



Contents lists available at SciVerse ScienceDirect

## Journal of Psychosomatic Research



## The metabolic costs of hostility in healthy adult men and women: Cross-sectional and prospective analyses

Bianca D'Antono <sup>a,b,\*</sup>, D.S. Moskowitz <sup>c</sup>, Anil Nigam <sup>a,d</sup>

<sup>a</sup> Research Center, Montreal Heart Institute, Montreal, Quebec, Canada

<sup>b</sup> Department of Psychology, Université de Montréal, Montreal, Quebec, Canada

<sup>c</sup> Department of Psychology, McGill University, Montreal, Quebec, Canada

<sup>d</sup> Department of Medicine, Montreal Heart Institute, Montreal, Quebec, Canada

## ARTICLE INFO

## Article history:

Received 25 March 2013

Received in revised form 24 May 2013

Accepted 25 May 2013

Available online xxxx

## Keywords:

Age

Anger

Hostility

Metabolic

Prospective study

Sex

## ABSTRACT

**Background:** Hostility is associated with altered metabolic activity but little research has examined sex and/or age differences using a global index of metabolic dysfunction or examined different aspects of hostility.

**Methods:** The moderating effect of sex and age on the associations between three aspects of hostility (cynical attitude, angry affect, quarrelsome behavior in daily living) and metabolic burden (number of metabolic parameters in the higher quartile) were evaluated in 188 healthy men and women ( $M_{age} = 41$ ;  $SD = 11.34$ ). Three years later, metabolic burden was measured again in 133 participants.

**Results:** At study onset, quarrelsome behavior was associated with greater metabolic burden in men and women ( $Beta = .144$ ;  $p < .05$ ). After 3 yrs, cynical hostility predicted increased metabolic burden among mid-age and older individuals ( $b = .013$  and  $.046$  respectively;  $p < .001$ ).

**Conclusion:** The aspect of hostility that is most closely associated with metabolic burden depends on the age of the participants and whether measures are concurrent or prospective.

© 2013 Elsevier Inc. All rights reserved.

## Introduction

Humans differ widely in their ways of perceiving and behaving in the world in which they live. These individual differences impact not only on the quality of interpersonal relations but also on health. Hostility is particularly important within this context. It has been defined in different ways in the literature but usually refers to 1) mistrustful, cynical attitudes towards others (hostile cognitive set), 2) frequent and intense feelings of anger (trait anger), and/or 3) overt hostile or quarrelsome behavior. Studies have supported a role for hostility in the incidence, progression, and mortality from coronary artery disease (CAD) [1,2]. The impact of hostility on CAD may occur through its influence on or its association with factors that in themselves confer risk, such as metabolic syndrome (MS). MS is an important risk factor for cardiovascular disease and premature death [3,4]. It refers to a cluster of metabolic dysfunctions involving elevations in blood pressure (BP), waist circumference (abdominal obesity), glucose and triglyceride (TRG) levels, and a reduction of high density lipoprotein levels (HDL) [3,5].

Studies using cross-sectional or prospective designs support a relation between hostility and individual parameters of MS [6–11]. However, inconsistent and null results do exist [12–14], and the direction of the

relations may depend on characteristics of the participants recruited (e.g., sex, age), and the metabolic measure used in the investigation. A few studies examined the relation between hostility and a global representation of MS and generally found that hostility is associated with a greater risk of MS [11,15–17]. A limitation of the current literature has been the inconsistent examination of sex and age differences in the relation between hostility and MS risk. This is surprising given the potential impact of these characteristics on results obtained. For example, there are established sex differences in MS prevalence [18–20] levels of hostility [13,21,22], behavioral risk factors [22], and reactivity to stress [23–28].

The measure of hostility used may also be critical. Smith [29] hypothesized that different measures of hostility may tap different dimensions of the overall construct of hostility, and the impact of these dimensions on health may not be the same or they may act through different mechanisms. While a multimethod approach has been recommended [30–32], studies using multiple measures of hostility are rare. In addition, most research has employed questionnaires administered on one occasion in which participants describe “typical” attitudes, behaviors, or emotions relating to hostility. However, methods based on intensive repeated measures in naturalistic settings may be more ecologically valid [33,34], while minimizing reliance on recall [33–35].

In sum, hostility may increase the risk for MS, but studies are needed to identify factors that modify hostility as a risk factor [36]. The current investigation was designed to examine the concurrent and prospective association of hostility with metabolic burden (MS burden)

\* Corresponding author at: Montreal Heart Institute, 5000 Belanger Street, Montreal, Quebec H1T 1C8, Canada. Tel.: +1 514 376 3330x4047; fax: +1 514 376 1355.

E-mail address: bianca.d.antonio@umontreal.ca (B. D'Antono).

in healthy working adults, with a specific interest in how this association is modified by age and/or sex. A multidimensional approach is taken to the measurement of hostility; hostility is investigated as a cognitive trait, as a behavioral state during interpersonal interactions, and as an emotional state during interpersonal interactions in the person's natural environment. A mathematical representation of MS, herein referred to as metabolic burden, was examined rather than MS per se given the healthy nature of the sample. It is expected that hostility will be associated concurrently and prospectively with increased metabolic risk, and these associations may strengthen with age, given increased prevalence of metabolic abnormalities with age.

