## The Relationship between General and Specific Attitudes about S&T

Attitudes about specific issues, such as genetic engineering, nanotechnology, and genetically modified (GM) food, can be based on general attitudes and knowledge, but this is not always the case. An analysis of the relationship between general and specific attitudes about S&T finds that the association between the two is, at best, small.

The NSF S&T survey on which the current chapter is largely based has typically focused on general knowledge and attitudes toward science, and the chapter has relied on data from organizations such as Gallup and the Pew Research Center to discuss specific S&T attitudes. However, the 2016 NSF S&T survey included several questions about specific issues that were drawn from past rounds of the GSS.

In looking at the relationship between general and specific attitudes, no attempt is made to suggest that one type of attitude caused the other because it seems possible that respondents may sometimes use their views about specific S&T issues and technologies to develop an overall view about S&T, and vice versa.

Researchers interested in the relationship between the two types of survey questions examine how closely the two move together, on average.

The NSF S&T survey has a 5-point measure of whether the respondent believes that scientific research has produced benefits or harmful results. Each respondent is marked as choosing 1 of 5 responses ranging from believing the harm benefit balance is "strongly in favor" of harm or "strongly in favor" of benefits (see Perceived Promise and Reservations about S&T).

Similarly, respondents in the current survey could indicate the degree to which they believed that pollution of America's rivers, lakes, and streams was between "not dangerous" and "extremely dangerous" using 1 of 5 response options.

There is little relationship between these two measures, however. On average, when a respondent's belief in the benefits of science goes up by a point, there is less than a 0.01-point shift in views about the danger of water pollution. Similarly, a 1-point change in views about the benefits or harms of science is associated with a less than 0.01-point average shift in views about the danger of industrial air pollution and global warming.

There was also no meaningful relationship between the three environment-focused questions and the degree to which respondents said they disagreed or agreed that science was making life change too fast or creating opportunities for future generations (see Perceived Promise and Reservations about S&T for the exact questions).

There were, however, small meaningful relationships between general science attitudes and attitudes about specific technologies such as nuclear energy, genetic engineering, and nanotechnology (all of which were measured with 5-point response options focused on perceived danger).

For GM foods and nuclear energy, a 1-point change in perceived general benefits of S&T was associated with about a 0.2-point average decrease in perceived technological danger. Similarly, 1-point changes in the belief that S&T would result in more opportunities for future generations or that science was *not* making our life change too fast were associated with about 0.2-point changes in perceived danger of GM foods and nuclear energy.

For nanotechnology, a 1-point change in perceived benefits (versus harms) was associated with a 0.3-point increase in belief that science would make life better and a 0.5-point decrease in the belief that science is making life change too fast.

The slightly larger relationship between views about nanotechnology and general attitudes about science may reflect the fact that respondents are more likely to draw on their general attitudes when faced with questions about a relatively novel technology.*

* Also of note is that the relationships between general attitudes about science and attitudes about specific technologies tend to remain statistically meaningful even after statistically controlling for general education level and the number of mathematics and science courses the respondent took in high school and college.