

PAPER

Hostility, Agreeableness-Antagonism, and Coronary Heart Disease

PAUL T. COSTA, Jr, PhD

*Gerontology Research Center, National Institute on Aging,
National Institutes of Health*

STEPHANIE V. STONE, MA

Department of Psychology, University of Maryland Baltimore County

ROBERT R. McCRAE, PhD

*Gerontology Research Center, National Institute on Aging,
National Institutes of Health*

THEODORE M. DEMBROSKI, PhD

Department of Psychology, University of Maryland Baltimore County

REDFORD B. WILLIAMS, MD

Department of Psychiatry and Behavioral Sciences, Duke University Medical Center

Summary: Although the Type A Behavior Pattern (TABP) is widely considered to be an important risk factor for CHD, several recent studies have failed to find associations between TABP and CHD. As a result, investigators using the Structured Interview have begun to examine more specific aspects of TABP, and Potential for Hostility has emerged as the probable 'toxic component' of the pattern. Other measures of cold-blooded or antagonistic hostility have also been associated with CHD, and this form of hostility can be understood as part of the broader personality domain of Agreeableness vs. Antagonism. We suggest that agreeableness-antagonism itself as well as related traits such as mistrust, manipulativeness, arrogance, and aggression should also be examined as promising predictors of CHD

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The idea that hostility plays a part in the development of coronary heart disease (CHD) dates back to long before advances in scientific methodology rendered it a testable hypothesis. Pre-eminent physicians such as William Harvey in the 17th century, Sir William Heberden in the 18th century, and Sir William Osler in the early 20th century, implicated emotional factors, particularly anger and rage, in precipitating cardiac events. The 18th-century physician, John Hunter, who himself suffered from

Address reprint requests to: Paul T. Costa, Jr., PhD, Chief, Laboratory of Personality and Cognition, Gerontology Research Center, Francis Scott Key Medical Center, Baltimore, MD 21224, USA.

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CHD, asserted, 'My life is in the hands of any rascal who chooses to annoy or tease me'.¹

More recently, psychoanalysts have made similar observations involving hostility, anger, aggressiveness, hard-driving behavior, and power and achievement orientation.²

One of the first systematic attempts to identify and study these behaviors was made by two cardiologists, Meyer Friedman and Ray Rosenman, who proposed that this constellation of behaviors be called Type A Behavior Pattern (TABP), which they defined as 'an action-emotion complex that can be observed in any person who is aggressively involved in a *chronic, incessant* struggle to achieve more and more in less and less time, and if required to do so, against the opposing efforts of other things or other persons' (p. 84).³

For 20 years, the portrait of the Type A person — competitive, aggressive, irritable, achievement-oriented, over-extended, and unwilling or unable to relax — has been familiar to both physicians and laypersons. Early studies reported that individuals diagnosed as Type As on the basis of a 15-min structured interview were more likely than Type Bs to suffer any clinical manifestation of CHD.⁴ Together with many other studies which used a variety of alternative measures of the TABP, these findings led a scientific review panel to conclude that TABP was a risk factor for CHD 'over and above that imposed by age, systolic blood pressure, serum cholesterol, and smoking'.⁵ As a result, Type A was given official status by the National Heart Lung and Blood Institute (NHLBI) as a major CHD risk factor, and programs are currently underway to modify Type A behavior, in hopes of reducing recurrent myocardial infarctions.⁶

However, serious problems with the Type A construct have been noted for some time. The scoring system used to assess Type A from the structured interview (SI)⁷ reflects primarily loud and rapid speech stylistics,⁸ which are at best a tangential element of the behavior pattern as it is commonly understood. Alternate measures of TABP have repeatedly been shown to have only small correlations with each other, and often to have stronger associations with theoretically unrelated variables like the normal personality traits of neuroticism and extraversion.⁹ Most crucial, however, are the results of an expanding body of clinical and epidemiological evidence that has failed to replicate the initial links between global TABP and CHD (for reviews, see Dembroski and MacDougall;¹⁰ Matthews and Haynes¹¹). Neither arteriographic studies nor large-scale prospective studies have supported the utility of global TABP as a predictor of CHD.¹² Especially sobering is the failure to find any association in the Multiple Risk Factor Intervention Trial, a meticulously controlled, multicenter study.¹³

