4 items per subscale; 12 in total) to create three observed indicators of autonomous motivation toward the environment, representing each subtype of autonomous motivation (Green-Demers et al., 1997; Pelletier, 2002; Séguin, Pelletier, & Hunsley, 1998). An example item reflecting autonomous motivation was: “because being environmentally-conscious has become a fundamental part of who I am”). External motivation was measured using four separate items (e.g. “because other people will be upset if I don't (do things for the environment)”. Finally, amotivation was measured using 3 items (e.g., “I don't really know; I can't see what I'm getting out of it”). The factor structure of the MTES has been validated by exploratory and confirmatory factor analyses (c.f., Pelletier et al., 1998), and held a satisfactory level of internal consistency in the current study (Cronbach’s α = .96 for autonomous motivation, α = .86 for external motivation, and α = .84 for amotivation).

**MTES Items**

**Instructions:** The following 24 items are designed to assess why you are doing things for the environment. Indicate the extent to which each item corresponds to your personal motives for engaging in environmental behaviors by selecting the appropriate number on the scale provided: (1 = does not correspond at all, 4 = corresponds moderately, 7 = Corresponds exactly)

1. For the pleasure I experience while mastering new ways of helping the environment.
2. For the pleasure I experience while improving quality of environment.
3. Because I like the feeling I have when I do things for environment.
4. For the pleasure I get from contributing to the environment.
5. Because taking care of the environment is an integral part of my life.
6. Because it seems to me that taking care taking care of the environment and of myself are inseparable.
7. Because it’s part of the way I’ve chosen to live my life.
8. Because being environmentally-conscious has become a fundamental part of who I am.
9. Because it’s a sensible thing to do in order to improve the environment.
10. Because it’s a way I’ve chosen to contribute to a better environment.
11. Because it is a reasonable thing to do to help the environment.
12. Because I think it’s a good idea to do something about the environment.
13. I think I’d regret not doing something for the environment.
14. Because I would feel guilty if I didn’t do anything for the environment.
15. Because I would feel bad if I didn’t do anything for the environment.
16. Because other people will be upset if I don’t.
17. For the recognition I get from others.
18. Because my friends insist that I do it.
19. To avoid being criticized.
20. I wonder why I’m doing things for the environment; the situation is simply not improving.
21. Honestly, I don’t know; I truly have the impression I’m wasting time doing things for the environment.
22. I don’t know; I can’t see how my efforts to be environmentally-conscious are helping the environmental situation.
23. I don’t really know; I can’t see what I’m getting out of it.
24. Because I would feel ashamed of myself if I was doing nothing to help the environment.

***Environmental knowledge.*** Participants were given eight multiple choice questions contained in the ‘Energy Knowledge’ section developed by DeWaters and Powers (2011) to test their knowledge base about various environmental issues. Items were presented with an item stem, e.g.: “The amount of electrical energy (electricity) we use is measured in units called \_\_\_\_\_\_” and then 6 possible options. Totals scores were calculated as percentage of correct responses. Items included:

1. The amount of electrical energy (electricity) we use is measured in units called
2. The amount of energy consumed by an electrical appliance is equal to the power rating of the appliance (watts or kilowatts)...
3. This raw material is used to make many manufactured products:
4. Scientists say that the single fastest and most cost-effective way to address our energy needs is to...
5. Which of the following choices uses the most energy in the average American home in one year?
6. Which of the following choices uses the least energy in the average American home in one year?
7. More of the electricity produced in the United States comes from this resource than others:
8. Many scientists say that the Earth's average temperature is increasing. One important cause of this change is...

