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The Relation of Childhood Mortality to Mobility in Contemporary Foragers

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In her stimulating paper Waguespack (2002) argued that the initial migration of foraging tribes from North to South America in the Late Paleolithic could not have been impeded or slowed by a disease barrier because infections did not seem likely to have impacted their mobility. Indeed, the data Waguespack used about the mobility and the infant mortality observed in nine contemporary foraging societies appeared to show no relationship between childhood mortality and either number of residential moves per year or total distances of yearly residential moves [incorrectly labeled in Table 4 and Fig. 3 as "Distance per move"]. Waguespack concluded that "based on modern hunter-gather societies the degree of group mobility between residential camps is unlikely to be affected by disease" (p. 238).

Even though Waguespack provided data on the habitat occupied by the different groups, this element was not factored in the analysis. There was a single Arctic tribe, the Greenland Inuit, which was different from the others for both its high childhood mortality and mobility. There were otherwise four tropical forest groups, two from the Philippines (Agta, Batak) and two from Central Africa (Aka and Mbuti), and four tropical/subtropical desert groups, one from Australia (Anbarra) and three from the Kalahari desert (Dobe, G/wi and ≠Kade G/wi). With one exception (childhood mortality of the Agta from Philippines), I have been able to find the source of all the data in Tables 4-1 and 6-9 (pp. 112 and 252) of Kelly (1995). Waguespack's Fig. 3A is reproduced in Fig. 1a, with an added linear regression slope.

I have reanalyzed these data. In order to control for habitat (desert vs. forest), I left the Inuit out as they were the only Arctic population. Figure 1b shows that, overall, when mixing forest and desert people, there is no association between childhood mortality and number of residential moves (slope=0.004, p=0.98). However, among tropical desert people, the association is negative (Fig. 1c, slope=−0.175, p=0.49). The same is true for forest people (Fig. 1d, slope=−0.190, p=0.76). The slope for the whole sample after adjustment for habitat is −0.177 (p=0.17, Fig. 1b). None of the slopes is statistically significant, as can be expected given the small sample size. Nevertheless, the consistency of the negative association and its magnitude among desert and forest people suggests that the lack of association between moves and childhood mortality reported by Waguespack is indeed confounded by habitat: forest people move more often than desert people, but in both groups there seems to be one less residential move for every 5% to 6% increase in mortality. The results are equivalent when using the total distance of residential moves in a year (slopes, crude=−1.44, p=0.78; adjusted=−1.78, p=0.44), but the variable is only available for three tropical forest groups, which makes the demonstration less neat.

The appropriate interpretation of these data is therefore that residential moves are inversely proportional to childhood mortality: Populations with greater childhood mortality move less, or vice versa, less mobile populations have greater childhood mortality. These findings are consistent with Bailey's report that Efe Pygmies of North-Eastern Africa are less mobile when sick than when not (Bailey 1991). This relationship between mobility and childhood mortality does not fully support the interpretation given by Waguespack (Waguespack 2002).

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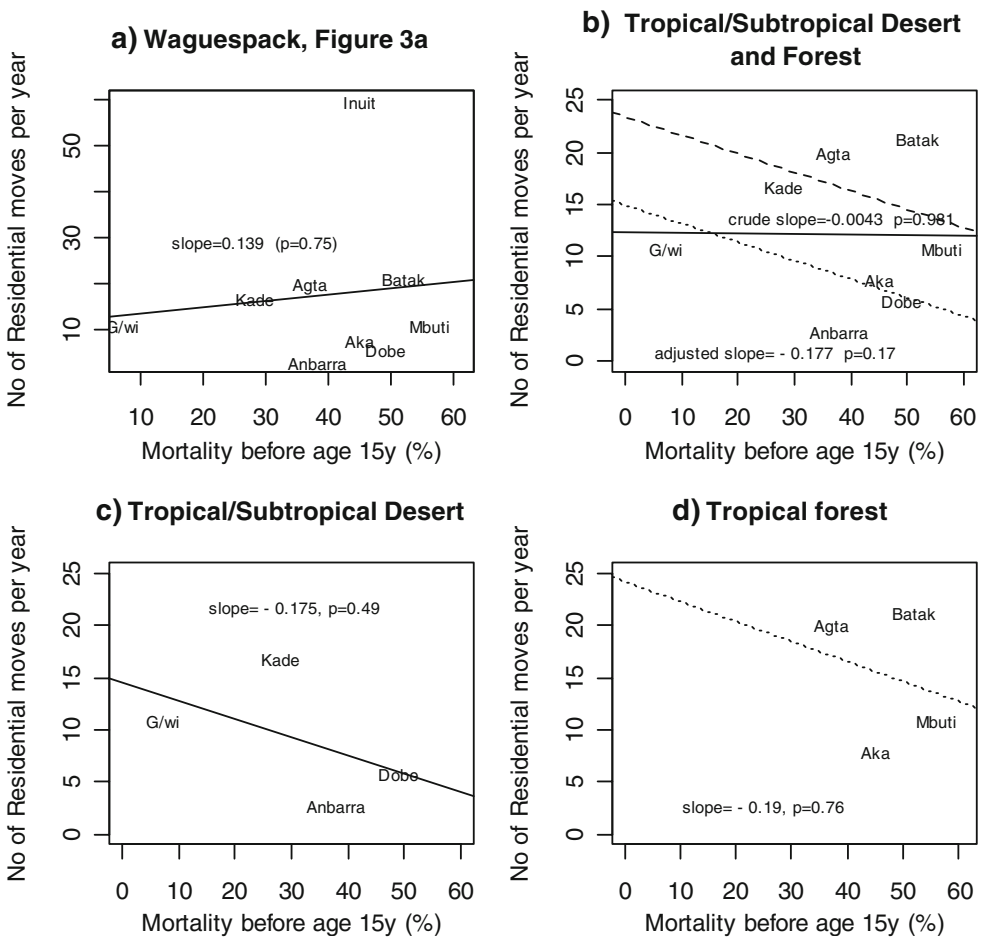

Fig. 1 Data points and regression lines between mortality before age 15 and number of residential moves per year among contemporary foragers. **a** Figure 3a of Waguespack (2002), regression line added. **b** Tropical deserts and forests. Regression lines: *dotted*=desert, adjusted; *dashed*=forest, adjusted; *solid*=all, unadjusted. **c** Tropical/subtropical desert only. **d** Tropical forest only

If this inverse association can be extrapolated to prehistoric foragers, either the disease barrier was too weak to have hindered the prehistoric foragers to rapidly occupy the South American continent. Or, there was a disease barrier, which must have momentarily stopped the tribes until their members acquired sufficient immunity or familiarity with the diseases to continue their journey. It may well be, however, that the relationship observed in contemporary foragers, who have all been in contact with Neolithic germs, cannot be extrapolated to prehistoric foragers. The prevalence of infectious diseases increases rapidly after contact with modern people. For example, among the Ache hunter-gatherers of Paraguay, respiratory diseases accounted for about 1% of all deaths of children less than 15 years old before permanent contact with modern societies, 8.6% during the contact period (1971–1977) and 27.4% in reservations (1978–1993) (Hill and Hurtado 1996). If contact infections alter mobility differently than precontact infections would have, it is not possible to rule out that, as Waguespack argues, Paleolithic pioneers were not held up by infections: they had to move ahead rapidly to leave the germs behind.

References

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