

Risky Behavior: Adolescents and Substance Use

An Interview with Bonnie Halpern-Felsher, PhD, Professor of Pediatrics, Stanford School of Medicine



Bonnie Halpern-Felsher is a professor of pediatrics and the director of research in the Division of Adolescent Medicine at Stanford University. A developmental psychologist, she is also a member of the Stanford Network on Addiction Policy (SNAP). Dr. Halpern-Felsher's research focuses on cognitive and psychosocial factors involved in adolescents' and young adults' health-related decision-making, perceptions of risk and vulnerability, health communication, and risk behavior.

Much of your work as a researcher and a clinician focuses on adolescent health risks and, in particular, the use of tobacco, alcohol, and other drugs by young people. What are the major policy initiatives that target these behaviors?

When I think about policies for reducing adolescent risk behavior, particularly around substance use, the first has to do with access: reducing adolescents' ability to actually purchase and/or receive these products at the point of sale and through the internet. That includes increasing the age of access and verification.

Flavors are also important. We know that adolescents are using tobacco and vaping products because of the flavors; if we can eliminate the sale of flavored tobacco products we would reduce adolescent use.

It's also important to look at the level of alcohol within various alcohol products, as well as the level of nicotine in tobacco products. If we can reduce those, particularly nicotine, we would reduce levels of addiction.

There's also marketing. These products, and particularly vaping products, are being marketed to youth and we really need policies that eliminate the marketing that is clearly targeting young people.

Another policy lever is taxes. Youth are particularly price sensitive. If we can raise the price of tobacco products or alcohol products or marijuana then we are going to reduce not only their access but their willingness to buy them. At a population level, taxes are one of the best levers that we have.

Why do flavors play such a big role in adolescent use and abuse of tobacco products?

There are over 15,000 flavors for e-cigarettes or vaping products on the market, from chocolate and cherry all the way to Honey Doo Doo and Unicorn Poop. The makers of these products say that they're not targeting youth. Clearly, they are. Our own published research clearly shows that adolescents want flavored tobacco products and that's driving their use. The FDA, states and local areas are considering flavor bans, which tend to mean eliminating fruit and dessert flavors. But mint and menthol also have to be included; our research shows that 25 percent of adolescents are using these flavors. They say, "Why use gum? Why wouldn't I use a mint flavored vape?"

Your team developed an educational toolkit aimed at tobacco use. Who is it for and what does it cover?

In September 2016, we launched the Tobacco Prevention Toolkit. It's a set of curricula focused on middle and high school students and teachers and is available online as a free resource for anybody to use. The goal of the toolkit is to enable teachers to educate middle and high school students about different tobacco products including the new e-cigarettes, vapes, and JUULs. It helps adolescents understand the harms involved in these products and the marketing that's enticing them, including flavors. And it teaches adolescents the refusal skills they need to reduce use.

The modules also focus on positive youth development, and how nicotine affects the brain. We provide PowerPoint presentations with scripts for teachers, hundreds of resources, and a lot of activities including games and quizzes. We've already reached over 300,000 youth in thousands of schools throughout the country and globally.

In May 2019, we launched the Marijuana Awareness and Prevention Toolkit. It's going to look very similar to the Tobacco Prevention Toolkit with the goal of reducing or eliminating adolescents' use of marijuana or cannabis. Given the impact



of marijuana on the adolescent brain, we know that if we can delay the onset of marijuana use until at least the early-to-mid-twenties, then the chances of them becoming addicted is going to be reduced.

What are some ways that the adolescent brain can be changed by marijuana use?

Adolescent brains go through wonderful changes, especially in terms of being able to understand more language and to think about the world in different ways. At this stage of development, your brain is pruning away what you don't need and myelinating or smoothing over what you do use, so your ability to communicate is more efficient. When you introduce a substance, like nicotine or cannabis, into this already changing brain, the brain consumes it, develops around it, and wants more—or it goes through withdrawal symptoms. If we delay the onset of these—and other—substances until at least the mid-twenties, you still may have some harmful effects from the products, but you're not going to become addicted as much as you would if you started in adolescence.

What are some of the challenges that scientists and policy makers face in addressing the upswing in adolescent tobacco use, especially vaping?

