# *Science* elicits hope, joy depending on the audience

*Effective communication understands the difference*

BY TODD NEWMAN



**HOW DO SCIENTISTS AND NONSCIENTISTS** think and feel about the word *science*? For the past several years, my research has focused on understanding the emotions that people associate with science. Through a number of surveys of the general public as well as of scientists, we asked respondents, "Which word best describes what you feel when you hear the word science?" A key discovery from this work is that the U.S. public overwhelmingly associates science with hope. In nearly every survey conducted, 45-60% of respondents indicate hope, while every other emotion (e.g., caution, fear, curiosity) is a distant second. This finding holds even after controlling for demographic and ideological factors. Scientists, however, overwhelmingly view science through a lens of joy and excitement, emotions rarely expressed in general population samples.

These findings reveal an assumption that many scientists take for granted: that nonscientists share the same unspoken starting point about what science represents. For most Americans, science isn't a goal in and of itself; it's a tool to accomplish a positive outcome or change in society, such as restoring ecosystems or facilitating access to clean water. But not all scientific research focuses on applied scientific questions, nor is research always at a stage where an application is even known. It is within this context that we decided to look more closely at the results of the scientist survey and see if and how joy and excitement vary depending on one's scientific discipline. We found that those in research fields that address more basic scientific research questions (e.g., physics or astronomy) were more likely to indicate joy and excitement (and less likely to indicate hope) than those in disciplines that address more applied research questions (e.g., social sciences or engineering). In other words, we found an inverse relationship between hope and joy and excitement depending on the type of research one conducts.

Understanding these nuances is essential for ensuring that science at every stage of the research process resonates meaningfully with the public. And it is only within the last several years that the scientific community started to pay attention to the unique challenges of communicating basic science. Scientists can struggle to connect with diverse publics if they don't share common ground. This is particularly important when engaging with so called "hard to reach" audiences who may be skeptical or less receptive to scientific messages and their implications. These findings should not be taken as the need to promise that your science will lead to a specific outcome or that basic science should not be communicated with nonscientist audiences. What it does say is the need to understand nonscientist audiences and build on common ground. This may be harder for some scientists than others depending on the extent to which nonscientist audiences are integral to the work that they do. Understanding that hope is a lens through which nonscientist perceive science is one step toward that goal.

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