

# Factors in Saving Water



USDA-CSREES National Water Conference

January 28-February 1, 2007

Savannah, Georgia

Barbara J. Andersen

Environmental Science Program/ University of Idaho



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# Acknowledgements

- Dr. Robert L. Mahler, PhD committee chair and faculty advisor
- Karen Loeffelman, technical support (Figures 1 & 2)

# Outline

- I. Introduction: water usage and conservation behaviors in the residential landscape
- II. Evidence-based literature review methodology
- III. Literature review
- IV. Research problem
- V. Discussion and dissertation research objectives
- VI. Conclusions

# Role of urban water conservation

- Cities have a critical role to play in addressing serious environmental problems, including overdependence on fossil fuels, global climate change, and water scarcity.
- Conservation and innovation practices have great potential for addressing water depletion issues in cities.
- Water, or lack of it, can ultimately decide many current growth and development debates.

# Methodology

- Systematic review began in summer 2006
- Purpose = to acquire knowledge of published (in refereed journals) research of residential water usage and conservation
- Searched by keywords (water usage, water conservation, residential water usage and conservation,...) in online databases (JSTOR,...)
- References entered into ProCite
- Made 1-2 page summaries of each paper

# Literature review

- Household water consumption behaviors
- Patchen's model of environmental behavioral determinants
- Role of values/ideology (interesting to me)
- Role of emotions (gap exists in existing res.)
- Role of habit (gap exists in existing res.)
- Household water conservation behaviors

# Household water consumption behaviors

<i>Residential water use in the landscape</i>	<i>Liters per month</i>
Fast-leaking faucet	7,600 or more
Watering a 750 sq. m. lawn	7,600-16,000
Uncovered pool (60 sq. m.)	3,000-11,000
$\frac{3}{4}$ inch diameter hose	2,300
$\frac{5}{8}$ inch diameter hose	1,900
Slowly dripping faucet	1,300-2,300

# Environmental psychology

- The field of environmental psychology has been recognized within psychological research ***since the late 1960s*** (Nickerson, 2003).
- It has been defined as “that branch of psychology concerned with providing ***a systematic account of the relationship between person and environment***” (Russell and Ward, 1982, p. 652). (emphasis mine)
- Environmental psychology research has tended to focus on questions of ***how people interact***, through perception and reactions, ***with their immediate physical and sociocultural environment*** (Nickerson, 2003, p.2). (emphasis mine)

# Social psychology

Whatever you may be sure of, be sure of this – that you are dreadfully like other people.

- James Russell Lowell

- “the discipline that studies how people think about, influence, and relate to other people” (Nairne, 2000, p.501)
- Phenomena investigated by social psychologists: persuasion, interpersonal attraction, attitude formation and change, and the behavior of groups
- 3 important adaptive problems in soc. psych.
  - How do we interpret the behavior of others?
  - How does our behavior change when we’re in the presence of others?
  - How do we establish relations with others, esp. close interpersonal relationships?