Part of the problem with understanding and setting policies around tobacco has

been the extreme and rapid change in the tobacco products that are in the market. In 2007, electronic cigarettes also called e-cigarettes, also called vapes, came on the market. We didn't really see an uptick in use amongst anybody, in particular youth, until around 2014. By then, there were many different generations of electronic cigarettes.

The first generation were disposable—you could use them then throw them away—but these were not very appealing to adolescents because they looked like cigarettes. Then we had the second and third generations which were bigger, cooler, and produced this huge vapor cloud. They had all these flavors and were pretty high in nicotine. But every one of those devices was different.

In 2017, JUULs arrived. With these you put the nicotine in a pod that then gets connected to the device. These are hard to study because every device is different; every coil within the device is different; and the liquid that goes into them is different. Now the new JUULs have a patented salt-based nicotine instead of the free-based nicotine that we saw with the other products. Recently, a Phillip Morris product called IQOS came on the market, which is a heated tobacco stick that's more like a cigarette.

The problem is that the FDA wants information on very precise aspects of



e-cigarettes, so they know exactly what to regulate. It's difficult with the products changing on such a regular basis.

Does the proliferation of marijuana products, including edibles, pose similar scientific and policy challenges?

Marijuana has been very similar in terms of our ability—or inability—to create both policies and education. We know a lot about the original rolled marijuana joints. But now you have all the different oils, the vaping marijuana, and edibles. Edibles are really complicated because until recently there was no way to even begin regulating the “standard” amount of marijuana in a chocolate bar or a brownie. I have to tell youth, "You know it takes longer for edibles to get to your brain, so don't finish the whole thing or you're going to wind up being pretty sick." With alcohol, too, we're still getting new products all the time that tend to target kids, like alcopops did. It's very hard to keep up with all this innovation.

As a member of the scientific community, are you optimistic about translating sound academic research into practice and effective policy? Or are you just trying to keep up with these new challenges and the big open questions about what works?

It's been very hard to keep up, between the academic research and the policy

piece because everything is changing so quickly. It's also really hard because we can only do natural experiments. I can't hand an adolescent an e-cigarette vs. a JUUL and study which one is more harmful. We can do that in mouse models, but not with humans, because of ethical concerns.

So when the FDA asks for specific policy information around say, the flavors, it's very difficult to do the research. Having said that, we are doing it. There is a new area of research called regulatory science and we're trying to really work from what policies are needed. We are trying to listen to what the policy makers need, do our research and then do better at translating the research into policy.

I think the biggest problem currently is the widespread debate among policy makers, the public health community and academics about whether e-cigarettes are less harmful than regular cigarettes. That's how they've been marketed to adults. We don't have a lot of research as to what extent e-cigarettes help adults quit smoking long term or more effectively than other therapies. What worries me is that adolescents and young adults were never going to use cigarettes, but now they may think all these new tobacco products are lower risk. I'm seeing far more adolescents initiating with e-cigarettes than I'm seeing adults quit smoking with them.



When it comes to cultural expectations and the availability of substances, are adolescents facing a different landscape now than they did 10 or 20 years ago?

If you asked me this question maybe 10 years ago, I would say, "Well what's nice is that given the social milieu, we don't see a lot of tobacco and nicotine use, and it's continuing to go down." In fact, five years ago, I thought I was done with that part of my career. I was moving on to other adolescent risk behaviors, quite happily.

The problem is the electronic cigarette market has changed the social norms. We don't have a lot of good evidence yet, but I feel like we are heading back into the milieu of 25, 30, 40 years ago, where it's more socially normative to vape. Not to smoke, but to vape, and that is very concerning to me.

In terms of marijuana, we've absolutely seen a change in the landscape, where marijuana is becoming more socially normative. We haven't really seen an uptick in adolescent usage of marijuana as a result of legalization, but certainly adolescents think that it's more acceptable, more cool, more interesting, and less harmful than they were saying 10 years ago.

We also have social media. Most of what and how adolescents learn about these substances is through marketing on social media. It's not just the industry marketing to them; they're marketing to each other. That's a much harder landscape and social environment to regulate and to know how to infiltrate and change. ☒

