We found increasing sibship size to be associated with a decreased risk of allergic rhinitis and asthma with allergic rhinitis but not with asthma without allergic rhinitis (1). However, by use of polytomous logistic regression, we found that the protective effect of having siblings on the risk of asthma with allergic rhinitis could be explained by a protective effect of siblings on the risk of allergic rhinitis alone. Thus, having siblings was found to protect against allergic rhinitis while, in contrast, having siblings (older, younger, or total number of siblings) was not associated with asthma. Our findings suggest that different mechanisms may be involved in the development of allergic rhinitis and asthma with respect to the effect of sibship characteristics.

This interpretation of our findings is challenged by Karmaus and Johnson (2) in their invited commentary. They propose that the three studied outcomes (allergic rhinitis and asthma with and without allergic rhinitis) do not necessarily represent different disease entities with different mechanisms, because allergic rhinitis in our study is likely to be based on immunoglobulin E sensitization triggered by pollen and because asthma not leading to allergic rhinitis might also be based on immunoglobulin E. Their speculation, however, does not explain our findings of differential effects. Karmaus and Johnson further speculate that, since our results are based on lifetime prevalence, exposures that took place after the inception of asthma or rhinitis could have confounded our results for older siblings. However, although confounding is always of concern in epidemiologic studies, important potential confounders for older siblings after disease initiation are not obvious.

Karmaus and Johnson (2) find that it would be interesting if we studied whether the change in risk per increase in number of older siblings (i.e., the trend or gradient) varied by birth cohort. We have already reported that the trend for number of siblings overall did not vary by birth cohort for allergic rhinitis. We can now furthermore report that the trend for number of older siblings or lack of trend did not vary by birth cohort for any of the three studied outcomes.

In conclusion, we find our previous conclusions valid and an obvious and likely way to interpret the results of our study.

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REFERENCES