# Patchen's model

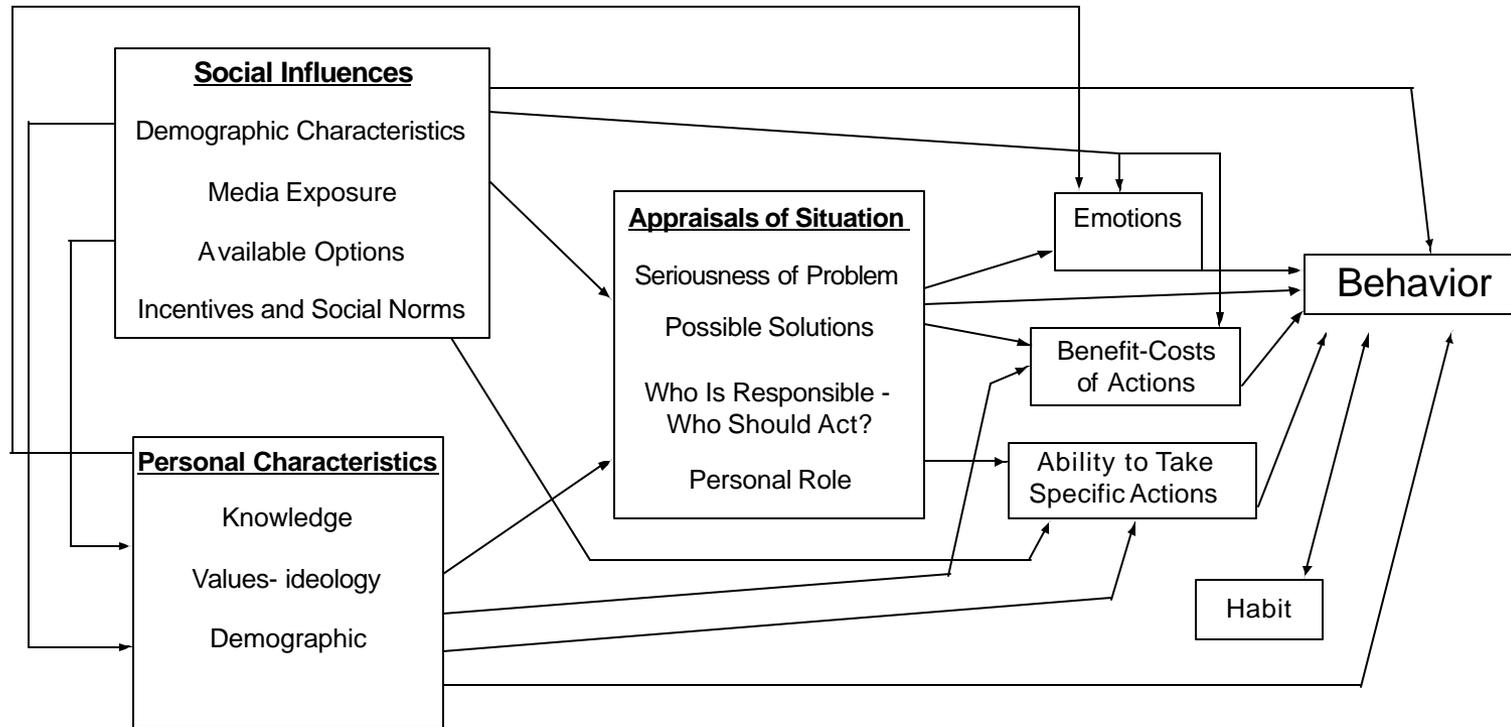


Figure 1. A Model of the Determinants of Behavior Relevant to Climate Change (Patchen, 2006, p.4)

# Role of values/ideology



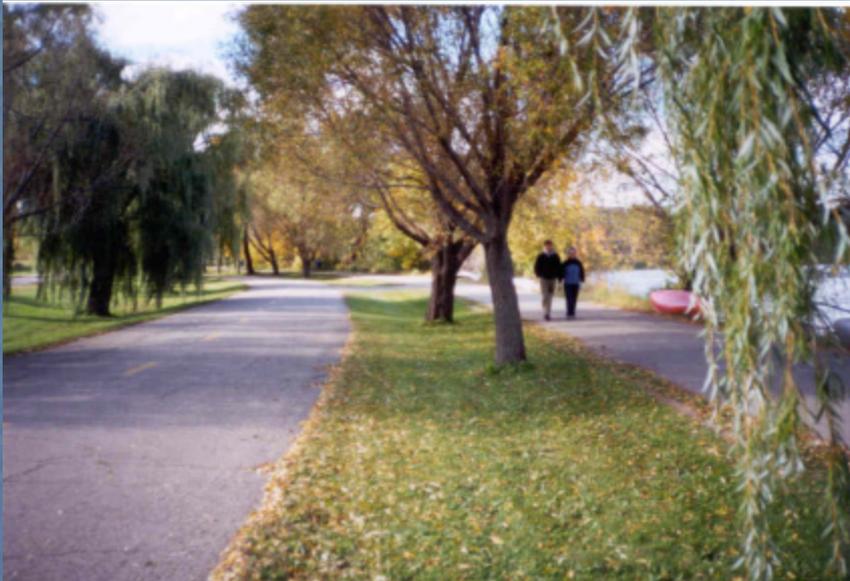
- **Values** are “culturally defined standards by which people assess desirability, goodness, and beauty and that serve as broad guidelines for social living” (Macionis, 2003)
- Values (permanent & important to society); compare with **attitudes** (a positive or negative evaluation or belief held about something), which are fleeting and unstable (Colman, 2003; Macionis, 2003).
- **World view** = “world vision”, a particular social group’s characteristic outlook on the world (Colman, 2003)
- **Range** of values/ideologies/world views from ecocentric to human exemptionalism (New Ecological Paradigm)

