

## Reply to E Archer and SN Blair<sup>1</sup>

Dear Editor,

We write in response to a recent letter to the Editor entitled “Implausible Data, False Memories, and the Status Quo in Dietary Assessment” by Archer and Blair (1). Although we disagree with some other aspects of their letter, we confine ourselves here to the portion of the letter in which the authors cite data from our recently published article (2). The authors claim that our data “demonstrate the futility” of self-report dietary data methods. They cite estimates of squared average correlation between true usual energy intake and self-reported energy intake of between 0.04 and 0.10, stating that these values “provide unequivocal evidence that self-report dietary data offer an inadequate basis from which to draw scientific conclusions.”

We strongly disagree with their conclusions. It does not follow logically that because energy intake is poorly estimated by self-reporting methods, self-report dietary data can never be used to establish scientifically valid conclusions. Archer and Blair ignore 2 of our findings. First, FFQ-reported protein density (protein intake divided by energy intake) has a far higher correlation with true usual intake than does protein itself. This same finding was also evident for potassium and sodium, as well as for the sodium-potassium ratio (3). Increased correlations are also seen with 24-h recall reported intake after forming densities. These findings indicate that self-report instruments are more suited to the elicitation of a person’s dietary composition than his or her absolute intake. This has long been recognized within the nutritional epidemiology community, and it has led to the common practice of energy adjustment (4) when analyzing self-reported intake of nutrients and food groups. In a similar vein, recent versions of the Healthy Eating Index (5) have been based on energy-adjusted intake. Second, we found that the averages of 2 and 3 24-h recall protein reports had substantially higher correlations with true usual intake than a single recall. This also was evident for potassium (3). Thus, the use of repeated 24-h recalls is another device that can be used to improve the quality of self-report dietary data.

Throughout their letter, Archer and Blair claim that their arguments are logical and empirically supported. In fact, their conclusions are far too sweeping.

**Laurence S Freedman  
Raymond J Carroll  
Marian L Neuhouser  
Ross L Prentice  
Donna Spiegelman  
Amy F Subar  
Lesley F Tinker  
Walter Willett**

*From Information Management Systems, Inc., Rockville, MD, and Biostatistics Unit, Gertner Institute for Epidemiology and Health Policy Research, Tel Hashomer, Israel (LSF; email: lsf@actcom.co.il); Department of Statistics, Texas*

*A&M University, College Station, TX (RJC); Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA (MLN, RLP, and LFT); Departments of Epidemiology and Nutrition, Harvard School of Public Health, Boston, MA (DS and WW); and Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD (AFS).*

<sup>1</sup> Author disclosures: LS Freedman, RJ Carroll, ML Neuhouser, RL Prentice, D Spiegelman, AF Subar, LF Tinker, and W Willet, no conflicts of interest.

## References

1. Archer E, Blair SN. Implausible data, false memories, and the status quo in dietary assessment. *Adv Nutr* 2015;6:229–30.
2. Freedman LS, Commins JM, Moler JE, Arab L, Baer DJ, Kipnis V, Midthune D, Moshfegh AJ, Neuhouser ML, Prentice RL, et al. Pooled results from five validation studies of dietary self-report instruments using recovery biomarkers for energy and protein intake. *Am J Epidemiol* 2014;180:172–88.
3. Freedman LS, Commins JM, Moler JE, Willett W, Tinker LF, Subar AF, Spiegelman D, Rhodes D, Potischman N, Neuhouser ML, et al. Pooled results from five validation studies of dietary self-report instruments using recovery biomarkers for potassium and sodium intake. *Am J Epidemiol*. In press.
4. Willett W. *Nutritional Epidemiology*. 3rd edition. Chapter 11: Oxford University Press, New York NY, 2013.
5. Guenther PM, Casavale KO, Reedy J, Kirkpatrick SI, Hiza HA, Kuczynski KJ, Kahle LL, Krebs-Smith SM. Update of the Healthy Eating Index: HEI-2010. *J Acad Nutr Diet* 2013;113:569–80.

doi:10.3945/an.115.009118.

## Reply to LS Freedman et al.<sup>1</sup>

Dear Editor:

We thank Freedman et al. (1) for their reply to our letter entitled, “Implausible Data, False Memories, and the Status Quo in Dietary Assessment” (2), and appreciate the continuance of the scientific discourse our previous work (3) engendered. Herein we address the claims from Freedman et al. that post hoc data manipulations that improve correlations between biomarkers and physiologically implausible data establish the scientific utility of those improbable data, and that additional 24-h recalls (24HRs) “improve the quality of self-report dietary data.”

Science is the pursuit of lawful relations between natural phenomena (i.e., knowledge of objective reality), and not mere statistical correlations between numbers (i.e., simple abstractions). It is an oft ignored fact that mathematical and/or statistical representations of natural phenomena per se do not demonstrate the validity of the allied data collection protocols or the representations themselves. As such, numeric representations often mislead those who lack a fundamental understanding of the phenomena under