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To watch CBS News's Harry Reasoner report on the 1964 release of the U.S. Surgeon General's report linking smoking with disease and mortality, go to www.youtube.com/watch?v=ggQEaUlw_S0.

As the country commemorates the 50th anniversary of the 1964 *Surgeon General's Report on Smoking and Health*, it's time to celebrate psychologists' contributions to tobacco control.

BY TORI DEANGELIS



Durham, N.C., a little north of the state's center, sits smack in the middle of tobacco country. It was there, in the late 1970s, that newly minted behavioral psychologist C. Tracy Orleans, PhD, took her first job as an assistant professor of medical psychology at the Duke University Medical Center.

She and three colleagues were charged with writing a report for the Institute of Medicine on the psychological and behavioral contributors to poor health in America. Ironically, she was also smoking more than a pack of cigarettes every day.

"In fact, three of the four of us were smokers," recalls Orleans.

As she scoured research for the report, Orleans gathered more than enough ammunition to scare herself but found little evidence for effective quitting treatments.

After the report was filed, she quit cold turkey, determined to outlast the uncomfortable withdrawal symptoms. But her ordeal made her vow to ease the way for others. Orleans spent the next couple of decades developing effective smoking-cessation interventions, including helping to create a successful outpatient clinic at Duke, and one of the country's first inpatient smoking-cessation consultation services for patients hospitalized at the Duke Medical Center. She also launched the first "proactive" telephone quit line, which included regular follow-up calls to counseled smokers. That in turn became the model for "Free and Clear," a national quit line that has been used by more than 2.5 million quitters.

Later, with colleagues at the Fox Chase Cancer Center in Philadelphia and others, she developed smoking-cessation programs for specific populations, including pregnant women, African-American smokers, older adults and professional athletes addicted to smokeless tobacco. That work laid the foundation for her current position as senior scientist at the

Robert Wood Johnson Foundation, where she's led policy research and action for population-based tobacco control and other public health efforts for the last 18 years.

Orleans is one of a cadre of psychologists who have been working in tobacco control since the 1964 *Surgeon General's Report on Smoking and Health*, studying the basic science of addiction, designing and evaluating treatments, masterminding anti-smoking public health strategies and countering "Big Tobacco" advertising campaigns with creative and sometimes controversial counter-ads. A well-known example is the "Truth" campaign of the 1990s, created by Legacy's Schroeder Institute, a public health tobacco-control research organization with formal academic ties to the Johns Hopkins Bloomberg School of Public Health and the Georgetown University Lombardi Comprehensive Cancer Center. One of its ads shows a truck pulling up in front of a tobacco company, the word "Truth" emblazoned on its side. People hop out of the truck and start pulling bodybags onto the curb. Eventually, they amass a pile of 1,200 bodies — the number of people killed each day by smoking.

The results of this work are impressive. In the 50 years since the report shared the dangers of smoking with the public, to the release of this year's surgeon general's report, *The Health Consequences of Smoking — 50 Years of Progress*, American smoking rates have dropped from 54 percent to 18 percent. A full 45 million Americans have quit smoking in the past 50 years. (More than 30 surgeon general's reports have centered on smoking or second-hand smoking since the original report.)

What's more, the public is far better educated on smoking's dangers than it was, and the tobacco industry has been forced to make major concessions, including the 1998 agreement in which four major U.S. tobacco companies agreed to curtail or

cease certain marketing practices and to pay states the medical costs of people who had developed smoking-related illnesses.

"It's been a collective effort — no one has worked alone," says Orleans. "Together we've had an extraordinary effect on the health of the American population, and the health of the world."

Origins of our knowledge

Psychologists started making their mark in tobacco control years before the 1964 report, says David Abrams, PhD, of the Schroeder Institute, Johns Hopkins and Georgetown. The origins of the basic knowledge of addiction began in the 1940s, he says, when psychologists used classical and operant conditioning to test behavioral responses in lab animals.

