

Special Section: Behavior Analysis and Climate Change

Introduction: How Can Behavior Analysts Help Save the Planet?

BY MARIA E. MALOTT

These days, it seems, every mainstream article on climate change starts the same way: The global temperature is rising, the Earth's ice cover is shrinking, the planet's weather patterns are changing, and human activity is almost certainly the cause. The climate change alarm sounded long ago and it continues to ring. The time has come for the conversation to move past "we are warming the planet" to "we need to *respond* to the warming planet." Perhaps no other scientific field has more to contribute to this new stage in the dialogue than behavior analysis, which is uniquely suited to address the human factors associated with the problem. Additionally, if we wish for the development and acceptance of behavior analysis to be a truly international endeavor, then we must have the courage to take on global problems.

In 2010, *The Behavior Analyst* printed a special section in the fall issue that featured articles offering behavioral solutions to climate change. The topics presented included everything from recycling to procrastination management to cooperation (Heward & Chance, 2010). The response was so positive that ABAI felt the time was right for a conference focused on climate change. In August 2012, ABAI hosted the Behavior Change for a Sustainable World Conference at The Ohio State University in Columbus, OH. The talks, symposia, and posters presented were straightforward, thought provoking, and given with much enthusiasm and passion—by all accounts, the conference was a success. However, it is important to see these activities for what they are: first steps in a very long trek.

The papers that follow were written by presenters at the conference and provide a narrative about behavior analysis and its relationship to climate change. First, Bill Heward explains why the behavior analysis community should take an active role in developing solutions. Lonnie Thompson then provides an overview of the evidence and consequences of a changing planet. Scott Geller outlines what behavior analysts have already done to encourage sustainable behaviors as well as where we have fallen short. Fred Provenza describes how behavioral techniques have been used to change ranching and farming practices to create stable, sustainable ecosystems. The final three papers focus on integrating behavioral science into the greater human community as a necessity for generating lasting changes: Darnell Lattal discusses how organizational behavior management can be used to improve the sustainability practices of corporations, Shawn Charlton and colleagues

stress the need for the community to develop and embrace effective public outreach practices, and Jeanine Stratton illustrates how reaching out to other scientific fields can produce welcome results.

There are few modern day problems grander in scope than climate change. As is often the case with seemingly overwhelming problems, the human response has been to ignore it in the hope that "someone else" will find a solution. However, many of us in the behavior analysis community feel the call to battle. After all, if we are the experts in behavior change, how can we refuse to join the fight?

Reference

Heward, W.L., & Chance, P. (Guest Eds.). (2010). Special section: The human response to climate change: Ideas from behavior analysis. *The Behavior Analyst*, 33, 145–206.

Time to Enlist

Behavior Change for a Sustainable World: Ultimate Challenge and Opportunity for Behavior Analysts

BY WILLIAM L. HEWARD

2012: was the warmest on record—freak storms, widespread drought, killer forest fires, disappearing ice sheets, and rising oceans. Representatives of 200 nations at the UN conference on climate change learned that the Intergovernmental Panel on Climate Change's (IPCC) dire predictions actually underestimated the magnitude, rate and impact of global warming (Scherer, 2012).

We are burning fossil fuels, depleting finite resources, and degrading the environment at such a frightening pace that geophysicist Brad Werner titled his presentation at the American Geophysical Union's 2012 fall meeting, "Is Earth F**ked?" Werner said his title was inspired by his friends' depression about the planet's future and our "seeming inability to respond appropriately to it." Like Lonnie Thompson (2010; this issue), Werner sees the biggest challenge of climate change as getting people to change their behavior in response to it.

Compulsory Challenge

Helping people mitigate and adapt to climate change is a made-to-order assignment for researchers and practitioners of a science devoted to understanding behavior and how to change it. It's easy to find reasons to be gloomy about the impact we can have, but it's important to reject them:

- *We don't know enough; better wait until we do.* Behavior analysis is a young science. It lacks the comprehensive

research literature and watertight conceptual analyses needed to build optimal behavioral solutions to a problem as large and complex as climate change. But society cannot wait to tackle climate change until behavior analysts get everything worked out. No one owns the facts of nature. Although behavior analysts have discovered valuable knowledge about how consequences select and maintain behavior, operant conditioning, like gravity, is a universal law available to everyone. Current efforts to encourage sustainable practices embody principles of behavior (e.g., Carrotmob.org; Volkswagen's fun theory ads; flashmob recycling, www.youtube.com/watch?v=GYnd5JRu86E; http://vermontivate.com; www.eebhub.org; and www.recyclebank.com). If behavior analysts helped design and evaluate those efforts, would their effectiveness increase? Is there any reason to believe they would not?

