Because vaccine hesitancy has been framed as a problem of public misunderstanding of science, vaccine outreach has focused on educating the misguided publics. Where efforts to change vaccine attitudes have failed, cynicism has bred the harsher view that the publics are anti-science and anti-expertise. Yet research into science and the publics lends strong support to the view that public attitudes regarding scientific claims turn crucially on epistemic trust rather than engagement with science itself. It follows that it is poor trust in the expert sources that engender vaccine hesitancy. This consideration redraws the lines of responsibility, where vaccine hesitancy signals a problem with scientific governance rather than a problem with the wayward publics. In order to improve vaccine communications, we should focus on building that trust rather than educating the misinformed publics or puzzling over the moral and epistemic failings of the publics. Doing this does not discount that public health agencies have the science on their sides. It does mean recognizing that the best science is not enough to ensure public uptake of health recommendations.