On Target: Environmental Health Messaging That Hits the Mark

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Since the onset of COVID-19, public health messaging—specifically its effectiveness or lack thereof—has been an especially pressing concern for health communicators worldwide. The twists and turns of the pandemic continue to present myriad challenges for those crafting advisories, explainers, and other messages. But these challenges are not unique to COVID-19; in the environmental health realm, public health officials, researchers, and health care providers have tried for years to both develop evidence-based guidance and persuade individuals to act on it. Different regions across the world grapple with their own combinations of environmental health issues—contaminants in food or drinking water, temperature extremes, pollution-emitting cooking methods, poor sanitation, and many others. Regardless of the topic, the challenge is largely the same: accurately assess the strengths and limitations of reported scientific findings, and develop a communication campaign that hits the mark and leads to positive change.

**Hits and Misses**

A key part of environmental health research involves testing whether a messaging approach results in positive change. A short personal narrative in an experimental brochure about fish consumption starts: “Do you think fish has risks for women who might become pregnant? Like Nicole, you might be surprised to learn that fish is an important part of a healthy diet.” Nicole wants to avoid mercury in fish but still get the nutritional benefits of fish for her baby’s developing brain. Could sharing her story make a difference in motivating real-world women to consume safe amounts of the right kinds of fish?

Jeff Niederdeppe, a professor of communication at Cornell University, helped develop the brochure for a study in the Great Lakes region, one of many sites worldwide where fish contamination is a major health concern. He and his team tested different versions of the brochure to see which would be most effective at persuading women to reduce intake of contaminated fish, increase intake of safe fish, or both. The version with a personal narrative worked best: Women who read Nicole’s story were more likely to adopt healthier fish consumption habits, compared with those who received a version providing federal guidelines and bulleted “facts on fish,” without a story.

Examples of successful messaging exist alongside those where messaging has gone awry, with serious consequences. When Ebola virus hit West Africa in 2013, many governments banned bushmeat in hopes it would prevent further outbreaks. However, that strategy backfired. Messaging that stressed the health risk posed by eating bushmeat contradicted the experience of West Africans, who for generations had eaten wild meat without incident. Bushmeat, moreover, is both a staple in areas with few other protein sources and a delicacy among city dwellers. It later turned out that bushmeat consumption was not even an important route of infection.

Investigators who studied the episode called this disconnect an “epistemic dissonance [that] radically undercut the effectiveness of the ban.” Worse, it led to a thriving underground trade in bushmeat, which raised the risk of exposure to other pathogens and parasites. “Beyond achieving little to no impact on outbreak control . . . the ban on wild meat ran the risk of eroding public confidence in the response efforts,” the investigators concluded.

Lessons in what not to do are helpful, but lessons in what to do may be even better. A growing body of literature is revealing that effective messages are rooted in knowledge of the audience’s motivations, culture, and level of awareness. These messages must convey a clear purpose or call to action. Researchers and public health workers must also know how to counter efforts to misinformation and address cognitive biases that shape people’s choices and beliefs.

**Why Knowing Better Does Not Mean Doing Better**

The notion of a knowledge deficit (sometimes called the scientific literacy model) holds that if people understand the facts behind an issue, they will change their behaviors or support health-protective public health policies. Overwhelming evidence shows that assumption to be untrue, however. Instead, people tend to base their opinions and decisions on the least amount of information possible, and to create general rules for how they react to contradictory information. This tendency leads them to seek information that confirms their existing beliefs or to interpret information a specific way—something known as confirmation bias.

Why would someone engage in confirmation bias? Finding evidence that appears to confirm one’s beliefs can cause a pleasurable release of dopamine in the brain, regardless of how sound that evidence may be. It has also been hypothesized that confirmation bias may be a positive evolutionary adaptation to foster community cohesion.

Overcoming confirmation bias is just one of the many challenges faced by public health experts. Understanding the audience and their values is necessary to craft messages that transcend mere information dissemination to actually influence healthy behaviors. Communicators must also take care not to come across as tone-deaf or culturally insensitive. Finally, they must tap into the values that are most important to the target audience.

