

Abstract 19

A Randomized Controlled Trial of the Effect of Hostility Reduction on Cardiac Autonomic Regulation

Richard P. Sloan, PhD;¹ Peter A. Shapiro, MD;¹ Ethan E. Gorenstein, PhD;¹ Felice A. Tager, PhD;¹ Catherine E. Monk, PhD;¹ Paula S. McKinley, PhD;¹ Michael M. Myers, PhD;¹ Emilia Bagiella, PhD;² Ivy Chen, MST;² Richard Steinman, BA;³ and J. Thomas Bigger, Jr., MD³

¹Department of Psychiatry, ²Mailman School of Public Health, and ³Department of Medicine, Columbia University, New York, NY

Objective: To test whether reduction in hostility increases autonomic regulation of the heart.

Methods: In this randomized controlled trial, participants were 158 healthy adults, 20 to 45 years of age, who were one standard deviation (SD) above national norms on the Cook-Medley Hostility Scale and the Spielberger Trait Anger Index. Participants also were interviewed using the Interpersonal Hostility Assessment Technique (IHAT). They were randomly assigned to a 12-week cognitive behavior therapy (CBT) program for hostility reduction or a wait-list control condition. The main outcome measure was cardiac autonomic modulation, measured as

RR interval variability (RRV) derived from 24-ECG recordings.

Results: In a MANOVA assessing psychological outcomes of hostility, anger, and IHAT scores, there was a significant treatment effect with an average reduction across the three outcomes that was approximately 0.7 SD ($ES = 0.685$, $se = 0.184$, $P < 0.001$) greater for the intervention group than for the control group.

In contrast, the change in HR was -0.14 bpm (95% CI, -2.43 to 2.14) in treatment participants and -1.36 bpm (95% CI, -3.28 to 0.61) in wait-list participants. HF RRV, an index of cardiac parasympathetic modulation, increased by 0.07 ln msec² (95% CI, -0.10 to 0.24) for participants in the treatment condition and decreased by 0.04 ln msec² (95% CI, -0.18 to 0.10) for participants in the wait-list condition. These differences were not significant. The findings for other indices of RRV were similar.

Conclusions: Reduction of hostility and anger was not accompanied by increases in cardiac autonomic modulation. These findings raise questions about the status of disordered ANS regulation of the heart as a pathophysiological mechanism underlying the hostility–heart disease relationship and about whether hostility itself is a mechanism or merely a marker of elevated risk of heart disease.