# Role of emotions

- “any short-term evaluative, affective, intentional, psychological state, including happiness, sadness, disgust, and other inner feelings” (Colman, 2003)
- Example: turtle crossing sign evokes emotional response from many or no response or negative emotional response from others



# Role of habit



- “a disposition to behave in a particular way, or an established practice or custom” (Colman, 2003)
- Example: daily exercise as a habit forming activity

# Household water conservation and innovation behaviors

## ■ Conservation behaviors

- Maintaining/repairing faucets, hoses, irrigation systems
- Covering swimming pools (or filling them in!)
- Observing water restriction rules
- Modest size homes and lots (Example: 1960s vs. 1990s)

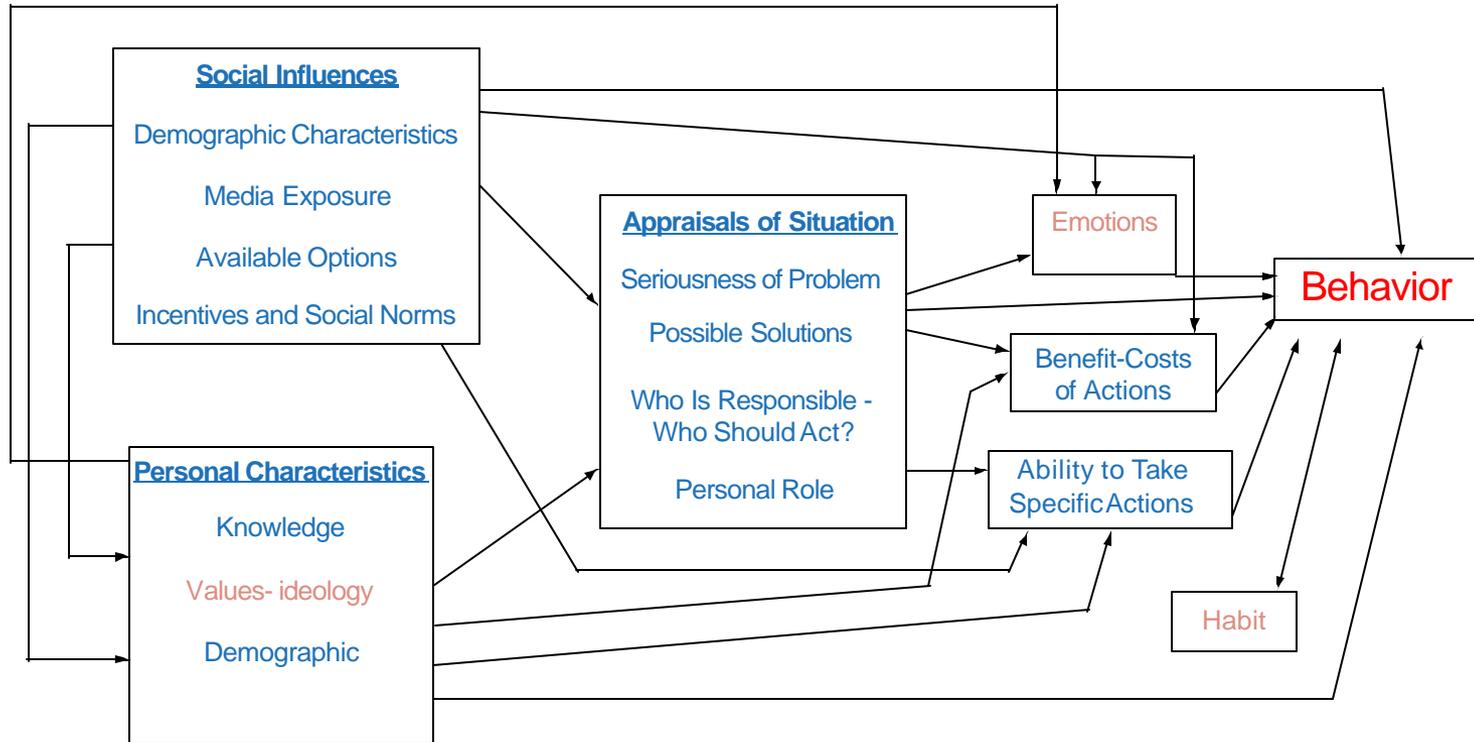


## ■ Innovation behaviors

- Rainwater harvesting
- Raingardens
- Drip irrigation systems
- Native/drought resistant plant communities
- Rainwater storage (such as cisterns)
- Stormwater management



# Adapted model



**Figure 2.** Patchen's model of behavioral determinants relevant to climate change adapted for outdoor residential water conservation.

# Conclusions

- Research gap exists re. residential water
- Mainly quantitative methods have been utilized in existing studies
- Leading edge of conservers and innovators – important to study them to promote positive changes
- Emotions and habit are potentially fruitful paths to investigate

# More conclusions

- We can learn some from environmental psychology and social psychology research of proenvironmental behaviors.
- But do the conclusions hold true for water use and water conservation/innovation behaviors?

# Further research directions

- Need to do further literature review on water conservation innovations
- Possible **research questions**
  - RQ1. What is the current state of knowledge about outdoor residential water conservation practices among single-family homeowners in the 3 sets of paired communities?