For example, when creating messages to educate Native Americans about cigarette smoking and secondhand smoke, public health workers should understand that many Indigenous peoples use tobacco for ceremonial, religious, and medicinal purposes, not just for personal reasons that result in addiction. But there is more to the story of cigarette smoking among Native Americans. In a 2021 podcast researcher Patricia Nez Henderson (Navajo Nation) recounted how the federal government banned all forms of cultural and religious practices for tribes in the late 1800s. “During this time,” she said, “it was just easier to have a product like a cigarette, which the government wouldn’t question if you were caught with it.”

Henderson, who is the vice president of the Black Hills Center for American Indian Health in South Dakota, developed a smoking intervention that appealed to the values of respect, family, and intergenerationalism, which are important to Native peoples. Accordingly, she found the most common reason cited for instituting smoke-free home rules was to protect the family’s children and grandchildren from the adverse health effects of secondhand smoke.

**Understanding Why People Do What They Do**

Messages meant to encourage healthy behaviors by focusing on raising awareness and educating may miss the bigger picture,
Do you think eating fish has risks for women who might become pregnant?

Like Nicole, you might be surprised to learn that fish is an important part of a healthy diet.

After being away for several years, Nicole and Chris recently moved back to their hometown of Buffalo, New York. They decided it was time to try to have a baby. A baby is a big change, so Nicole began doing her homework on exercise and nutrition that would help her have a healthy baby.

Nicole found a website with guidelines about eating fish for women of childbearing age. The website explained that, although many women don’t eat fish before and during pregnancy, certain fish are actually a great source of omega-3s. Omega-3s are important for a baby’s development and are not found in many other foods. Fish are also a very nutritious food for children to eat as they grow.

Nicole wasn’t convinced. She looked for other sources and found the New York State Department of Health’s “Health Advice for Eating Fish you Catch.” These guidelines confirmed that while some types of fish contain higher levels of chemicals like mercury, other fish are safe for women of childbearing age.

Researchers tested different versions of this educational brochure about safe fish consumption. Including a personal narrative made a difference in whether consumers changed their behavior or not. Images: Courtesy Cornell University.

namely, systemic issues that affect society at large or the influence of social, political, and economic environments on individuals. For example, many people believe obesity is prevalent in the United States solely because of poor habits or lifestyle choices. Yet, researchers now understand economic factors influence which foods are most readily available and affordable to particular populations.23,24 Similarly, the built environment—which may retain the consequences of historical policies such as redlining25—determines whether a community has safe, pleasant public areas to exercise.23,24

“People, of course, have individual agency, but it is within the context of what is enabled or denied by the society in which
they live,” says Nancy Krieger, a professor of social epidemiology at Harvard University. “So any message that comes across saying health is somehow only a function of what individuals autonomously decided—that they are completely free agents with all options available to them—flies in the face of the scientific evidence to date.”

The belief that the individual alone is responsible for his or her health can also undermine public support for addressing social determinants of health.26 “Any effort to promote policies that address [other] determinants of health immediately start off having to contend with this counterargument that it is all an individual’s fault and they are to blame for what happens to them,” says Niederdeppe. At the same time, because this belief is so ingrained, explicitly mentioning personal responsibility may heighten the effectiveness of messages.27 “There’s tension between acknowledging the fact that people do make decisions every day about their health [and that] those decisions are constrained by the environments in which we live,” says Niederdeppe. His own and others’ research has yielded evidence that stories placing individual decisions in a broader context, such as describing the barriers that people face and the roles of policies and community-level interventions, can help shift attitudes about obesity, with one caveat: It is not always possible to predict how people will react.28,29

Most effective are programs that go beyond messaging to build coalitions, stimulate conversations, and mobilize people.30 But Niederdeppe acknowledges the difficulty of telling stories that put someone’s health in the context of their social influences. “It is a lot harder to tell a story about structural, economic, or social factors than it is to tell a story about individual people overcoming odds through heroic personal effort,” he says. “It is no surprise that the most popular movies are superhero movies. They fit into this narrative that what really matters is exceptional human beings doing exceptional things, [rather than] collective solutions.”

