mantle that incorporate extrapolations to high temperatures and pressures based on the behavior of normal salts may well need to be revised.

M. O'KEEFFE
J.-O. BOVIN*

Chemistry Department, Arizona State University, Tempe 85281

References and Notes

1. M. O'Keeffe, *Science* **180**, 1276 (1973).
2. C. E. Derrington and M. O'Keeffe, *Nature (London)* **246**, 44 (1973); C. E. Derrington, A. Lindner, M. O'Keeffe, *J. Solid State Chem.* **15**, 171 (1975).
3. L. E. Nagel and M. O'Keeffe, in *Fast Ion Transport*, W. van Gool, Ed. (North-Holland, Amsterdam, 1973), p. 165.
4. M. O'Keeffe and B. G. Hyde, *Philos. Mag.* **33**, 219 (1976); M. O'Keeffe, *Comments Solid State Phys.* **7**, 163 (1977).
5. C. E. Derrington, A. Navrotsky, M. O'Keeffe, *Solid State Commun.* **18**, 47 (1976).
6. M. O'Keeffe and B. G. Hyde, *Acta Crystallogr. Sect. B* **33**, 3802 (1977).
7. J.-P. Loup, N. Jonkiere, A.-M. Anthony, *High Temp. High Pressures* **2**, 75 (1970).
8. The ternary salt was made by melting together NaF and MgF_2 (both Merck "suprapur," that is, 99.999 percent pure) in sealed boron nitride crucibles in an oxygen- and water-free environment. Conductivity measurements were made in 1 atm of pure argon.
9. E. C. T. Chao, H. T. Evans, B. J. Skinner, C. Milton, *Am. Mineral.* **46**, 379 (1961).
10. M. O'Keeffe, B. G. Hyde, J.-O. Bovin, *Phys. Chem. Minerals* **4**, 299 (1979).
11. L. G. Liu, *Geophys. Res. Lett.* **1**, 277 (1974); *Earth Planet. Sci. Lett.* **31**, 200 (1976).
12. A. E. Ringwood, *Composition and Petrology of the Earth's Mantle* (McGraw-Hill, New York, 1975); *Geochem. J.* **11**, 111 (1977). According to these references, the composition of the perovskite phase is about $Fe_{0.1}Mg_{0.9}SiO_3$.
13. F. D. Stacey, *Phys. Earth Planet. Inter.* **15**, 341 (1977).
14. K. L. McDonald, *J. Geophys. Res.* **62**, 117 (1957); R. G. Currie, *ibid.* **73**, 2779 (1968); R. J. Banks, *Geophys. J.* **17**, 457 (1969).
15. D. C. Tozer, in *Physics and Chemistry of the Earth*, L. Ahrens *et al.*, Eds. (Pergamon, London, 1959), vol. 3, page 414; F. D. Stacey, *Physics of the Earth* (Wiley, New York, ed. 2, 1977).
16. See, for example, *Physics of Superionic Conductors*, M. B. Salamon, Ed. (Springer-Verlag, New York, 1979).
17. Research supported by a grant (DMR 78-09197) from the National Science Foundation and also by the Swedish National Science Research Council.
* Permanent address: Inorganic Chemistry 2, Chemical Centre, Post Office Box 740, S-220 07 Lund 7, Sweden.

30 April 1979; revised 18 June 1979

Determinants of Cognitive Performance in Warsaw

Firkowska *et al.* (*1*) investigated determinants of cognitive performance in Warsaw, where the variance in extrinsic determinants (such as the quality of schools, health care, and housing) was greatly reduced owing to social policy. A determinant that does not vary cannot explain variability in cognitive performance. Thus, Firkowska *et al.* observed stronger correlations between cognitive performance and certain intrinsic determinants (parents' education and occupation) than between cognitive performance and extrinsic determinants. They conclude that "an egalitarian social policy executed over a generation failed to override the association of social and family factors with cognitive development that is characteristic of more traditional industrial societies" (p 1358).

It could hardly have been otherwise. The egalitarian social policy could have eliminated individual differences in performance only under two unlikely sets of circumstances: if intrinsic factors did not affect cognitive performance, or if extrinsic factors were systematically and inversely correlated with intrinsic factors. Neither of these conditions is met in Warsaw nor, probably, in any other society.

Assessed extrinsic factors in the study by Firkowska *et al.* did not vary and therefore were not important in explaining the variability in cognitive performance in Warsaw. This does not mean that they may not be important in other populations where they do vary. Furthermore, although assessed extrinsic factors could not explain variability of cognitive performance in Warsaw, they may have been an important determinant of performance. Nutrition cannot explain any of the variability in height of a uniformly well-nourished population, but it is certainly an important determinant of height. The same may be true of extrinsic determinants in Warsaw and elsewhere.

The study by Firkowska *et al.* has mainly emphasized a statistical fact: reducing the variability of only one determinant of a multiply determined capability can only reduce the portion of the variance which that determinant explains.

ROBERT E. LASKY
Department of Pediatrics, University of Texas Health Science Center, Dallas 75235

References

1. A. Firkowska, A. Ostrowska, M. Sokolowska, Z. Stein, M. Susser, I. Wald, *Science* **200**, 1357 (1978).

12 February 1979; revised 24 May 1979

On the specific subject of the ability of our study to explain the contribution of extrinsic factors to cognitive performance, Lasky seems not to be aware that he is in agreement with us. We make the same point more than once in our paper, for instance:

> . . . The range of variation among the extrinsic variables themselves is not great, however; such effects as they may have would be largely neutralized by their even distribution across districts.
>
> For this reason one cannot say from our study that extrinsic factors are not salient in mental performance, but only that they are not salient under the equalized conditions of habitation found in Warsaw. In other words, social policy may have removed the effects of extrinsic factors from the reach of measurement. . . .

On the general subject of our study of cognitive performance in Warsaw, Lasky seems to us to have missed its main point. Virtually everywhere (but not in Warsaw) "extrinsic" and "intrinsic" factors are systematically associated. Statistical analysis, however sophisticated, of their relations with cognitive performance is therefore subject to confounding. For instance, the children of the better-off go to "good" schools, the children of the poor to "poor" schools, and cases that depart from such a distribution are likely to be too few or too deviant to provide adequate statistical control. The contribution of our study as we see it is that in Warsaw the two sets of factors were unconfounded. Since social policy had neutralized the effect of extrinsic factors, the effects of intrinsic factors could be isolated and studied separately. We aimed precisely to exploit the objective results of a social experiment rather than a "statistical fact."

On one particular point Lasky is in error. It is not true that "reducing the variability of only one determinant of a multiply determined capability can only reduce the portion of the variance which that determinant explains." Quite apart from the untenable assumption of perfect knowledge of confounding on which the statement rests, Lasky leaves out of account the possibility of interaction among factors. In the real world, manifestations of interaction are protean, and can rarely be safely ignored.

MERVYN SUSSER
Gertrude H. Sergievsky Center, Faculty of Medicine, Columbia University, New York 10032

ZENA A. STEIN
Epidemiology of Brain Disorders Research Department, New York State Psychiatric Institute, and *School of Public Health, Columbia University, New York 10032*

9 July 1979

0036-8075/79/1102-0600$00.50/0