THREE AUTHORS REPLY

We thank Drs. Tseng and McCann (1) for their comments on our paper (2). We agree with Tseng and McCann that our study had several limitations, among them the relatively arbitrary food grouping applied and the limited number of cases involved, which we discussed in depth in our article (2). Still, the hypothesis-oriented pattern appeared to perform better than any of the exploratory patterns with respect to the outcome being considered. The multivariate adjusted relative risks for quartiles of pattern scores were 1.00, 0.78, 0.51, and 0.70 for the hypothesis-oriented Dietary Approaches to Stop Hypertension (DASH) pattern and 1.00, 1.02, 0.61, and 1.02 for the “traditional cooking” pattern. Furthermore, all food groups used in defining the DASH pattern consistently showed a tendency to be associated with a lower hypertension risk (relative risks for quartiles: for dairy products, 1.00, 0.93, 0.79, and 1.04; for vegetables, 1.00, 1.28, 0.84, and 0.79; for fruits, 1.00, 0.78, 1.03, and 0.69), though none of these associations were statistically significant. It is therefore likely that the association observed for the DASH pattern reflects the combined protective effect of these exposures. In contrast, both exploratory patterns were not associated with dairy intake and were associated only with intake of either raw or cooked vegetables, and were therefore unable to reflect potential health effects of dairy and total vegetable intake.

In their letter, Tseng and McCann (1) argue that exploratory dietary patterns represent real-world dietary behaviors that are of interest by themselves and that can be as informative as hypothesis-oriented patterns with respect to diet-disease relations. However, factor analysis results seem to account for only a small or moderate proportion of the total variance of foods (3). Thus, any factor analysis solution represents the optimal solution in terms of explained variance; however, it leaves enough space for many other patterns prevailing in the study population. Therefore, it is troublesome to assume that the derived patterns should represent those combinations of foods that are most relevant for a specific disease. Obviously, other real-world combinations might be at least as important but might not be identified with this approach just because they explained a slightly smaller amount of the total variance.

Although it might be scientifically interesting to explore how socioeconomically and culturally influenced patterns are related to disease occurrence, answering this question with confidence would require replication of study findings. This is less an issue for hypothesis-oriented patterns but is a difficult if not impossible task for exploratory patterns, because exploratory analysis gives, by nature, population-specific results. We have previously discussed the use of hypothesis-oriented pattern scores to replicate exploratively derived patterns in different study populations as a potential solution to this dilemma (4), but this issue has not been addressed otherwise. In addition, from a public health point of view, the ultimate goal of nutritional epidemiology is to define optimal diets for disease prevention. In this sense, it would seem less important to answer the question of whether “a fast-food-based diet of meat and French fries is less healthy than a more traditional meat-and-potatoes diet” (1, p. 913) than to determine whether people following either dietary pattern would benefit from adding more vegetables and fruits to their diet.

In general, neither hypothesis-oriented nor exploratory methods are ideal for deriving disease-related dietary patterns, because they use only one source of information and are not able to combine prior information with the data at hand. Possibly, other, more flexible statistical methods like reduced rank regression should be applied to discover what variation in diet is important for the development of a specific disease.

REFERENCES


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