

Commentary

Polarization Within the Field of Tobacco and Nicotine Science and its Potential Impact on Trainees

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As nicotine delivery products continue to diversify, research on the potential public health impact of novel products has become a cornerstone of nicotine and tobacco science. For example, the field is investigating the positive and negative effects of e-cigarettes on varying populations. Some scientists are studying whether e-cigarettes have the potential to reduce morbidity and mortality among smokers unable or unwilling to quit; while other scientists are studying the potential for e-cigarettes to addict another generation to nicotine.^{1–4} Dividing and conquering research questions allows scientists across a range of disciplines (eg, preclinical behavioral pharmacology to epidemiology) and career levels (eg, trainee to senior scientist) to contribute to a comprehensive evidence base that can explain the effects of e-cigarettes and the impact of potential regulatory and public health measures. However, the research priorities described above are increasingly presented within the scientific community and to the general public in an oversimplified context, pitted against one another as though e-cigarettes either exclusively benefit or exclusively harm public health. The amplification of one-sided, divisive views likely misrepresents the majority of scientists and moves the field away from norms beneficial to scientific integrity, such as nuanced discourse about e-cigarettes and frequent acknowledgment of the trade-offs that can arise between e-cigarette harm prevention and cigarette harm reduction (Figure 1).

We, along with others,^{3,5} are concerned that the continued promotion of select, polarized stances on e-cigarettes will threaten the integrity of research and the objective consideration of complicated public health issues. Our more narrow concern, based on our experiences as trainees and early-career scientists, is that the dominance of polarized perspectives may be perpetuated and reinforced through training experiences, and as a result, greatly hinder the field's progress in eliminating tobacco-related disease and death.

The purpose of this commentary is to draw attention to how early-career nicotine and tobacco scientists may inherit or feel pressured to align with one side of the e-cigarette debate and the potential adverse impacts that this may have on career development. We also discuss how mentors, senior scientists, professional organizations, and journals may reinforce aligning to an oversimplified, one-sided stance on e-cigarettes. While we acknowledge that our experiences do not represent all trainees in the field, we hope that this commentary will serve as a starting point for reflection, dialogue, and action.

The Current Environment

Views regarding the potential public health impacts of e-cigarettes within nicotine and tobacco science can be contentious. As pointed out by Wagener et al., the most polarized stances, whether they are