## Cross-sectional study

### Methods

#### Participants

Working men ( $n = 81$ ) and women ( $n = 118$ ), aged 20 to 64 years ( $M = 41$ ;  $SD = 11.45$ ), were recruited from advertisements in newspapers and community centers from 2005 to 2007. Eligibility criteria were (a) no utilization of mental health services within the past year, (b) no current/diagnosed health problems (for example, asthma, hypertension, diabetes, hypercholesterolemia, heart disease, cancer, auto-immune disorders, disorders of the adrenal gland) or use of medication (for example, statins, beta-blockers, anti-inflammatory) capable of affecting cardiovascular, immune, or neuroendocrine functions, (c) no learning or cognitive disabilities sufficient to impair ability to complete questionnaires or understand instructions and (d) not currently on hormone replacement therapy. To ensure a broad age distribution, participants were selected to provide approximately three equal age groups (18–34 years; 35–44 years; 45–65 years). Women were over-sampled to include a substantial number of post-menopausal women ( $N = 34$ ) for a separate component of the study not discussed here. Complete data were obtained for 188 participants. Missing data were due to non-completion of event records by 7 participants, as well as inability to use physiological data in 4 participants due to presence of artifacts.

#### Procedure

Eligible participants were scheduled for a laboratory appointment. To control for circadian rhythms, all sessions began at 8:00 a.m. on weekdays. Participants were requested to abstain from eating, drinking (other than water), smoking, and strenuous exercise for 12 h prior to testing. They were also asked to refrain from alcohol or other drug use during the 24-h period preceding the appointment. Participants who did not adhere to these instructions or were presenting any physical symptoms (e.g., cough, cold, headache) were sent home and rescheduled. Questionnaires were administered to obtain information on sociodemographic, medical and psychological profile. Waist circumference, height and weight were measured and blood was drawn following a 10-min rest period. Participants then underwent a stress protocol involving four 5-minute interpersonal stressors (reading task, 2 role-plays manipulating quarrelsome/agreeable behavior, non-scripted debate), each preceded by a preparation period and followed by a 5-minute recovery period. Refer to [37,38] for details regarding the stress protocol. Ambulatory BP was obtained during the 24-h period following the laboratory session. For a period of 21 consecutive days after the laboratory session, participants were asked to complete a form for each substantial interaction defined as an interaction (in person) lasting at least 5 min up to a maximum of 10 per day. They were requested to complete the form as soon as possible after each social interaction on a palm pilot handheld computer. Participants were encouraged to sample across all social contexts (work, home, leisure). While the context and type of relationship was noted for each interaction, this is not addressed in the current manuscript.

Each participant signed a consent form and received 200 dollars compensation for time and travel. The research was approved by our Institution's Ethics Board, and has been carried out in accordance with *The Code of Ethics of the World Medical Association (Declaration of Helsinki)*.

### Measurement

**Hostility variables.** Three aspects of hostility were assessed: cognitive (cynicism) was measured using the Cook–Medley Hostility Inventory while affective (anger) and behavioral (quarrelsomeness) dimensions were measured using ecological momentary assessments (EMA) during interpersonal interactions of daily living. These measures are described below.

**The Cook–Medley Hostility Inventory (CMHo; [39]).** The CMHo is a 50-item empirically derived self-report scale from the MMPI that measures a cynical, mistrustful attitude towards others. It is answered using a true–false format. The measure has excellent internal consistency ( $\alpha = 0.88$ ) and test–retest reliability ( $r_s > 0.84$ ). In our sample, the internal consistency was  $\alpha = .83$ .

**Ecological momentary assessments (EMA).** The study employed a well-validated method for sampling behaviors during interpersonal events of everyday life [35,40]; the traits sampled were based on a widely held model, the interpersonal circumplex model of behavior [41,42]. Event-contingent record forms requested information about behavior, affect, and context in social interactions. Of interest to the present study are the quarrelsome behaviors and angry affect obtained from EMA.

**EMA of interpersonal behavior.** Items from the Social Behavior Inventory (SBI; [35]) were used to assess participants' dominant, submissive, agreeable, and quarrelsome behaviors. Each dimension was represented by 12 items. Items measuring quarrelsome behavior included "I did not respond to the other's questions or comments" and "I made a sarcastic comment." A complete list of behavior items and a detailed description of the SBI's development is provided by Moskowitz et al. [35,40].

The event-contingent record form asked participants to endorse all of the behavior items in which they had engaged during the social interaction being recorded. Each form contained a subset of behaviors to guard against the tendency for participants to adopt a response set when presented repeatedly with the same form. Four versions of the form were used. Each version contained three items representing each of the four circumplex dimensions. Forms were rotated daily on a 4-day cycle.

Interpersonal behavior scores were constructed consistently with our prior approach [43]. First, the frequency with which each behavior was checked was tallied. Second, ipsatized scores were constructed by subtracting the mean frequency for all behaviors from each scale score. Ipsatized behavior scores expressed the respondent's reported frequencies of dominant, submissive, agreeable, and quarrelsome behaviors adjusted for the total number of behaviors reported [44]. Ipsatized scores were used to control for individual differences in the tendency to endorse all items. Individuals' mean ipsatized values for quarrelsomeness across all events are typically negative, indicating that a person's mean level of quarrelsomeness across all events is lower than the mean level of all four interpersonal behaviors combined.

**EMA of affect.** Event-contingent record forms also asked participants to indicate how they felt during the interaction using nine items. Each item was rated on a scale ranging from 0 (not at all) to 7 (extremely). The affect item analyzed in the present study was angry/hostile. Mean intensity rating across events occurring for the 21 days was calculated.

Potential psychological covariates included *Defensiveness*, as measured by the Marlowe–Crowne Social Desirability scale (MCSD; [45]), and *Social Support* using an adaptation of the MOS Social Support Survey [46].

Download English Version:

<https://daneshyari.com/en/article/10469472>

Download Persian Version:

<https://daneshyari.com/article/10469472>

[Daneshyari.com](https://daneshyari.com)