***Environmental emotion.*** Ten items measured three separate indicators of environmental emotion: empathy, distress, and disgust. Participants were asked to rate the extent to which the statement reflected their own feelings on a 7-point Likert scale (1 = Very untrue of me; 4 = Neutral; 7 = Very true of me). Two of the three emotion subscales were composed of items adapted from the Empathetic Concern Scale and Personal Distress Scale of the Interpersonal Reactivity Index (Davis, 1980). An example item reflecting Environmental Empathy was: “I am often concerned for nature and the state of our environment” (Cronbach’s α =.65). An example item reflecting Environmental Distress was: “I feel apprehensive and ill-at-ease when I think about human's effect on nature” (Cronbach’s α =.70). The third emotion subscale was composed of items adapted from a domain-general Disgust scale (Haidt, McCauley, & Rozin, 1994), for example: “I feel disgusted with myself when I behave in ways that are damaging to the environment” (Cronbach’s α =.80).Because of the high conceptual and empirical consistency of these three variables, they were averaged to form an overall environmental emotion variable. Items include:

1. Thinking about resource waste and damage to the environment affects me emotionally.
2. I don't really feel sorry for the negative ways that we affect the environment.
3. I don't really feel sorry for the negative ways that we affect the environment. (reverse-scored)
4. Damage to the environment disturbs me a great deal.
5. It makes me feel sick to my stomach when I hear about the destruction of the environment through human behavior.
6. I think it's immoral for human beings to pollute the earth.
7. I feel disgusted with myself when I behave in ways that are damaging to the environment.
8. I sometimes feel helpless when it comes to the state of the environment.
9. Sometimes I go to pieces when I think about the damage we have done to our environment.
10. I feel apprehensive and ill-at-ease when I think about human's effect on nature.

***Frequency of Proenvironmental Behavior.*** Based on the ‘Frequency of Conservation Behaviors’ measure developed by DeWaters and Powers (2011) participants were asked to indicate how often they currently perform various proenvironmental behaviors (10 items) on a 7-point Likert scale (1 = never; 4 = sometimes, in about 50% of the chances when I could have; 7 = every time). Behaviors ranged from daily activities—like recycling—to broader activities, such as purchasing high-efficiency lightbulbs, and trying to save water. In line with previous studies, we grouped and averaged items to create three separate indicators of PEB (Kline, 2010) based on the conceptual premise that these items represent behaviorally different domains (see Dunlap, Van Liere, Mertig, & Jones, 2000; Karp, 1996; Stern, 2000). For instance, Green-Demers et al. (1997) found three distinct classes of behavior, including every day activities like recycling, to purchasing environmentally friendly products, and more effortful behaviors, which map closely onto our clusters. One parcel described daily, frequent behaviors for energy conservation (e.g., turn off your computer when you are done with it; Cronbach’s α = .78). The second described recycling behavior (e.g., recycle or return glass bottles, cans, paper, and plastic containers; Cronbach’s α = .59), and the third described more effortful, but impactful behaviors (e.g., walk or bike to go short distances, rather than driving or asking for a ride in someone's car; Cronbach’s α = .50 overall PEB Cronbach’s α = .81)[[1]](#footnote-1).

**Frequency of Proenvironmental Behavior Items**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Instructions:** Please indicate how often you perform the following activities/behaviors according to the scale provided below: | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Never | Rarely, in less than 10% of the chances to do so | Occasionally, in about 30% of the chances to do so | Sometimes, in about 50% of the chances to do so | Frequently, in about 70% of the chances to do so | Usually, in about 90% of the chances to do so | Every time |

1. Walk or bike to go short distances (rather than driving or asking for a ride in someone's car).
2. Buy compact fluorescent or LED light bulbs instead of incandescent bulbs.
3. Turn off your computer when you are done with it.
4. Turn off the lights when you leave the room.
5. Try to save water.
6. Adjust the thermostat or air conditioner to save energy.
7. Recycle or return glass bottles, cans, paper, and plastic containers.
8. Reuse old bags or re-usable bags when shopping.
9. Bring a re-usable cup to cafés, eateries, etc.
10. Buy less stuff (i.e., material goods) to save energy.