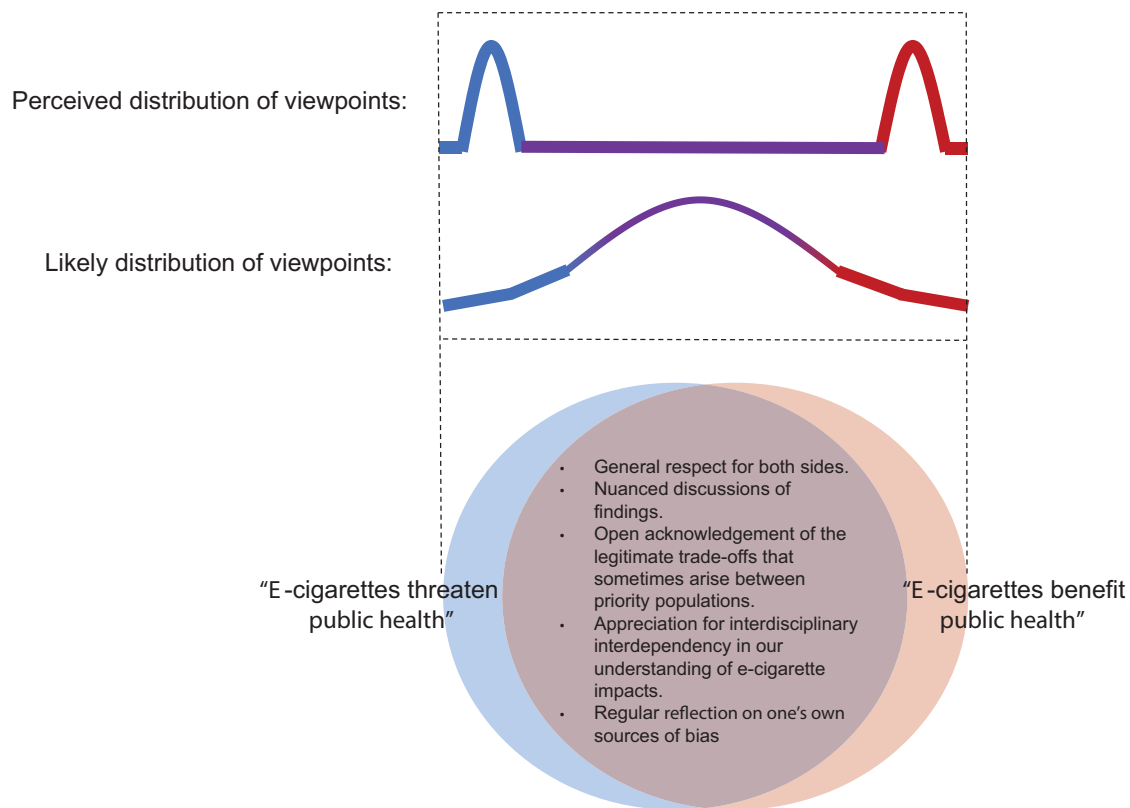


Figure 1. Oversimplified, one-sided perspectives (A) increasingly dominate discussions of e-cigarettes, suppressing the more nuanced, middle ground perspectives likely held by most scientists (B). This polarization moves the field away from overlapping views and the norms (C) that facilitate scientific integrity and public health progress.

advocated by e-cigarette enthusiasts (eg, e-cigarettes are solely harm reducing) or e-cigarette skeptics (eg, e-cigarettes are solely harm elevating) are often prominently featured in the scientific community, the literature and the media.³ However, the likely reality is that relatively few members of our field fit into these extremes, as noted in Figure 1. A consequence of this false dichotomy is the under-representation of scientists with nuanced views who consider the complexity of the issue and the relative trade-offs. The lack of nuanced views can lead policymakers and public health professionals to make abrupt decisions without consideration of the full evidence available. Most concerning is how this dichotomy of polarized viewpoints is confusing the public. A relevant example of public confusion comes from an analysis of the 2017 Health Information National Trends Survey—a US nationally representative survey—that showed nearly two-thirds (65.5%) of adults (inaccurately) perceived e-cigarettes to be “as harmful or even more harmful” as combusted cigarettes.⁶ The authors of this study suggest that a lack of accurate and complete communication to the public from scientists may contribute to confusion about the health risks of e-cigarettes.

Factors Fueling Polarization

While many factors likely facilitate an environment where polarized perspectives thrive, trainees’ immediate research environments and interactions with mentors may contribute to the spread of polarized viewpoints by failing to guard against bias. This could be the case when mentors and senior scientists are dismissive of findings that do not align with their personal, preconceived bias toward e-cigarettes and their research priorities. These practices could also

be accompanied by inflation bias, which is commonly referred to as “p-hacking,” “data mining,” or “selective reporting.” Inflation bias occurs when researchers experiment with many different statistical analyses and/or data eligibility criteria and then only report results that support one’s viewpoint.⁷ Trainees may also feel pressure from mentors and senior scientists to declare their allegiance to support or oppose e-cigarettes and therefore draw conclusions beyond what is supported by the data or without consideration for trade-offs. In line with this is a commentary by Lucherini which shed light on trainees being encouraged by senior colleagues to situate their conclusions on one side of the e-cigarette debate to improve their research impact.⁸

Mentors are not the only potential contributors to the perpetuation of polarized viewpoints among trainees. Training centers, professional organizations, and journals may further fuel polarized views on e-cigarettes by providing platforms predominately to those who have extreme viewpoints and therefore limiting the diversity of information to which trainees are exposed. In the current climate, trainees who do not take a one-sided perspective may face pushback from manuscript and grant reviewers at a time when grants and publications are particularly crucial to career development. We and others⁸ have experienced the peer review process that at times has been more of an opportunity for reviewers to share their opinions on e-cigarettes with the goal of persuading the author to align the manuscript with their perspective, as opposed to assessing academic rigor. What may seem like a minor hiccup can have cascading effects on a trainee’s career. For instance, delays to a first-authored manuscript acceptance (perhaps due to disagreement between authors and reviewers on public health effects of e-cigarettes) can negatively impact their

publication record, which in turn, could reduce their competitiveness for a fellowship. We acknowledge that these sources of bias are not new nor are they specific to the field of tobacco and nicotine science, but the polarization that has surrounded e-cigarettes, has brought them to the forefront in a way that is pervasive and prominent. We believe that the field should act now to minimize the influence of extreme perspectives. We also believe that while our perspective has merit for bringing awareness to this issue, actions to combat this issue and its potential ramifications must come from members of our field in positions of authority and influence, including mentors and senior scientists and leadership at training programs and journals. Next, we provide suggestions for consideration by those in such positions.