- *Failure will damage the public's perception of behavior analysis.* There surely will be failures, but the biggest failure would be not to try. We cannot let worry over our image keep us from making mistakes. The worst harm to the status of a field dedicated to behavior change would be failing to help deal with what may be the most serious behavior problem the world has ever faced. The stakes are too high to not try. While we can and must do a better job of showing the public what our science is all about (Charlton et al., this issue), if we don't help as best we can now, what a crumbling society thinks about behavior analysis will be meaningless.
- *The behavior changes we can make will be too little, too late.* Even if all fossil fuel emissions were to end today, our climate would continue warming for decades. Successfully adapting to that reality will require massive changes in energy sources and use, transportation infrastructure, food production, environmental protection, population control, and economic practices on a global scale. But the changes we do promote will help create a *behavioral wedge* that gives society time to implement the necessary technological fixes and policy changes (McKenzie-Mohr, 2011).

Opportunity Galore

Today's sustainability movement teems with opportunities for teachers, researchers, and practitioners of behavior analysis:

Teachers

Today's teachers of behavior analysis will play a vital role in how much and how well the field helps make sustainable practices a reality. Current students of behavior analysis must come to understand that sustainability is a behavioral challenge that will last for decades. Steps have been taken in that direction. Instructional programs, special topic seminars, and joint courses with other disciplines dedicated to environmental issues are being offered (e.g., Luke, Alavosius, Newsome, & Leeming, 2011; Wilhite, 2012). Sustainability

is now an integral component of a class in behavior analysis at Bangor University, where students must do a personal behavior change project on travel, recycling, or energy use. This past year, 142 students presented their findings at an end-of-the-semester sustainability conference attended by the university vice chancellor and a director of the Welsh Institute for Natural Resources. (Examples of green behavior change projects by Bangor University students can be seen at www.bangor.ac.uk/psychology/greenbehaviours.)

Researchers

Peer reviewed behavior analysis research on environmental issues has been published since the 1970s, but the science and those who practice it can and must do much more (Geller, this issue; Heward & Chance, 2010). None of the applications of behavior principles to increase this or that environmentally friendly behavior published to date is the answer to the complex problems posed by climate change. Much research is needed to translate basic findings into potential applications and to evaluate and analyze interventions derived from that work.

Behavior analysts can contribute to an astounding range of potential studies on sustainability issues (e.g., Provenza, this issue). Those seeking potential research topics or collaborators might find both in the archived programs of ABAT's 2012 Behavior Change for a Sustainable World Conference and the annual Behavior, Energy & Climate Change Conference that began in 2007. Efforts by people outside behavior analysis can also provide topics and avenues for research: Government policies and efforts by conservation groups have eradicated poisonous insecticides from the food chain, improved air and water quality, preserved significant tracks of forest and wetlands, and removed some species from endangered lists (Kareiva, 2012). These and other accomplishments should be recognized, celebrated, and used as models for systematic replications aimed at improving the health of our planet.

Like society's need for effective autism treatment, the need for sustainable practices is a tremendous opportunity for behavior analysis to recruit bright, caring young people. Murray Sidman described what drew him to a career of behavioral research: "Like many young people, both then and now, I was worried, not so much about what kind of a job I was going to end up in, but rather, how I was going to go about helping to change the world for the better" (2007, p. 310). Feeling good about helping to change the world for the better might nudge a young behavior analyst toward focusing on sustainability, but more substantial supports are probably needed to make a career of it. Fortunately, behavioral researchers who choose to tackle sustainability won't need to forgo traditional supports and rewards: grants, publishing opportunities, and academic promotion for producing solid research on behavior change will likely be widely available.

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HEWARD continued from page 7**Practitioners**

Organizational behavior management professionals have helped businesses design and implement environmentally friendly programs and their efforts provide the foundation for far-reaching applications (e.g., Knott, Kernan, Luke, & Alavosius, 2012; Lattal, this issue). Most behavior analysis practitioners today work in autism, developmental disabilities, and education—fields where their knowledge and skills are greatly needed. What if some of the many human service agencies run by behavior analysts made reducing their programs' carbon footprints a priority? ABA autism treatment programs could experiment with interventions to encourage staff to increase recycling, conserve energy, and reduce fuel consumed by company vehicles. ABAI's home office staff in Kalamazoo might do the same. Such efforts could serve as model demonstration projects and research sites.

ABAI's affiliated chapters could add a sustainability track to their annual conferences and encourage green R&D projects by their members. Each of ABAI's 20,000+ members and affiliate members might examine his or her behavior per Darrel Bostow's (2011) challenge for behavior analysts to be better models of the lifestyles we promote.

The Ultimate Outcome?

I am not suggesting that behavior analysts can save the world on their own. Collaboration with other scientists and professionals has never been more important (Stratton, this issue). And, as Hiroshi Komiyama and Kazuhiko Takeuchi (2006) illustrate, the door is wide open.