  - RQ2. Based on Patchen's model, what are the largest influences/determinants on single-family homeowners' outdoor residential water conservation practices in the 3 sets of paired communities?
  - RQ3. How do outdoor residential water conservation practices differ, if at all, among and between the 3 sets of paired communities?
  - RQ4. How do household water conservers and innovators differ, if at all, from the general public in the 3 sets of paired communities?
- Possible **research methodology**
  - 3 sets of paired cities
  - Quantitative mail survey to assess attitudes about water usage, conservation and innovations
  - Qualitative interviews to understand motives of conservers and innovators

There is enough to satisfy our need  
but not our greed.

- Mahatma Gandhi



- Need to find and practice the “soft path” for water, a la Amory Lovins’ “soft energy path”, i.e., asking ourselves to reconsider how and for what we use water.

# Questions?



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# References

- Coleman, Andrew M. 2003. *Oxford Dictionary of Psychology*. Oxford: Oxford University Press.
- Gleick, Peter C. (ed.). 1993. *Water in Crisis: A Guide to the World's Fresh Water Resources*. New York: Oxford University Press.
- Graziano, Anthony M. and Raulin, Michael L. 2004. *Research Methods* (5th ed.). Boston: Pearson.
- Macionis, John J. 2003. *Sociology* (9<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.
- Nairne, James S. 2000. *Psychology: The Adaptive Mind* (2<sup>nd</sup> ed.). Belmont, CA: Wadsworth.
- Nickerson, Raymond S. 2003. *Psychology and Environmental Change*. Amhearst: University of Massachusetts Press.
- Patchen, Martin. October 2006. Public Attitudes and Behavior About Climate Change. Purdue Climate Change Research Center Outreach Publication 0601. Available at [www.purdue.edu/climate](http://www.purdue.edu/climate)
- Russell, J.A. and Ward, L.M. 1982. Environmental psychology. *Annual Review of Psychology*, 33:651-688.