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The Authors Respond

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To the Editor:

We thank the editor for the opportunity to respond to the letter by Pearce, Vandenbroucke, and Lawlor (PVL)¹ regarding our commentary.² We agree that we have broad areas of agreement, and comment on a relatively narrow remaining area of disagreement. In particular, we agree with PVL that certain methods like triangulation, consideration of Bradford Hill “criteria”,³ instrumental variable methods, and use of biologic knowledge are important parts of causal inference. We disagree in that we do not think recognizing the importance of such methods is inconsistent with the work of leading researchers in modern causal inference methods such as Greenland, Hernán, Pearl, Robins, and VanderWeele. We also disagree with PVL that the work of such leading researchers or our citations of selected parts thereof marginalizes triangulation, consideration of Bradford Hill “criteria”,³ instrumental variable methods, or use of biologic knowledge as “just optional extras”. In broad terms, we hold that the frequency with which the leading researchers (particularly those noted above) have mentioned these methods in their work (evidently, PVL would argue too infrequently) is attributable to the often distinct goals of their work. In their work, these researchers have often sought to address concepts, definitions, relationships, biases, study designs, and methods useful for estimating causal effects in individual studies. Other topics like the Bradford Hill considerations and triangulation may not have been mentioned in many articles, perhaps because the latter tools tend to be useful for addressing somewhat different, although overlapping, goals. For example, the Bradford Hill considerations may be particularly useful for separating causal from noncausal explanations based on information from different sources, evidence of different types and results of multiple studies. PVL seem to interpret the infrequent mention of such methods by certain leading researchers as implying that those researchers view the methods as optional extras, an interpretation with which we disagree; certainly this was not our intent when we documented in our commentary selected works where the methods were mentioned. Ultimately, the researcher must decide what the goals are and what set of tools best fits those goals.

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Disclosure: Dr. Flanders owns Epidemiologic Research & Methods, LLC, which does consulting work for pharmaceutical companies, environmental laboratories, chemical manufacturers, and attorneys.

The authors report no conflicts of interest.

REFERENCES

1. Pearce N, Vandembroucke J, Lawlor DR. Re. Is the smog lifting? *Epidemiology*. 2019;30:e37.
2. Flanders WD, Garber MD. Is the smog lifting?: causal inference in environmental epidemiology. *Epidemiology*. 2019;30:317–320. [PubMed: 30789424]
3. Hill AB. *The Environment and Disease: Association or Causation?* Thousand Oaks, California: SAGE Publications; 1965.