Precisely because sustainability science includes global, social, and human systems in its purview, and because the problems it addresses involve disparate elements—from science and technology, to politics and economics, to human lifestyles and behavior—this new discipline must necessarily embrace the social and natural sciences. (p. 5)

How did Werner answer the provocative question he posed? With inputs based on humanity's present behavior his predictive model didn't paint a pretty picture. But in the Q&A following his talk, Werner acknowledged that "maybe the Earth is not quite f**ked yet after all. But the ultimate outcome may depend on how much, and how many, scientists choose to wade into the fray" (Mingle, 2012).

Behavior analysts must do more than wade in. The world wants and needs our best efforts now.

References

Bostow, D.E. (2011). The personal life of the behavior analyst. *The Behavior Analyst, 34*, 267–282.

Chance, P. (2007). The ultimate challenge: Prove B.F. Skinner wrong. *The Behavior Analyst, 30*, 153–160.

Charlton, S.R., Detrich, R., Dixon, M.R., Magoon, M.A., & Critchfield, T.S. (2013). Getting the public to accept behavior analysis as a route to sustainability. *Inside Behavior Analysis, 5(1)*, 15–16.

Knott, S., Kernan, D., Luke, M., & Alavosius, M. (2012). Distributing green practices: Sustainability in a supply chain. Paper presented at the 38th Annual Meeting of the Association for Behavior Analysis International. Seattle, WA.

Geller, E.S. (2013). Actively caring for the environment: How applied behavior analysis can do more for sustainability. *Inside Behavior Analysis, 5(1)*, 11–12.

Heward, W.L., & Chance, P. (Guest Eds.) (2010). Special section: The human response to climate change: Ideas from behavior analysis. *The Behavior Analyst, 33*, 145–206.

Kareiva, P. (2012). Resurrecting the environmental movement. Invited address at Behavior Change for a Sustainable World Conference. Columbus, OH: Association for Behavior Analysis International.

Komiyama, H., & Takeuchi, K. (2006). Sustainability science: Building a new discipline. *Sustainability Science, 1*, 1–6.

Lattal, D. (2013). Time to recognize green behavior standards for corporations? *Inside Behavior Analysis, 5(1)*, 14–15.

Luke, M., Alavosius, M.P., Newsome, W.D., & Leeming, E.M. (2011). Climate change and human behavior: An undergraduate/graduate course in environmental psychology at University of Nevada, Reno. Paper presented at the 37th Annual Meeting of the Association for Behavior Analysis International. Denver, CO.

Mingle, J. (2012). Scientists ask blunt question on everyone's mind. *Slate*. Retrieved December 12, 2012 from http://www.slate.com/articles/health_and_science/science/2012/12/is_earth_f_ked_at_2012_agu_meeting_scientists_consider_advocacy_activism.single.html#pagebreak_anchor_2

Provenza, P. (2013). Connecting humans, animals and landscapes for the good of all. *Inside Behavior Analysis, 5(1)*, 13–14.

Scherer, G. (2012). Climate science predictions prove too conservative. *Scientific American*. Retrieved December 12, 2012 from <http://www.scientificamerican.com/article.cfm?id=climate-science-predictions-prove-too-conservative>

Sidman, M. (2007). The analysis of behavior: What's in it for us? *Journal of the Experimental Analysis of Behavior, 39*, 309–315.

Stratton, J.P. (2013). Building bridges across disciplines to support sustainable practices: The role of behavior analysis. *Inside Behavior Analysis, 5(1)*, 17–18.

Thompson, L.G. (2010). Climate change: The evidence and our options. *The Behavior Analyst, 33*, 153–170.

Thompson, L.G. (2013). The greatest challenge of global climate change: An inconvenient truth meets the inconvenienced mind. *Inside Behavior Analysis, 5(1)*, 8–9.

Wilhite, C. (2012). Three more projects from Fresno State. Paper presented at the 38th Annual Meeting of the Association for Behavior Analysis International. Seattle, WA.

We've Got Our Work Cut Out for Us**The Greatest Challenge of Global Climate Change: An Inconvenient Truth Meets the Inconvenienced Mind**

BY LONNIE G. THOMPSON

In a paper published a couple of years ago in *The Behavior Analyst*, I laid out the evidence for climate change and the options available to us: mitigation, adaptation, or suffering (Thompson, 2010). In this essay I provide a brief update on the state of the global climate system and the need for widespread human response to it.

Some Inconvenient Truths

Our Earth's climate system continues to warm at an alarming rate due largely to human activities.

The Earth's Ice Cover

One of the most disconcerting signs of climate change is the loss of ice around the world. Glaciers, the "canaries in the coal mine," are the planet's early warning systems of global climate change (see Figure 1).

They both respond to and record key climatological variables such as temperature, precipitation, cloudiness, humidity, and radiation. Thirty years of data from more