"Nicotine and tobacco have been at the forefront of the models being used to understand the brain mechanisms that lead to the reward pathways of addiction," Abrams says.

By the mid-1970s, he and others were continuing to conduct tobacco- and nicotine-related basic science, linking animal models to human research. Through human laboratory studies, Abrams was able to uncover the basic mechanisms behind relapse that are triggered by stress and the sights and smells of other people who are smoking — known as cue reactivity or stimulus-induced craving, phrases that have become staples in the addiction-treatment lexicon.

Another psychologist to lay the basic groundwork for understanding the effects of nicotine was Saul Shiffman, PhD, now a professor of psychology at the University of Pittsburgh. In the early 1980s, "many people doubted that smoking was addictive, and documenting withdrawal and providing a way to assess it helped turn the tide toward recognizing smoking as nicotine addiction," he says. That distinction was made clear in the 1988 surgeon general's report, which made a point of substituting the word "addiction" for "habit" throughout.

Relapse prevention

The work of Shiffman and other psychologists also informed critical research on treatments that identify situations, thoughts and behaviors that spur quitting or relapse and pose cognitive-behavioral strategies to help people anticipate or avoid such triggers. A person may be tempted to smoke under a situation of work stress, for instance, but learn to substitute positive coping strategies such as relaxation techniques or reframing negative thoughts that would normally provoke smoking.

A major psychological model that employs such techniques is harm reduction, developed and widely disseminated by the late G. Alan Marlatt, PhD, of the University of Washington. It includes a component called relapse prevention, or strategies to cope with the cues and temptations of a given addictive behavior, in this case, smoking.

The model takes a pragmatic approach to addiction, acknowledging that some people won't be able to quit immediately, fully, or forever. If a person starts to use again after

a period of abstinence, they can learn from the lapse and try again until they succeed. The model also holds that small steps toward quitting are OK — that a goal can be controlled use, rather than complete cessation.

Relapse prevention contrasts with the disease model of addiction, which holds that addiction is a life-long, biologically based disease that can only be countered by abstinence, discipline, outside help and avoidance of triggers. Examples are Narcotics Anonymous and other Twelve Step programs. While such programs are effective for many, Marlatt understood they wouldn't work for all users, some of whom can't quit either temporarily or permanently. Thus, in Marlatt's view, reducing harm is a better strategy than an intervention that doesn't work at all.

Susan Curry, PhD, now dean at the University of Iowa's College of Public Health, worked with Marlatt to elaborate on the relapse prevention approach during a collaboration in the 1980s. A 1987 article they published in the *Journal of Clinical and Consulting Psychology*, for instance, demonstrated the "abstinence violation effect," which describes people's tendency to overreact to minor lapses from attempted abstinence with guilt, resignation, and sometimes, by relapsing.

Meanwhile, Shiffman was conducting extensive research that gathered data from people struggling to avoid relapse in order to identify factors that cause such relapse — rising emotional distress in the hours preceding a lapse, for instance. The research, which relied on real-time, real-world data collected by electronic diaries, also reinforced the importance of cognitive and behavioral coping in overcoming such obstacles.

Those data have "informed the content of almost all contemporary behavioral treatments for smoking," Shiffman says. Most if not all treatments emphasize the importance of avoiding stress and of preparing coping responses for dealing with it when it does arise. Now, he and colleagues are tailoring that work by programming smartphones to help smokers overcome hurdles to quitting.

A broader reach

In the early 1980s, psychologists studying cigarette and nicotine addiction changed tacks, finding that they could have a larger impact with broad public health interventions than with individual interventions alone.

Among them was Oregon Research Institute psychologist Ed Lichtenstein, PhD. In 1980, he was invited to work for a year with the National Cancer Institute, whose public health perspective on cancer prevention and reduction — viewing the disease from a population-level perspective and developing strategies based on which ones might have the biggest impact — inspired him to consider a similar approach to smoking cessation.