***Subjective Energy Use.*** Participants were asked “When it comes to energy use, how would you describe your personal energy consumption (e.g., typical daily use relative to your peers)?” {1 = Low energy-user; 2 = Moderately low energy-user; 3 = Somewhat low energy-user; 4 = Average energy-user; 5 = Somewhat high energy-user; 6 = Moderately high energy-user; 7 = High energy-user}

***Value of Conservation.*** Participants were asked to rate the importance of environmental protection and conservation on a 7-point Likert scale (1 = Strongly disagree; 4 = Neutral; 7 = Strongly agree). Items included:

1. Energy education should be an important part of everyone's lives.
2. Saving energy is important.
3. We don't have to worry about conserving energy because new technologies will be developed to solve energy problems for future generations.
4. Efforts to develop renewable energy technologies are more important than efforts to develop new sources of fossil fuels.
5. Laws protecting the natural environment should be made less strict in order to allow more energy to be produced.

***Perceived Efficacy Toward Conservation.*** Participants were asked to rate the extent to which they believe they can make a difference in addressing climate change issues on a 7-point Likert scale (1 = Strongly disagree; 4 = Neutral; 7 = Strongly agree). Items included:

1. I would do more to save energy if I knew how.
2. The way I personally use energy does not really make a difference to the energy problems that face our nation.
3. I believe that I can contribute to solving the energy problem by making appropriate energy-related choices and actions.
4. I don't need to worry about turning lights and computers off in the classroom because the school pays for the electricity.

***Political Ideology.*** A subset of questions from the Pew Research Center’s American Values Survey (Kohut et al., 2012) was used to assess political ideology. Participants were asked to rate the extent to which they agreed with each statement on a 7-point Likert scale (1 = strongly disagree; 4 = neutral; 7 = strongly agree). A higher score on the social subscale indicated higher liberalism in this domain, or support for the government protecting individual freedoms and civil rights (as opposed to restricting freedoms, e.g., making abortion illegal). For example, the item ‘The growing number of newcomers from other countries threatens traditional American customs and values’ was reverse-scored so that lower scores on this item indicated a higher liberalism score. The economic subscale can be equated with economic egalitarianism, where a higher score on the scale indicated higher support for government policies that promote economic equality by redistributing resources (i.e., through government regulation of business and/or social welfare programs).[[2]](#footnote-2) An individual scoring low on this scale would likely agree with a statement like ‘Poor people have become too dependent on government assistance programs’ and ‘Government regulation of business usually does more harm than good’ (items both reverse-scored).To reflect and assess American liberalism, we combined the social and economic subscales. Together, these 11 items retained an acceptable level of internal consistency (Cronbach’s α = .77).

**PEW Items (by domain)[[3]](#footnote-3)**

**Instructions:** The following items are several questions concerning your economic and social views on key societal issues (remember that your responses are completely confidential). Please rate your level of agreement/disagreement to each item using the scale provided below: (1 = strongly disagree; 2 = disagree; 3 = mildly disagree; 4 = neither disagree nor agree; 5 = mildly agree; 6 = agree; 7 = strongly agree)

|  |  |
| --- | --- |
| **Economic** | |
| 1. The government should help more needy people even if it means going deeper in debt | |
| 1. Government regulation of business usually does more harm than good | |
| 1. Labor unions are necessary to protect the working person | |
| 1. There needs to be stricter laws and regulations to protect the environment | |
| 1. Poor people have become too dependent on government assistance programs | |
| 1. Business corporations make too much profit | |
| 1. The government needs to do more to make health care affordable and accessible | |
|  | |
| **Social** | |
| 1. The growing number of newcomers from other countries threaten traditional American customs and values | |
| 1. One parent can bring up a child as well as two parents together | |
| 1. I never doubt the existence of God | |
| 1. Gays and lesbians should be allowed to marry legally | |
| 1. Abortion should be illegal in all or most cases | |
| 1. Dissent is a critical component of democracy | |

1. Although the internal consistency is mediocre for two of the behavioral dimensions, the factor loadings in the measurement model are acceptable. Moreover, the structural equation modeling itself takes into account measurement error, making it a more reliable measure of PEB overall. [↑](#footnote-ref-1)
2. “Economic egalitarianism” refers generally to concerns for the degree of government redistribution and economic inequality. [↑](#footnote-ref-2)
3. (G) Government; (B/E) Business, Labor, Environment; (R) Religion, Social Values; (IM) Race, Immigration, Equal Opportunity [↑](#footnote-ref-3)