Suggestions for Mentor–Mentee Pairs and Training Programs

Limiting the impact of personal biases throughout the scientific process should be a primary goal for all scientists. Training programs should develop opportunities for mentors and mentees to learn about conscious and unconscious biases and how to monitor and limit the impact of these biases throughout the scientific process. A relevant activity for mentor–mentee pairs that may prove beneficial for reducing bias is a researcher identity memo. A researcher identity memo is a tool used in qualitative research in which researchers express any personal biases or conflicts of interest that the researchers need to be mindful of throughout the life cycle of the study.⁹ We encourage mentor–mentee pairs to engage in writing and frequently updating their own researcher identity memos and to have frank conversations about how their biases may affect their work and impact their ability to see the legitimacy of other perspectives. Another point of discussion we recommend for mentor–mentee pairs concerns advocacy. Specifically, the roles scientists should have in advocacy efforts, if any, merit discussion. This is a topic that the field, as a whole, needs to address given the potential for advocacy to blur objectivity and yet has received little to no attention in training programs. This is particularly relevant now more than ever due to the potential to stumble into advocacy while using social media (eg, Twitter) to build a “brand” as a scientist. A final point to highlight is that mentors have an ethical obligation to act in the best interest of the mentee, even if those actions run counter to the mentor’s research priorities or viewpoints or the mentee’s results counter the mentor’s views.

Suggestions for Professional Organizations, Societies, and Journals

We encourage methods that promote a platform for all viewpoints, not just polarizing views, to be heard. Researchers self-segmenting into smaller, niche conferences or organizations that only highlight one perspective are a disservice to the field and have the potential to undercut public health. We encourage organizations such as the Society for Research on Nicotine and Tobacco (SRNT) to evaluate whether conference sessions and presenters are in any way limited to one extreme perspective. In 2018, SRNT publicly committed to involving junior colleagues more within the Society and recognizing their efforts.¹⁰ We applaud this effort and encourage the organization to also consider the importance of nuanced, moderate viewpoints, as this approach has been shown to help depolarize extreme viewpoints.¹¹

Peer-reviewed academic journals in our field, such as *Nicotine & Tobacco Research*, *Tobacco Control*, and *Tobacco Regulatory*

Science, should consider soliciting commentaries and letters from scientists who have moderate stances, and comment on trade-offs across research priorities. Journals should provide a balanced set of reviewers and/or proactively train editors to identify and respond to biased reviews. There is also an obligation for journals to publish research findings based on methodological strength and importance of the research question, regardless of the significance or direction of the results. We encourage journals to follow the lead of publications such as PLOS, and commit space to the publication of null and inconclusive results as this can help to create a more comprehensive evidence base.¹² We also suggest the inclusion of statistical analysis plans when publishing to prevent bias from data mining and p-hacking.

Conclusion

Divisive, dominant perspectives on e-cigarettes move the field of nicotine and tobacco science away from scientifically rigorous discourse on this important public health topic, which involves millions of lives at stake. If norms do not change, the polarized climate may pressure trainees to choose or inherit an allegiance towards an uncompromising, one-sided stance. That allegiance can then restrict career development, undermine the credibility of research, and hinder public health progress. There is an urgent need to act to avoid negatively affecting the next generation of nicotine and tobacco research scientists. Though we have suggested some solution-oriented ideas, we are calling for reflection among everyone in the field and particularly among those with influence and power. There are important questions that must be addressed, including: (1) as the field continues to conquer a range of research questions on e-cigarettes across a range of disciplines and career levels, how can we work better together toward the shared end goal of eliminating tobacco-related disease and death?; (2) how can scientists who perpetuate polarized viewpoints be incentivized and supported to improve?; (3) to whom can junior scientists turn for help with navigating the polarization in the field?; and (4) how can the academic community avoid contributing to the polarization that seems to pervade the field? Dialogue and actions regarding these issues are needed at the mentor–mentee level and within training programs, professional organizations, and journals. We look forward to continuing discussions to generate effective solutions.

Supplementary Material

A Contributorship Form detailing each author’s specific involvement with this content, as well as any supplementary data, are available online at <https://academic.oup.com/ntr>.

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Declaration of Interests

None declared.

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