"The logic of it seemed compelling," he says. "It was clear we needed to reach larger numbers of people, and I began to see some ways of doing that." These included moving interventions

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to health-care settings, and later, to telephone quit lines, an area of longstanding expertise for Lichtenstein, Orleans and University of California, San Diego psychologist Shu-Hong Zhu, PhD, who developed the award-winning California Smokers’ Helpline. Quit lines, paid for through tax funds and administered by state contractors, are now available in every state and in Washington, D.C., and in many other countries.

Meanwhile, other recent broad-scale evidence-based smoking-cessation programs — Legacy’s Become An EX website (www.becomeanex.org), for instance, and text messaging on cellphones — have further improved the cost-effectiveness and reach of cessation interventions.

Ellen R. Gritz, PhD, professor and chair of the department of behavioral science at the University of Texas MD Anderson Cancer Center in Houston, likewise saw the potential benefits of the public health view, thanks to her experience writing a section of the 1980 surgeon general’s report on the behavioral aspects of smoking in women. Seeing the issue from a population perspective, she was motivated to apply psychological smoking-cessation treatments to other specific groups, including people with cancer and HIV-AIDS.

Ray Niaura, PhD, of Legacy, Johns Hopkins and Georgetown, was also conducting smoking-cessation work on people with HIV/AIDS, and he and Gritz joined forces to further develop programs of research on tobacco and AIDS, which they are hoping to apply in developing countries.

Tailoring these interventions to specific populations is important because each group has different issues and needs, Gritz explains. Research by her and others has shown that compared with nonsmokers, for example, different kinds of cancer patients who smoke have differential, and worse, outcomes in terms of cancer treatment, further disease development, survival and quality of life.

“You want to be able to point out to the patient exactly what the relationships are [between smoking and different outcomes], why it’s critically important that he or she stop smoking, and how you’re going to help them to stop,” Gritz says.

Other psychologists — among them Abrams, Orleans, Niaura, Carlo DiClemente, PhD, of the University of Maryland Baltimore County, and James O. Prochaska, PhD, and Wayne Velicer, PhD, both of the University of Rhode Island — are creating worksite-wellness and community interventions based on the “transtheoretical stages of change” model developed

by DiClemente, Prochaska and Velicer, which assesses people’s readiness to act on healthier behaviors and provides strategies to get there. That work has evolved into addressing chronic lifestyle-related diseases, such as obesity and Type II diabetes in large-scale public health formats, Abrams notes.

Present and future

Despite these and other forms of progress, the smoking problem remains pernicious. About 44 million Americans still smoke, despite the new surgeon general’s report showing that smoking is linked to an increasing number of diseases, including diabetes, rheumatoid arthritis and colorectal cancer.

The tobacco industry remains a well-heeled foe, spending billions of dollars each year to develop and market new products designed to capture new cohorts of nicotine addicts. And there remain important areas for research exploration. These include the new field of neuromarketing, which explores consumers’ sensorimotor, cognitive, and affective responses to marketing stimuli; pharmacotherapies that are genetically engineered to suit individual needs; safer forms of nicotine delivery, such as the e-cigarette (see page 48); and effective ways of combating the socioeconomic and cultural disparities that lead some groups to smoke more than others (see sidebar on page 52).

That said, it’s a good time to celebrate the successes of the past 50 years, psychologists in the field say. Last year’s end-of-year National Institute on Drug Abuse report, “Monitoring the Future,” found the lowest-ever rates of youth smoking. Between 1990 and 2009, the number of states with Medicaid coverage for smoking cessation grew from one to 45. Tobacco dependence treatment is covered under the Affordable Care Act. And the number of physicians providing cessation counseling rose from 16 percent in 1991 to 87 percent in 2011, to name a few of the gains made.

And, thanks to its rigorous research in the realm of tobacco use and cessation, psychology incontrovertibly established itself as a hard science, says Abrams.

“The laws of human behavior are fairly well understood,” he says. “If you apply them and align them properly with political will, you can change a whole population in about a generation, and get 40 million people to quit smoking. To me, that’s a spectacular success for behavioral science.” ■

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