Hostility, Coronary Heart Disease, and Total Mortality: A 33-Year Follow-Up Study of University Students

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Hostility as measured by the Cook–Medley Hostility (HO) Scale on the Minnesota Multiphasic Personality Inventory has been suggested as a risk factor for coronary heart disease (CHD) and total mortality. This study tested the HO–CHD hypothesis in a sample of 1399 men who entered the University of Minnesota in 1953 and, as part of freshman orientation, completed the MMPI. Current health status was ascertained for 94% of the sample through telephone interviews 33 years later. Higher HO scores did not predict CHD mortality, CHD morbidity, or total mortality either before or after adjustment for baseline risk factors. Among the plausible explanations for these results are that (1) hostility is not a risk factor in all populations, (2) the HO scale at age 19 does not assess a stable psychological characteristic, or (3) the HO scale is not an adequate measure of hostility.

KEY WORDS: hostility; coronary heart disease; mortality; Cook–Medley Hostility Scale.

INTRODUCTION

Two separate lines of research have identified hostility as a potential risk factor for coronary heart disease (CHD). The first has focused on hostility...
as a component of the Type A behavior pattern (TABP), where several studies have found hostility to be highly predictive of CHD outcomes (Jenkins et al., 1966; Matthews et al., 1977; Dembroski et al., 1985; MacDougall et al., 1985). Hostility has also been studied apart from its relationship to TABP in studies which used as a measure of hostility the Cook–Medley (1954) Hostility (HO) Scale derived from the Minnesota Multiphasic Personality Inventory (MMPI). In one cross-sectional and three prospective studies, high levels of HO were associated with increased CHD incidence and mortality independent of other risk factors (Williams et al., 1980; Barefoot et al., 1983; Shekelle et al., 1983; Barefoot et al., 1987). Two studies have failed to support these findings (McCraine et al., 1986; Leon et al., 1988). Most of these studies have been conducted in small or highly selective samples and have been weakened by low response rates. This study tested the HO–CHD relation in a more general population and achieved a much higher follow-up rate.

**METHODS**

*Design.* A retrospective cohort design was used to test the HO–CHD hypothesis in a sample of college-age MMPI respondents (*N* = 1399) followed over a 33-year period. MMPI data were collected in 1953 and a follow-up telephone survey for health and vital status was conducted in 1985–1986. A case-control study was conducted within the cohort study in order to examine the relationship between HO and CHD in the presence of traditional CHD risk factors measured in 1953. Based on the information obtained through the tracking and telephone survey, the sample was defined for the smaller case-control study. Cases were those who had died and those who had a history of CHD (*N* = 110). From those remaining (*N* = 1174), an equal number of healthy controls (*N* = 110) was randomly chosen within strata of the HO scale in order to match that distribution in the larger sample.

*Sample.* Potential subjects included those men who entered the University of Minnesota in 1953 and, as part of freshman orientation, completed the MMPI. MMPI data were located for 1408 men. According to admissions records for new freshmen at the close of the second week of class, this sample included over 90% of new male registrants in the School of Liberal Arts and the Institute of Technology in 1953. The mean age was 18.9 years (SD = 2.0 years). The vast majority graduated from public high schools in Minnesota. University admissions standards for 1953 suggest that they all ranked above the fortieth percentile on an average of high-school class rank and a college aptitude test.