A New Emphasis on Social Justice
Several messaging campaigns are taking aim at products and marketing efforts that exploit beliefs and traditions rooted in racism. The use of skin-bleaching cosmetics—an $8.8 billion industry and growing31—is a case in point. Women and men across Africa, Asia, North America, South America, and the Middle East use these products to achieve lighter skin,32–34 a desire often stemming from colorism (prejudice against darker skin).34,35 Skin-lightening creams and soaps, ranging from upscale to off-market brands, often contain toxic substances such as arsenic, mercury, and hydroquinone. These ingredients have been restricted or banned in many countries due to their adverse health effects,34 and the Minamata Convention on Mercury now prohibits party countries from manufacturing, importing, or exporting bleaching products containing more than 1 ppm mercury.36 Nevertheless, the products remain popular and available.

Although a growing public backlash against colorism helped convince companies such as Johnson & Johnson and Unilever to stop selling certain products37—or at least modify marketing that
emphasizes whiteness\textsuperscript{38}—it did not remove consumer demand. And if a campaign to dissuade consumers from using skin-bleaching creams focuses only on avoiding toxic products, it may miss the mark. Groups such as India’s Women of Worth and Nigeria’s Embrace Melanin Initiative therefore emphasize that women and men should take pride in their natural coloring, seek skin that is healthy rather than “fair,” and understand that colorism has deep roots in colonialism and racism.\textsuperscript{39}
Efforts to influence behavior may also be hampered by deceptive or misleading marketing campaigns. For example, says Krieger, “When court decisions finally required the tobacco papers to be released,” their marketing [documentation] was incredibly frank about how they were manipulating issues around gender, around race, around sexuality, around you name it, in order to get more consumers.”

Helping the public see behind these practices is another approach to counteracting harmful influences. “Inoculation,” the practice of forewarning people that someone will attempt to
persuade them of something, can be a powerful strategy. This is the concept behind Truth Initiative, a campaign that targets younger people with messages about how the tobacco industry tries to manipulate consumers.

Truth Initiative, launched in 2000 after states and tobacco companies reached what is known as the Master Settlement Agreement, exposes unethical industry marketing tactics. Truth’s strategies appear to have boosted the efforts of other policies and programs that helped reduce the youth smoking rate from 22.6% in 2000 to 4.2% in 2020. Their “Read Between the Lies” campaign reveals marketing tactics that target people of color. For example, companies disproportionately market menthol cigarettes—which are often harder to quit—to Black Americans. They also advertise more frequently in low-income and Black communities.

With the advent of e-cigarettes, tobacco companies began marketing vaping as a healthier alternative to smoking, casting themselves as concerned about public health. In 2018, Imperial Tobacco wrote that e-cigarettes provide a “huge global public health opportunity.” However, the U.S. Food and Drug Administration has not authorized any company to market specific vaping products as smoking cessation devices, and several studies have found evidence that vaping is far from a public health boon.

In response, Truth Initiative has launched its (This Is Quitting) campaign, targeting young people who vape.

Moving Messages Forward
Regardless of the health topic, it is clear that public health practitioners must navigate a complex web of perceptions; fears; beliefs about one’s ability to change, motivation, and values; confirmation bias; cultural and historical factors; personal responsibility; misinformation; and social, political, and economic drivers of behavior. Implementing individual psychological mechanisms can have powerful influences on people’s behavior. Understanding how to craft effective messages by understanding the audience and their values, defusing misinformation, and knowing whether to motivate, inform, or persuade all play a role.

However, moving beyond the individual level can be challenging. “If you think about the resources that public health, climate change, and environmental health organizations have compared to the resources that industries have,” says Niederdeppe, “that’s a really difficult messaging environment to get into. You are talking about billions of dollars [in potential revenue]—and public health is chronically underfunded.” Nevertheless, if done right, a message may just change lives, one person, one neighborhood, or one nation at a time.

Wendee Nicole is an award-winning San Diego-based science and environmental journalist. Her work has also appeared in Nature, Defenders of Wildlife, and other publications.

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