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Letter to the Editor

## Inverse association between sense of humor and coronary heart disease

Adam Clark, Alexander Seidler, Michael Miller\*

*Division of Cardiology, University of Maryland Medical Center, and Johns Hopkins Medical Institutions, Baltimore, MD 21201, USA*

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### Abstract

Prospective studies have suggested that antisocial Type A personality traits may be associated with an increased incidence of coronary heart disease (CHD). However, few data have addressed whether more favorable personality characteristics may be inversely correlated with CHD. Therefore, two standardized questionnaires designed to either assess anger and hostility or to measure the propensity to laugh under a variety of situations encountered in everyday life, were administered to 300 consecutive subjects. Compared to controls, CHD subjects were significantly less likely to experience laughter during daily activities, surprise situations or social interactions ( $P < 0.005$ ). Logistic regression analysis revealed an inverse correlation between humor and CHD, even after adjustment for other covariates, including hypercholesterolemia, hypertension and diabetes mellitus ( $P = 0.03$ ). A significant inverse association was also observed between humor production and antisocial Type A personality traits ( $P = 0.0001$ ). These data extend previous observations linking antisocial Type A personality traits to CHD and raise the possibility that the propensity to laugh may contribute to cardioprotection. © 2001 Elsevier Science Ireland Ltd. All rights reserved.

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Prospective studies have identified selected Type A personality traits such as hostility and anger proneness to be associated with an increased risk of coronary heart disease (CHD). The Framingham Heart Study demonstrated a significantly increased prevalence of CHD in men and women who were hard driving, competitive, hostile and aggressive, independent of age, systolic blood pressure, cholesterol and smoking [1]. Subsequent studies in myocardial infarction (MI) survivors showed increased rates of re-infarction and severity of CHD in Type A versus Type B men [2]. Of the Type A personality traits, anger and hostility as measured by the Cook–

Medley Hostility Scale (CMHS) [3] have consistently correlated with enhanced risk of CHD. Despite the growing evidence that anger and hostility may contribute to CHD, few studies have examined whether sociable personality traits, such as sense of humor, may be inversely associated with CHD.

The aim of the present study was to evaluate the responses of CHD patients (cases) and biologic family members (controls) to validated questionnaires that measure responsiveness to situational humor and hostility. The Situational Humor Response Questionnaire (SHRQ) [4] and CMHS were administered to 300 consecutive subjects at The University of Maryland Medical Center. Each of the 21 multiple-choice questions in the SHRQ was graded on a scale of 1–5 where 1 implied that the designated situation was not humorous (e.g., ‘lack of amusement’) and 5

\*Corresponding author. Tel.: +1-410-328-6299; fax: +1-410-328-4382.

*E-mail address:* mmiller@heart.umaryland.edu (M. Miller).

Table 1  
Questions in SHRQ that were strongest correlates with CHD

1.	<i>“You thought you recognized a friend in a crowded room. You attracted the person’s attention and hurried over to him or her, but when you got there you discovered you had made a mistake and the person was a total stranger . . .”</i>
2.	<i>“If a friend gave you a puzzle to solve and you found, much to your friend’s surprise, that you were able to solve it very quickly . . .”</i>
3.	<i>“If you were watching a movie or TV program with some friends and you found one scene particularly funny, but no one else appeared to find it humorous, how would you have reacted most commonly?”</i>

represented ‘laughing heartily’. An average humor score was obtained for each participant by dividing the total score by number of questions answered. The CHMS consisted of 50 true and false questions. A point was assigned for each affirmative response to anger or hostility. Participants were also asked to complete a risk factor profile listing the presence or absence of the following: high cholesterol, hypertension, diabetes, cigarette smoking and/or family history of heart disease. The protocol was approved by the Institutional Review Board at the University of Maryland Medical Center.

The median SHRQ response rate was 53. Cases had a significantly lower mean humor score (52.7 vs. 56.3;  $P < 0.005$ ) compared to controls. There were no significant differences in mean humor score in subjects with or without CHD risk factors defined by age, family history of CHD, diabetes mellitus, hypertension or cigarette smoking. Logistic regression analysis demonstrated that humor was inversely correlated with CHD in univariate analysis (odds ratio, 0.074; 95% confidence intervals, 0.05, 0.2;  $P = 0.001$ ). Following adjustment for gender, high cholesterol, hypertension, diabetes mellitus, cigarette smoking and family history of CHD, humor remained inversely correlated with CHD (odds ratio, 0.536; 95% confidence intervals, 0.3, 0.95;  $P = 0.03$ ). Three questions in the SHRQ (Table 1) were the strongest inverse correlates with CHD (odds ratio, 0.852; 95% confidence intervals, 0.768, 0.945;  $P < 0.003$ ). A significant inverse correlation was identified between situational humor response and anger/hostility (odds

ratio, 0.275; 95% confidence intervals 0.135, 0.415;  $P = 0.0001$ ).

Previous studies have supported stress-modifying effects of humor. Laughter reduces the immunosuppressive effects of stress with concomitant reductions in blood pressure, heart and respiratory rate [5]. Yet, despite the physiologic advantage offered by jollity, a potential inverse association between laughter and CHD has not, to our knowledge, been previously explored. The present study not only affirms that individuals with CHD are more inclined to score poorly on an anger and hostility scale, but in addition, also appear to be less likely to laugh mirthfully in response to routinely encountered situations in everyday life. Prospective studies evaluating CHD rates that are quantified by sense of humor may determine the extent to which sociable, interactive traits such as situational laughter directly contribute to cardioprotection.

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