Understandably, these findings have led to a crisis of confidence in the original formulation of TABP and to a need for reconceptualization. One approach has been to examine separately the components of the global TABP, on the assumption that early results are attributable to some discrete portion, the 'toxic component', of the behavior pattern.¹⁴ A series of studies have been conducted in which hypothesized aspects of the global pattern were separately assessed and related to long-term outcomes and arteriographic findings.^{15,16} From these studies, potential for hostility has emerged as the most probable toxic component of TABP. Potential for hostility as

assessed by the SI⁷ can be conceptually defined as 'a stable predisposition to respond to a relatively broad range of frustrating circumstances with varying degrees and combinations of anger, irritation, disgust, arrogance, contempt, resentment and the like, which may or may not be associated with overt behavior directed against the source of frustrations' (p. 140).¹⁶ Potential for hostility is operationalized in the interview setting as argumentative and unnecessarily qualified responses, challenging the interviewer, manifestations of boredom, condescension or rudeness (which constitute a subcomponent called *hostile style*), endorsement of frequent anger episodes (called *hostile content*), and use of harsh generalizations, emotionally laden words and profanity (called *hostile intensity*).¹⁷

In a reanalysis of SI data from the Western Collaborative Group Study (WCGS), which had earlier provided evidence for a prospective association between TABP and CHD,⁴ Matthews *et al.*¹⁵ found that potential for hostility items significantly discriminated between cases ($N = 62$) and controls ($N = 124$), $p < 0.003$. In two subsequent independent analyses of angiographic cases, ratings of potential for hostility predicted CHD severity even when global TABP and components such as vocal stylistics failed.^{16,18}

These data suggest that traits such as achievement orientation and inability to relax are probably not relevant to the prediction of heart disease; instead, some form of hostility appears to confer risk. This conclusion is supported by several other studies, including those of Williams and his colleagues, who found that the Cook and Medley hostility scale¹⁹ (HO) of the Minnesota Multiphasic Personality Inventory (MMPI) predicted CHD in three different studies.²⁰⁻²² Siegman *et al.*²³ found that an expressive hostility factor from the Buss-Durkee hostility inventory (BDHI)²⁴ was positively associated with extent of stenosis. A set of consistent results is beginning to emerge.

The two types of hostility

Soon after attention was focussed on the topic of hostility, it became clear that more distinctions were necessary. Some forms of hostility appeared to be unrelated to CHD outcomes; one study even reported significant negative correlations between Spielberger's trait anger scale and extent of stenosis (Spielberger, personal communication, 1986). The basis for a distinction had been anticipated by several studies conducted on instruments like the BDHI, which typically showed two factors in measures of anger, aggression, hostility, and related constructs.²⁵ The first factor referred to the experience of anger as a negative emotional state; the second referred to the expression of anger in interpersonal contexts. A similar difference can be seen in the phrases 'hot-blooded' and 'cold-blooded' hostility. The former is, at the extreme, seen in rage; the latter in cynical, manipulative, and antagonistic attitudes and behavior.²⁶

It would be quite natural to assume that it is the hot-blooded form of hostility, with all its attendant psychophysiological arousal, that is a precursor of CHD, but all the data point in precisely the opposite direction. The Cook and Medley HO scale measures cynical attitudes²⁷ and predicts CHD; the Spielberger trait anger scale

measures the frequent and intense experience of anger, and does not predict CHD. When Dembroski separately scored three aspects of potential for hostility, those related to anger experience were not predictive of CHD; the stylistic component, however, which assesses rude, condescending, and uncooperative behavior on the part of the interviewee, was predictive.²⁸

The larger context: dimensions of normal personality

The distinction between the two types of hostility can be understood better in terms of a larger framework of individual differences. Recent research on the structure of normal personality has begun to converge on a five-factor model that can be traced back to the work of Tupes and Christal.²⁹ In contemporary terms, the five dimensions are identified as neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.³⁰⁻³²

Like all tendencies to experience distressing emotional reactions, hot-blooded hostility is an aspect of neuroticism, and can be called neurotic hostility. Cold-blooded hostility is something quite different: it appears to be an element of low agreeableness, and can be identified as antagonistic hostility.³³ Although both forms of hostility have some of the same interpersonal results, the underlying dispositions are independent. Thus, an individual may be antagonistic in attitudes and rude in behavioral style while at the same time being high, low, or average in the experience of anger as an emotional state.

