



Letter

Response to “Cigarette and E-cigarette Dual Use Is an Important Factor in the Cross-lagged Path Analysis”

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We appreciate the comments made by Kalan in response to our article¹ and agree with the sentiments expressed with respect to the importance of examining differences across distinct classes or types of product use. However, this was not the purpose of our study. The purpose of our study was to examine reciprocal longitudinal associations between the frequency of electronic cigarette (e-cigarette) use and cigarette use among young people, and to examine the role of three “shared risk factors” (alcohol and marijuana use and mental health symptoms) in explaining these longitudinal associations.

Toward these goals, we used a novel statistical approach (ie, auto-regressive latent trajectory with structured residuals (ALT-SR) modeling) that disaggregates within-person and between-person effects. A major strength of the ALT-SR approach is the ability to describe longitudinal associations between e-cigarette and cigarette use *within individuals* relative to an individual’s *typical level of use*. We showed that across the full sample, which included both single-product use and “dual”-product users, escalations in frequency of e-cigarette use within an individual were prospectively associated with subsequent escalations in frequency of cigarette smoking *and* e-cigarette use. Further, escalations in frequency of cigarette smoking were prospectively associated with subsequent escalations in frequency of e-cigarette use and cigarette smoking. This suggests that individuals who increase their frequency of use of *either* product from one year to the next show (on average) a pattern of escalation toward more frequent use of both e-cigarettes and cigarettes in the future. Because both e-cigarette and cigarette use frequency are modeled at each time point, covarying for binary dual use status (whether treated as a time-invariant trait-like variable or a time-varying state-like variable) would be duplicative and unlikely to affect within-person results.

We also acknowledge that “dual users” appear to demonstrate particularly high rates of other substance use (eg, marijuana use); indeed, our team has previously reported on this issue using data

from the CHOICE-STRATA sample.² However, our prior work—as well as the studies referenced by Kalan in this letter—^{3,4} reports these associations cross-sectionally, at the between-person level. As such, comparisons of the current longitudinal study (ie, within-person results) to prior cross-sectional work examining associations between dual use and other substance use (ie, between-person results) are not particularly informative.

Our study addressed one component of longitudinal e-cigarette and cigarette use patterns: reciprocal associations between frequencies of past-month product use. We acknowledge that there are many other questions and outcomes that should be addressed in future work. As discussed in our article, the novel statistical methods presented in our work can be readily adapted to answer other research questions, such as examining transitions in use status (eg, likelihood of transitioning from a single-product user to a dual-product user, or vice versa). We hope that the methods outlined in our article can be applied by others to help address some of the important issues raised by Kalan and develop a more nuanced understanding of associations between patterns of e-cigarette, cigarette, and other substance use among young people.

References

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