Despite the intuitive appeal of the notion that the negative affectivity associated with neuroticism has a negative impact on health and the considerable attention afforded it in the psychosomatic literature, there is compelling evidence that neuroticism cannot be implicated in the etiology of coronary artery disease (CAD) as distinct from angina pectoris.³⁴ There is, however, increasing evidence that the personality domain of agreeableness, as assessed by the NEO Personality Inventory (NEO-PI)³⁰ contains the essence of what the SI-derived potential for hostility, the BDHI-derived anger expression factor, and the MMPI HO scale measure.

The personality domain of agreeableness versus antagonism has been variously named likeability,³⁵ friendly compliance,³⁶ and socialization.³⁷ It appears from these labels that agreeableness is a highly desirable quality (at least to others), but that it also shows elements of weakness and acquiescence. Adjective definers of the agreeableness pole derived from our research with subjects in the Augmented Baltimore Longitudinal Study of Aging³³ are: good-natured, soft-hearted, courteous, selfless, helpful, sympathetic, trusting, generous, acquiescent, lenient, forgiving, open-minded, flexible, gullible, straightforward and humble. By contrast, the definers of the opposite, antagonistic, pole are: irritable, ruthless, rude, selfish, uncooperative, callous, suspicious, stingy, antagonistic, critical, vengeful, narrow-minded, stubborn, cynical, manipulative and proud.

Taken together, these adjectives describe a person's orientation toward others. Indeed, the domain of agreeableness is reminiscent of Alfred Adler's concept of *Gemeinschaftsgefühl*, or social interest, Adler's goal for personality adjustment.³⁸

In addition to traits such as cooperation and empathy, social interest included selflessness or self-transcendence and identification with others and with the world in general.

Horney³⁹ has provided a less glowing version of the domain. In her interpretation, high agreeableness is seen as dependency and slavish compliance in response to feelings of personal inadequacy; low agreeableness or antagonism may take the form of active conflict with others or indifference to them. Geis⁴⁰ has noted similar characteristics in individuals scoring high in Machiavellianism: low scorers are more person-oriented than task-oriented, and are more easily manipulated. Thus, the hard-headed rationality of antagonistic people can be useful in situations where human emotion is disruptive.

The detached cognitive style of the disagreeable individual is probably related to a pervasive attitude of mistrust. Agreeable people believe that others are both trustworthy and altruistic⁴¹ like themselves and therefore see no need to be on their guard. Disagreeable people, by contrast, are cynical and maintain a low opinion of human nature, an attitude which may reflect their self-knowledge and serves to justify their lack of altruism.

Emotionally, agreeable people are warm, sympathetic, loving, with a quick and deep emotional attachment to others. Antagonistic people may be hostile and irritable, but they are just as likely to display a lack of emotional response, appearing cool or cold, contemptuous, callous, and unfeeling. Wiggins and Broughton's⁴² work illustrates how the needs defined by Henry Murray⁴³ distinguish between agreeable and antagonistic people. Whereas the agreeable individual needs to give sympathy and support, please others and win affection, admire and support superiors, the antagonistic individual needs to resist coercion and remain unattached, to oppose, attack, or punish others, to exclude, abandon or snub those who are disliked or thought to be inferior.

Interpreting hostility within the broader framework of agreeableness-antagonism has at least two advantages. First, it suggests that the other, related personality attributes described above should also be examined as possible risk factors for CHD. Such traits as egocentrism, Machiavellianism, and some forms of excitement seeking are related to antagonistic hostility, and might also be related to CHD. These are traits that probably would not be investigated if researchers thought only in terms of anger and aggression.

Second, experience with the measurement of agreeableness versus antagonism may be useful in assessing antagonistic hostility. Both self-reports and observer ratings on questionnaire measures of the broad domain of agreeableness have been shown to be both reliable and valid, and might offer an alternative or supplement to the SI, which is costly and time consuming to administer and score. In addition, self-reports and spouse or peer ratings have the advantage of being based on years of experience with the individual, rather than on a 15-min. sample of behavior in an atypical setting. In addition, there is evidence that self-reports of agreeableness on the NEO-PI³⁰ are significantly inversely related to SI-derived ratings of potential for hostility in college samples.³³ Prospective studies using self-reports or ratings of the personality dimension of agreeableness versus antagonism would appear to be a high priority for future research on CHD risk factors.

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